FINAL

Preliminary Assessment Report Joint Base Elmendorf-Richardson, Alaska

Perfluorooctane-Sulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

October 2019

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Contract Number: W912DR-12-D-0014
Delivery Order: W912DR17F0192

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Acronyms and Abbreviations

ADEC	Alaska Department for Environmental Conservation
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AKARNG	Alaska Army National Guard
AOI	area of interest
ARNG	Army National Guard
BAAF	Bryant Army Airfield
CAF	Compressed Air Foam
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
°F	Fahrenheit
FTA	fire training area
gpm	gallons per minute
HA	Hazard Assessment
HH	Human Health
IED	Installations and Environment Division
JBER	Joint Base Elmendorf-Richardson
MGTW	Migration to Groundwater
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site inspection
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VSI	visual site inspection

Executive Summary

The United States Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide. The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily in the form of aqueous film forming foam (AFFF) released during firefighting activities or training, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

AECOM completed a PA for PFAS at Alaska Army National Guard (AKARNG) locations on Joint Base Elmendorf-Richardson (JBER) in Anchorage, Alaska to assess potential release areas and exposure pathways to receptors. The facilities at Bryant Army Airfield (BAAF) were built in the 1950s when the AKARNG shared this facility with other military branches. The performance of this PA includes the following tasks:

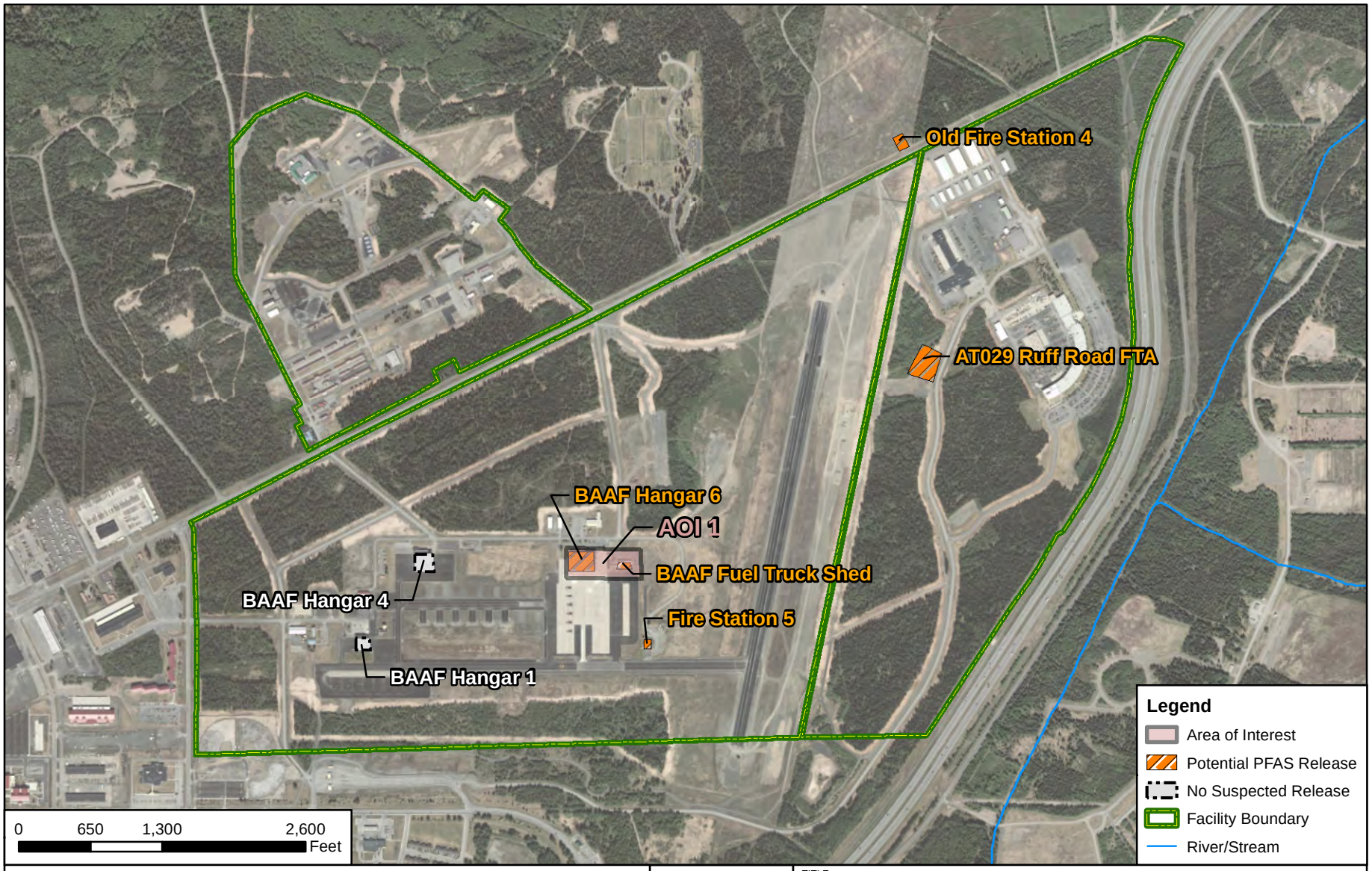
- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Conducted a multi-day site visit in August and September 2018
- Interviewed current and former employees associated with JBER fire response, JBER AKARNG BAAF, and other AKARNG facilities on JBER, including the JBER Cultural Resources Manager.
- Completed visual site inspections at known or suspected PFAS release locations and documented with photographs

One area of interest (AOI) related to PFAS release was identified at BAAF Hangar 6 based on PA data. The summary of PA findings is shown on **Figure ES-1**.

Table ES-1: AOIs at JBER-Bryant Army Field

Area of Interest	Name	Used by	Potential Release Date
AOI 1	BAAF Hangar 6 and Fuel Truck Shed	AKARNG	1990s – 2000s

Based on potential AFFF releases at the AOI, there is potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers via ingestion and inhalation of dust; subsurface soil to construction workers via ingestion and inhalation of dust; and shallow groundwater to construction workers via accidental ingestion. Most surface water runoff remains on-site at BAAF; however, during spring melting, surface water can potentially migrate off BAAF. Therefore, the ingestion exposure pathways for surface water and sediment are potentially complete for site workers, construction workers, off-facility residents, trespassers, and off-facility recreational users. Potential off-facility PFAS release areas exist adjacent to the AOI 1. Because these areas include property upgradient of the facility, it is unknown whether or not the off-facility sources affect AOI 1. The conceptual site model for the JBER-BAAF is shown on **Figure ES-2**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at JBER, AK			
REVISED	1/4/2019	GIS BY	MS	1/4/2019
SCALE	1:15,600	CHK BY	CC	1/4/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/4/2019

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Summary of Findings

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Figure ES-1

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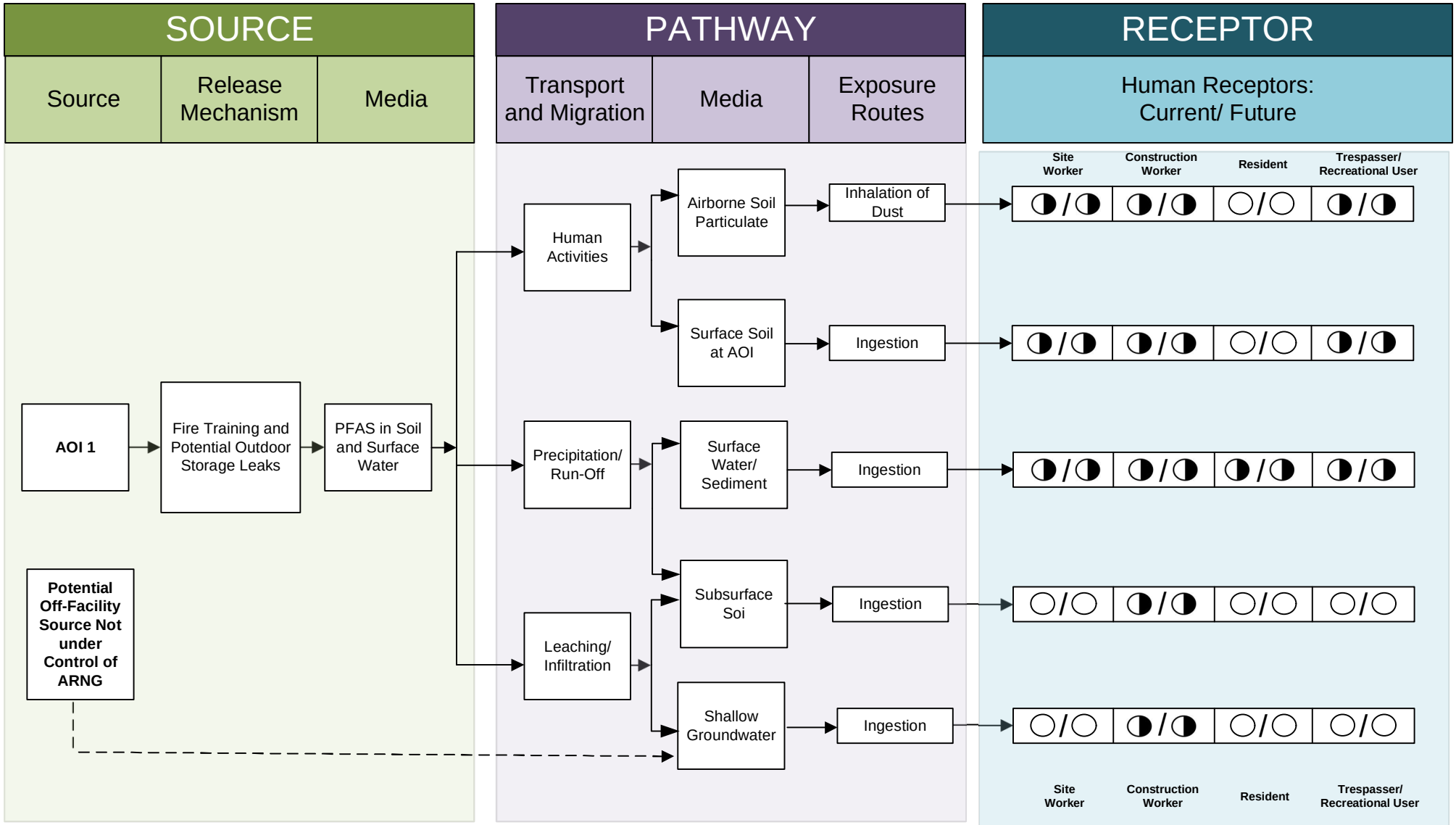


LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Notes:
1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
JBER-Bryant Army Airfield

1. Introduction

1.1 Authority and Purpose

The United States Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017. The ARNG is assessing potential effects on human health related to processes at their facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily releases of aqueous film forming foam (AFFF) released during firefighting activities or training, although other sources of PFAS are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisories for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS. In August 2018, the Alaska Department of Environmental Conservation (ADEC) established non-promulgated action levels (70 parts per trillion) for PFOA and PFOS in groundwater water and surface water used for drinking water.

This report presents findings of a PA for PFAS at Alaska Army National Guard (AKARNG) locations on Joint Base Elmendorf-Richardson (JBER) in Anchorage, Alaska, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300), and USACE requirements and guidance. This PA Report documents the known locations where PFAS may have been released into the environment at the JBER BAAF Hangar 6. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components of AFFF.

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases
- Conducted a multi-day site visit in August and September 2018
- Interviewed personnel associated with JBER fire response, JBER AKARNG BAAF, and other AKARNG facilities on JBER
- Completed visual site inspections (VSIs) at suspected PFAS release locations and documented with photographs
- If areas of interest (AOIs) were identified, developed a conceptual site model (CSM) to outline the potential release and pathway of PFAS for each AOI

1.3 Report Organization

This report has been prepared in accordance with the USEPA *Guidance for Performing Preliminary Assessments under CERCLA* (USEPA, 1991). The report sections and descriptions of each are:

- **Section 1** – **Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2** – **Fire Training Areas:** describes the Fire Training Areas (FTAs) at the facility identified during the site visit.
- **Section 3** – **Non-Fire Training Areas:** describes other locations of PFAS releases at the facility identified during the site visit.
- **Section 4** – **Emergency Response Areas:** describes areas of AFFF release at the facility, specifically in response to emergency situations.
- **Section 5** – **Adjacent Sources:** describes sources of PFAS release adjacent to the facility that are not under the control of ARNG.
- **Section 6** – **Conceptual Site Model:** describes the pathways of PFAS transport and receptors at each AOI.
- **Section 7** – **Conclusions:** summarizes the data findings and presents the conclusions of the PA.
- **Section 8** – **References:** provides the references used to develop this document.
- **Appendix A** – Data Resources
- **Appendix B** – Preliminary Assessment Documentation
- **Appendix C** – Photographic Log

1.4 Facility Location and Description

In 2010, Fort Richardson and Elmendorf Air Force Base were merged based on recommendation of the 2005 DoD BRAC Commission (USAF, 2018). Portions of Joint Base Elmendorf-Richardson (JBER) are located north and east of Anchorage, Alaska (**Figure 1-1**). The Glenn Highway cuts through the center of the Fort Richardson side of JBER, dividing it into the main base to the north, and the training and recreational area to the south. JBER is bound by the Knik Arm of Cook Inlet to the north, and Chugach State Park and other lands to the east.

The AKARNG leases three subdivisions on the Fort Richardson side of JBER, Camp Carroll, Camp Denali and Bryant Army Airfield (BAAF) (NHG, 2012). Because AFFF was not used at Camp Carroll or at Camp Denali by the AKARNG, this report focuses on locations at BAAF and adjacent sites.

BAAF first appears in aerial photographs by 1953, and was used by the Army for short take-off and landing exercises. The AKARNG has been present on the airfield alongside the Army starting in 1972. Since 1997, BAAF has been operated solely by the AKARNG, under a lease from the Army. BAAF, approximately 491 acres, includes a north/south runway, an east/west taxiway with a helicopter crosswind runway, and ground-support structures (NHG, 2012).

1.5 Facility Environmental Setting

The Municipality of Anchorage encompasses the City of Anchorage, JBER, and nearby small towns such as Girdwood and Eagle River. It consists of 1,687.20 square miles of land, 263.90 square miles of water, and includes part of the Chugach State Park (DCCED, 2018). Wildlife in close vicinity of Anchorage and JBER include bear, moose, salmon, squirrels, and numerous species of bird. The terrain on the north side of the Glenn Highway is generally flat and is composed of unconsolidated deposits, while south of the highway is mostly mountainous terrain containing a mix of unconsolidated deposits, McHugh Complex, and the Valdez Group (USGS, 2018).

1.5.1 Geology

JBER lies entirely within the Anchorage lowlands, roughly 150 square miles of glaciated lowland between two estuaries, and is an informal subdivision of the Cook Inlet-Susitna Lowland that lies southeast of the northern Knik Arm. Several hundred meters to the southeast of JBER, the lowlands are bordered by the Kenai-Chugach Mountains physiographic province (USGS, 1976; USGS, 1979). To the north of JBER, the Elmendorf Moraine, a terminal moraine sequence marking several Wisconsin age glacial advances, trends southwest-northeast through Anchorage and to the coast and creates an outwash plain which underlies JBER. The majority of both the surface and underlying material are several hundred feet of Pleistocene age deposits associated with glacial advance and erosion (i.e. glacial drift). East of BAAF contains outwash, estuarine sediments, and till comprised of unstratified clay, coarse sand, gravel, and boulders, which grades westward through Anchorage to chiefly well bedded, well sorted sand commonly overlain by 1-5 feet (ft) of silt (USGS, 1959). Some alluvial fan deposits are also seen northwest of BAAF Hangar 6 (Building 47427, referred to herein as BAAF Hangar 6).

The Anchorage lowland is heavily influenced by glacial and postglacial activities. Five glaciations are recognized to have advanced through the Anchorage lowland area; the Mount Susitna, the Caribou Hills, the Eklutna, the Knik and Matanuska, and the Naptowne glaciations. Deposits from at least three of the five glaciers are represented in the upper lowland and JBER area, with the Knik, Eklutna, and Naptowne depositions being the most prominent. Erosion represented by undercutting of sea-bluffs, landslides and downcutting into material along modern stream courses is the most prevalent post-glacial activity seen. Furthermore, lacustrine and alluvial deposits consequent with or subsequent to the advances are also represented.

The Elmendorf Moraine typically displays topographic relief averaging 250 – 300 ft, while the Anchorage lowland area around JBER averages 150 – 200ft. Bootlegger Clay (blue-gray clay) spans along where the terminal moraine abuts the outwash plain, separating the Knik from the overlying Naptowne glacial deposits. JBER lies in the western portion of the Anchorage lowland outwash plain and is predominantly underlain by unconsolidated sediments from glacial till and outwash deposits of Quaternary age. Below this, argillite, greywacke, and chert, as well as altered acidic and basic igneous rocks constitute the greater part of the Mesozoic age rocks in the Anchorage lowlands area (USGS, 1976; USGS, 2018), while the bedrock is chiefly Tertiary shale.

1.5.2 Hydrogeology

Regional groundwater flow follows a surface drainage pattern that is facilitated by the Chugach Mountains which border to the east, where elevation is highest between 1,500 – 4,000 ft above mean sea level and flows in a westerly to northwesterly direction through the BAAF Hangar 6 facility towards the Knik Arm.

In the north eastern area of the Anchorage plains under BAAF Hangar 6, one shallow and one deep groundwater system were identified, however, three separate aquifer systems exist in the cantonment area, including a shallow unconfined system, a locally confined system, and a deeper confined system. Clay and till form the confining beds: the till in some areas is classified as “leaky” (USGS, 1959) causing poor-producing wells in some locations. Groundwater in this area occurs in the locally confined aquifer at a depth around 80 ft bgs, while in the deeper confined system it occurs around 130 ft bgs (USGS, 1959). Moving from south to north, the locally confined aquifer changes from confined to semiconfined to unconfined, causing the upper confining unit to pinch out and merge the shallow unconfined and locally confined aquifers (USAF, 2018).

Two aquifers underlay Elmendorf Hangar 6 to the southwest (**Figure 1-2**): a shallow water table aquifer (approximately 20 to 45 ft bgs and 15 to 40 ft thick) and a deeper, confined aquifer (from 50 to 300 ft bgs and 100 to 300 ft thick). The Bootlegger Cove formation separate these aquifers, which functions as an aquitard separating the shallow water table aquifer from the deeper confined aquifer (USAF, 2018). Water use in this area is either supplied from the Ship Creek Dam or from the deep aquifer. The aquifers in both the westerly (Elmendorf Hangar 6) and northwesterly (BAAF Hangar 6) areas of the Anchorage plains are recharged by infiltration of precipitation at the land surface and of surface water through stream beds (USGS, 1979). The nearest known drinking water wells are at a minimum 2 miles away from both hangars.

There are 17 drinking water supply wells around Elmendorf Hangar 6 and BAAF Hangar 6, and all are screened in the deeper confined aquifer, with nearly 600 spanning the entire Anchorage lowlands area, most furnishing small domestic supplies but about 50 wells provide public water supplies mainly for municipal use, rural housing development, and schools (USGS, 1976; USAF, 2018). Average pumping yields are between 100 to 200 gallons per minute (gpm) for shallow wells. The deepest wells (down to 850 ft) can reach rates of 1,380 gpm, and serve as a secondary drinking water source when the shallow confined wells (mostly pulling from Ship Creek) are low (USGS, 1979; USAF, 2018). The majority of wells are downgradient from JBER. Camp Denali gets its drinking water from Anchorage Water and Wastewater Utility, while Camp Carroll and BAAF get their drinking water from three wells southeast of BAAF and south of Ship Creek (USAF, 2018). Based on the USEPA Unregulated Contaminant Monitoring Rule 3 data, it was indicated that no PFAS was detected in a public water system above the USEPA Health Advisory Level within 20 miles of the facility.

1.5.3 Hydrology

The BAAF Hangar 6 and Elmendorf Hangar 6 are situated within three watersheds: the Knik Arm-Frontal Cook Inlet, the Lower Eagle River, and the Outlet Ship Creek watersheds (**Figure 1-3**) that cover a combined total of 52,000 acres and drain nearly 22 miles of streams. No surface water currently enters or flows in the immediate vicinity of the Elmendorf Hangar 6 or BAAF with the exception of Ship Creek.

Ship Creek headwaters begin in the nearby Chugach Mountains as two smaller streams that flow north-southwest and west, respectively, only one mile apart. The north-southwest portion is located less than 0.15 miles away from BAAF Hangar 6 (to the east) where it converges with the west flowing branch, at approximately 2 miles southwest of the BAAF Hangar 6 (**Figure 1-3**). Ship creek continues flowing west-southwest roughly 1 mile below Elmendorf Hangar 6 where it drains into the Knik Arm. Since 1912, Ship Creek has been impounded in various locations as the water source for the municipality of Anchorage and JBER. Currently, JBER operates the Ship Creek Dam, which provides raw water to the JBER Water Treatment Plant (USAF, 2018). Eagle River also has its headwaters in the Chugach Mountains, to the south and east of JBER and the city of Anchorage at the base of Eagle Glacier. Eagle River flows north to northwest

across the outwash plains roughly 3 to 4 miles away from BAAF Hangar 6 and empties into the northern Knik Arm.

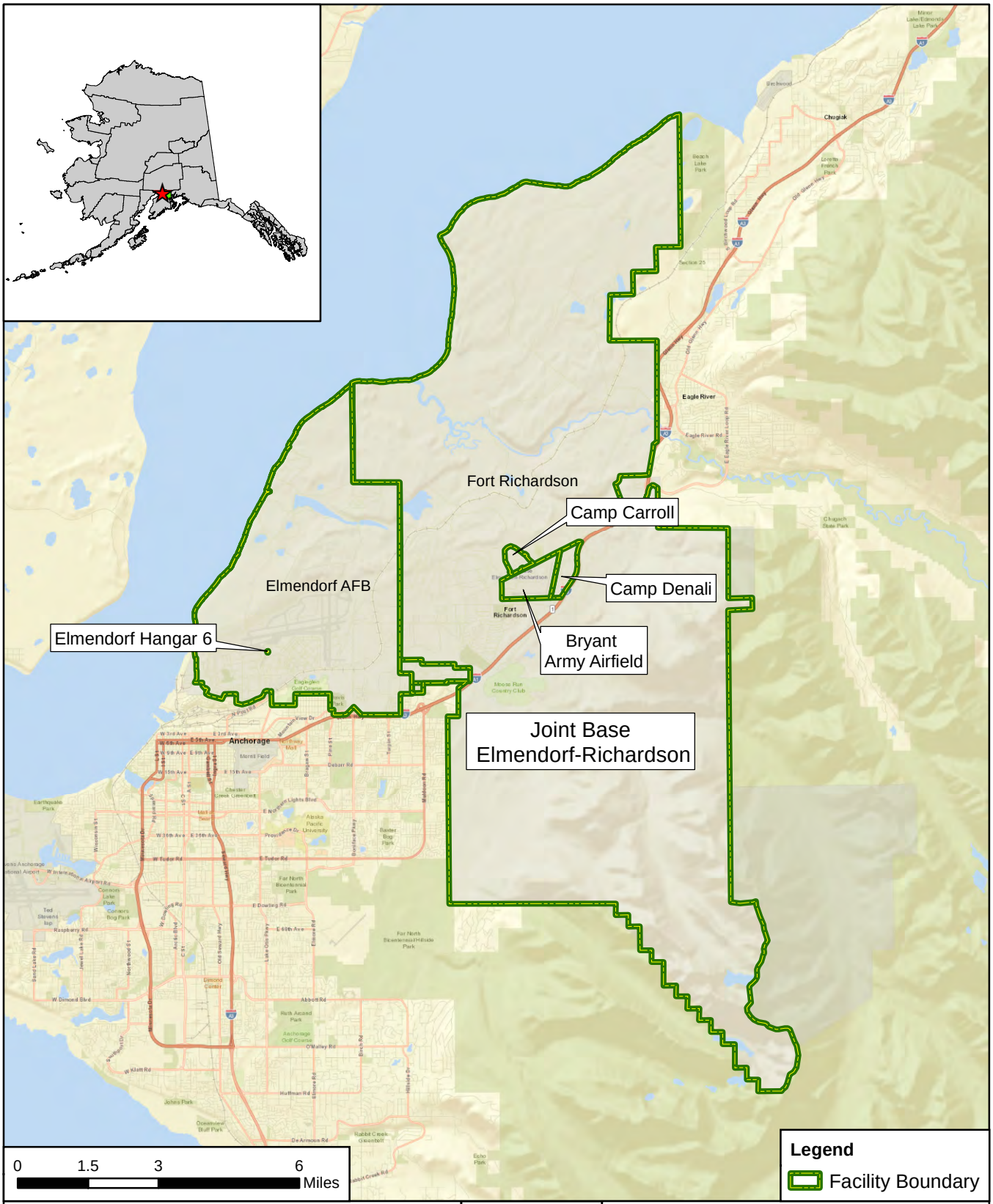
There are also various water bodies such as Sixmile Creek, Sixmile Lake, Otter Lake, and Cherry Hill Ditch in the vicinity of JBER. All are roughly 3 miles to the northwest of BAAF Hangar 6, and 4 miles northeast of Elmendorf Hangar 6 (**Figure 1-3**). Six Mile Creek is a small creek that flows west into the Knik Arm. The Upper and Lower Six Mile Lake are man-made lakes that receive the majority of drainage from a spring located to the west of Otter Lake. Cherry Hill Ditch, an artificial drainage channel, flows westward from the east-west runway in front of Elmendorf Hangar 6. It is composed of a network of closed pipe and open ditch drainage pathways that is used to direct surface water runoff towards the Knik Arm of the Cook Inlet (USAF, 2018). Surface water runoff at Bryant Airfield is directed towards a network of stormwater drains and drainage ditches that discharge to infiltration areas at the airfield.

1.5.4 Climate

The climate at JBER is subarctic. Seasonally, temperatures vary from an average July high temperature of 66 Fahrenheit (°F), to average January low temperature of 9 °F (MOA, 2018). The total mean annual precipitation (rainfall) is 16.57 inches. April is the driest month, with an average of 0.47 inches of precipitation, while August is the wettest month with 3.27 inches. The average annual snowfall is 74 inches (U.S. Climate Data, 2018). JBER experiences lengthy daylight hours in the summer and minimal daylight hours in the winter due to its latitude, which affects the climate and habitat of the area. The frost-free growing season lasts approximately 100 days (MOA, 2018).

1.5.5 Current and Future Land Use

The BAAF is currently used by the AKARNG for helicopter and small fixed-wing aircraft operations, with ground support activities. The mission of the AKARNG at BAAF has been consistent since 1958 and, in general, the future use of the facility is not expected to change (NHG, 2012).



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Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	11/5/2018

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Facility Location

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Figure 1-1

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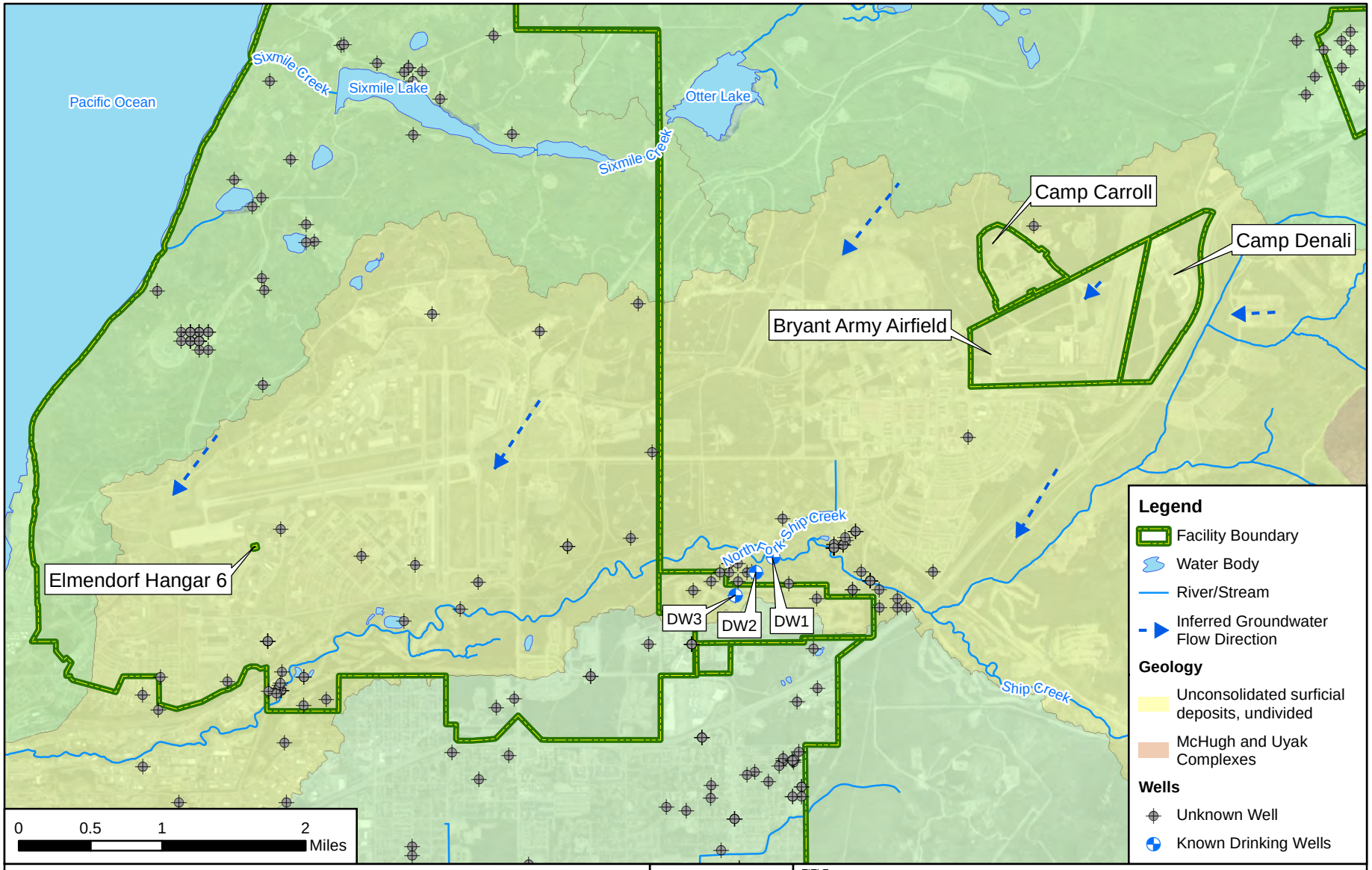

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Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/7/2019

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TITLE

Groundwater Features

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Figure 1-2

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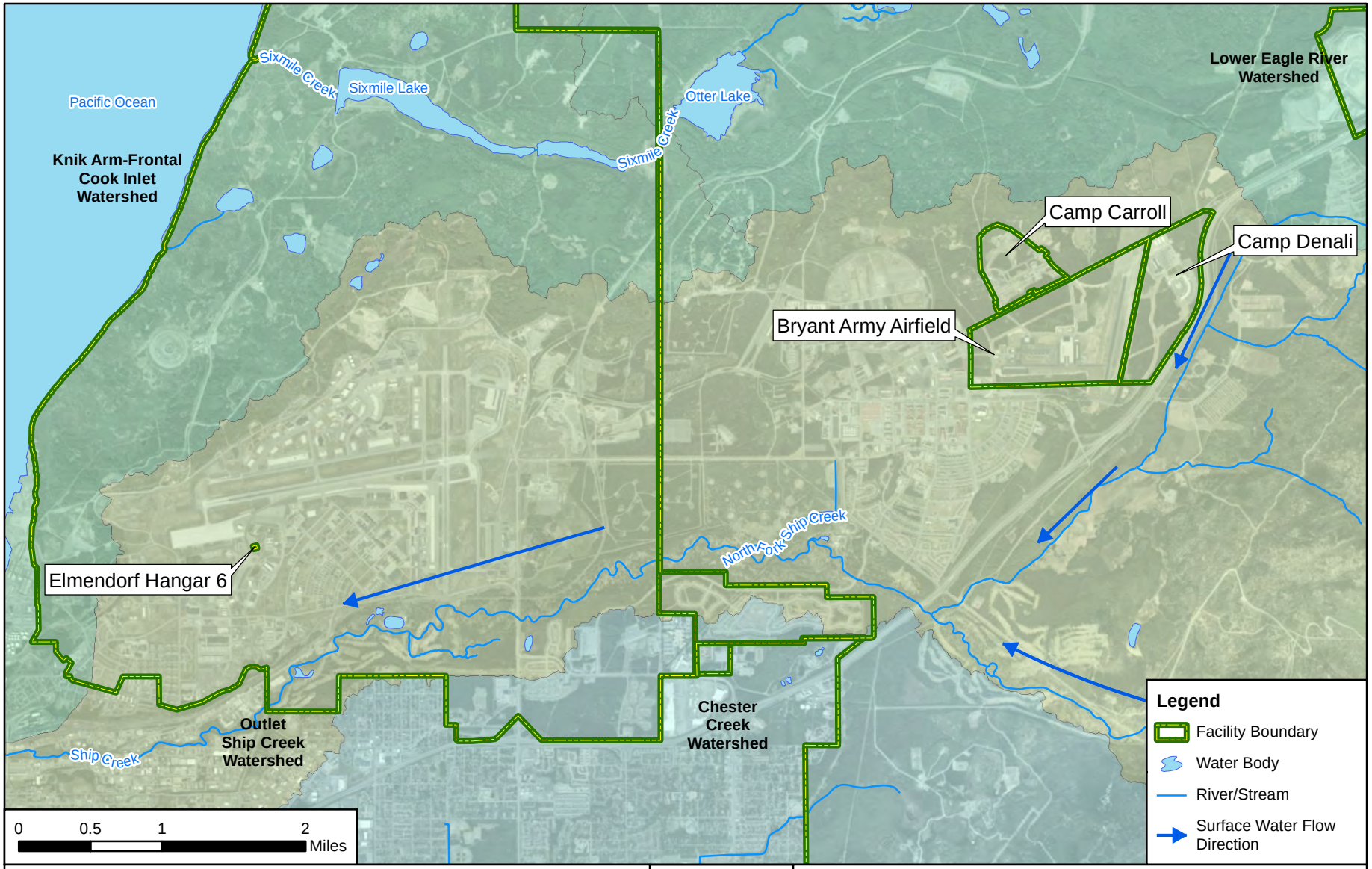

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Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/7/2019

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TITLE

Surface Water Features

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Figure 1-3

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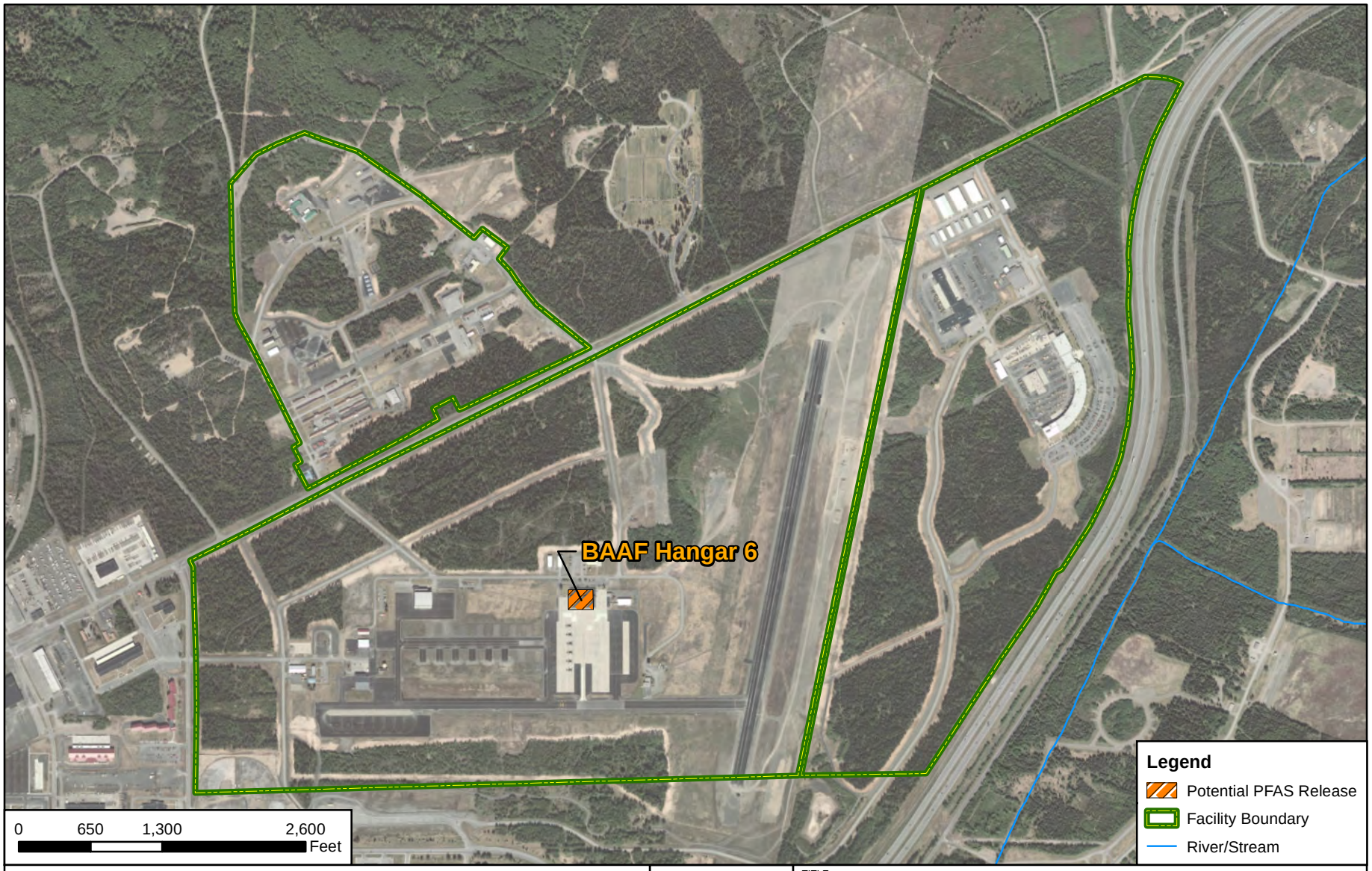
2. Fire Training Areas

One FTA was identified during the PA. A description of the FTA is presented below, and the FTA location is shown on **Figure 2-1**. Interview records appear in **Appendix B**. Photographs of the FTA appear in **Appendix C**.

2.1 BAAF Hangar 6

BAAF Hangar 6 is operated by the AKARNG, west of Runway 17-35, and north of Taxiway 5 (**Figure 2-1**). The geographic coordinates are 61.265041°N, -149.663672°W. BAAF Hangar 6 was built in 1975 for AKARNG (NHG, 2012). The fire suppression system uses water, sourced from a tank on BAAF that is shared with other structures. BAAF relies on Fire Station 5 for fire suppression, which is operated by the Air Force and near the south end of the runway (see **Section 5.2** for further discussion). Three Tri-Max Compressed Air Foam (CAF) Systems were present at BAAF Hangar 6 at the time of the site visit. In an interview with the Air Force Occupational Safety Officer, who was a Guardsman from 1978 to 2010, it was stated that annual training occurred for three years between 2004 and 2008. The training consisted of each technician spraying the side of a HEMTT fuel truck for about three seconds before passing the Tri-Max to the next technician. This occurred outside, at the south east corner of BAAF Hangar 6.



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Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/3/2019

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Fire Training Area

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Figure 2-1

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3. Non-Fire Training Areas

Three non-FTAs were identified during the PA. A description of the non-FTAs is presented below, and the non-FTA locations are shown on **Figure 3-1**. Interview records appear in **Appendix B**. Photographs of the non-FTAs appear in **Appendix C**.

3.1 BAAF Fuel Truck Shed

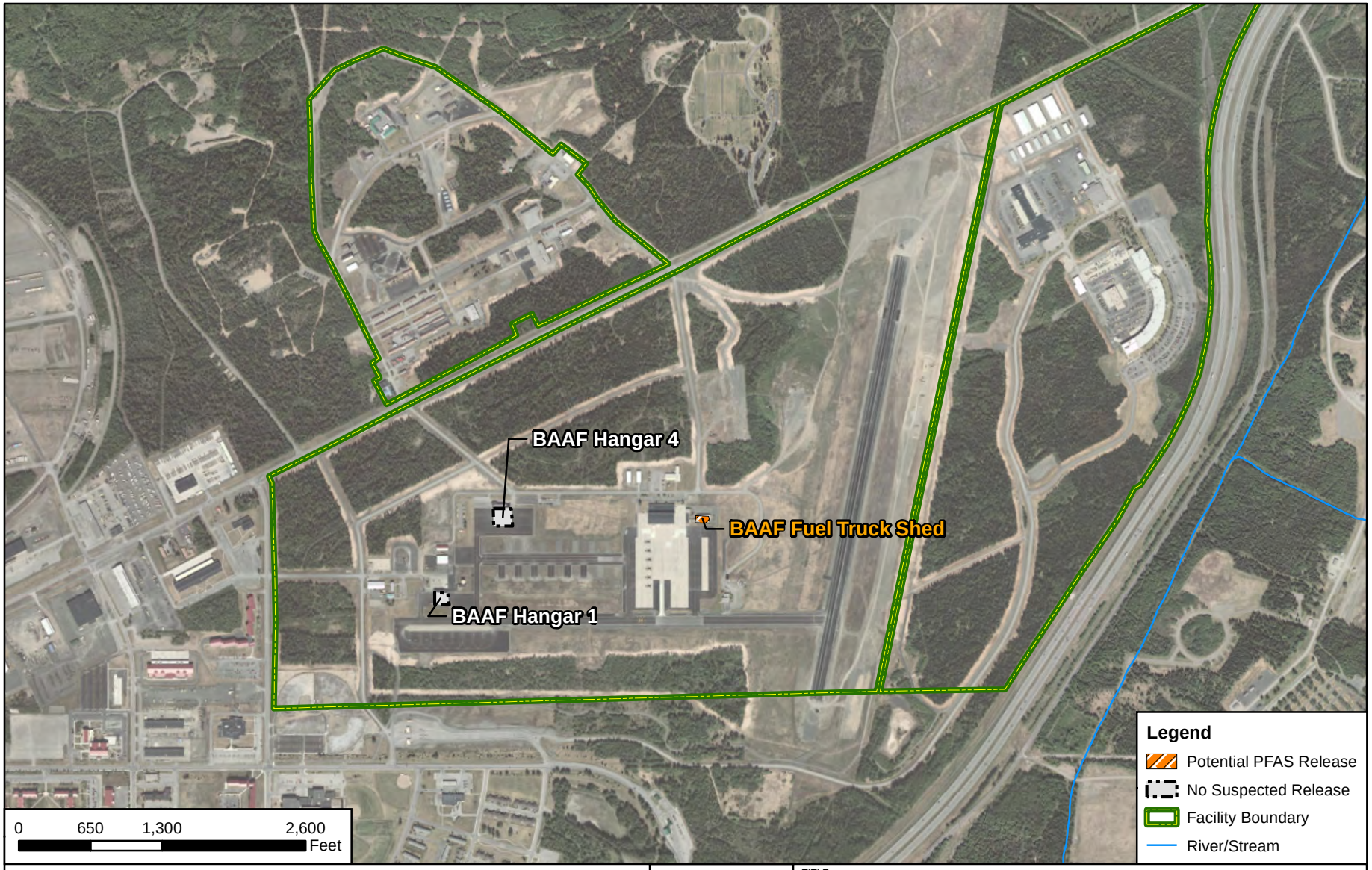
The BAAF Fuel Truck Shed (Building 74729, referred to herein as BAAF Fuel Truck Shed) is operated by the AKARNG and east of BAAF Hangar 6 (**Figure 3-1**). The geographic coordinates are 61.264885°N, -149.661466°W. The BAAF Fuel Truck Shed was built in 2003 on a concrete pad contiguous with the surrounding asphalt, is an open-air, covered storage area, and is used to store fueling equipment and AFFF (NHG, 2012). From the 1990s to 2018, AFFF was stored outside on the asphalt to the north of its current location. Currently, one partially-filled Intermediate bulk container tank, two 3% AFFF Chemguard 5-gallon buckets, and one drum of AFFF are stored in the BAAF Fuel Truck Shed. Based on information received from interviewees, AFFF from the BAAF Hangar 6 Tri-Max extinguishers was transferred between Tri-Maxes and other containers when the extinguishers were sent out for servicing. AFFF was also transferred when replacing the AFFF with training foam. These transfers took place at or near the BAAF Fuel Truck Shed. No leaks or spills have been reported at this location, but transfers were completed out in the open without the use of secondary containment, therefore it is likely that small spills occurred. Although leaks or spill have not been reported, given the storage of AFFF containers outdoors the integrity of the contains may have been compromised by the severe weather conditions.

3.2 BAAF Hangar 1

BAAF Hangar 1 (Building 47430, referred to herein as BAAF Hangar 1) is operated by the AKARNG and near the western end of Taxiway 5 (**Figure 3-1**). The geographic coordinates are 61.262953°N, -149.675102°W. BAAF Hangar 1 was built in 1958 on a concrete pad contiguous with the surrounding asphalt, and is a 21,000-foot hangar with shops (NHG, 2012). The fire suppression system in the hangar is a water deluge system. One Tri-Max CAF System is staged outside on the south east side of the hangar in the summer, and brought into a partially-enclosed arctic entry in the winter. There was no known documentation of AFFF use at this hangar.

3.3 BAAF Hangar 4

BAAF Hangar 4 (Building 47431, referred to herein as BAAF Hangar 4) is operated by the AKARNG (**Figure 3-1**). The geographic coordinates are 61.264999°N, -149.671657°W. BAAF Hangar 4 was built in 1968 on a concrete pad contiguous with the surrounding asphalt, and is a larger version of BAAF Hangar 1 (NHG, 2012). The fire suppression system in the hangar is a water deluge system. BAAF Hangar 6 (discussed in **Section 2.1**) is to the east and 11 Tri-Max CAF Systems are stored inside on the south side of the hangar. There was no known documentation of AFFF use at this hangar.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at JBER, AK			
REVISED	1/3/2019	GIS BY	MS	1/3/2019
SCALE	1:15,600	CHK BY	CC	1/3/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/3/2019

N

TITLE

Non-Fire Training Areas

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Emergency Response Areas

An AKARNG C-23 Sherpa skidded off the south end of Runway 17-35 at BAAF in the 1990s, but did not catch fire. It is unknown if any fire suppression foam was used during the response actions. BAAF relies on Fire Station 5 for fire suppression, which is currently operated by the Air Force and near the south end of the runway (**Section 5.2**).

5. Adjacent Sources

Three adjacent areas with reported PFAS releases were identified during the PA VSI; two areas adjacent to the BAAF, and one area adjacent to Elmendorf Hangar 6. An additional area of discussion is an old fire station north of the BAAF runway. The adjacent sources discussed is this section were addressed by the Air Force (USAF, 2018). **Figure 5-1** identifies the location. Interview records appear in **Appendix B**. Photos of the adjacent site appear in **Appendix C**.

5.1 AT029 Ruff Road FTA

The AT029 Ruff Road FTA was used for fire training exercises from the 1940s to the 1980s, although never by AKARNG. The AKARNG does not staff firefighters at this facility. It contains a staging area, a grassy area, and an approximate 50 foot diameter FTA (**Figure 5-1**). The geographic coordinates are 61.269580°N, -149.646725°W. The AT029 Ruff Road FTA was investigated for PFAS in a 2018 by the Air Force. Downgradient soil results indicated concentrations of PFOS above ADEC Migration to Groundwater (MGTW) criteria and below ADEC Human Health (HH) criteria. Groundwater concentrations of PFOA and PFOS + PFOA (calculation) were above the criteria for USEPA Hazard Assessments (HAs) (USAF, 2018). According to a feasibility study conducted of the area (E&E, 1996), over 85,000 gallons of liquids were disposed of at the FTA, most likely including fuels, solvents and other waste liquids. The shallow aquifer ground flow direction flows west towards BAAF from this site (USAF, 2018).

5.2 Fire Station 5

Fire Station 5 (Building 48010, referred to herein as Fire Station 5) was built in 1981 on BAAF, near the south end of the runway off of Taxiway 5, and is operated by the Air Force (**Figure 5-1**). The geographic coordinates are 61.262886°N, -149.660320°W. Fire Station 5 was investigated for PFAS in 2018 by the Air Force. Downgradient shallow soil results indicated concentrations of PFOS above ADEC MGTW criteria and below ADEC HH criteria. Groundwater concentrations were detected below the USEPA HA. It is thought that groundwater flow is to the north-northwest from Fire Station 5 (USAF, 2018).

5.3 Elmendorf Hangar 6

Elmendorf Hangar 6 (Building 9311, referred to herein as Elmendorf Hangar 6) was built in 1944 and is located near the end of the main flightline at the airfield on the Elmendorf side of JBER. Geographic coordinates are 61.244442°N, -149.833219°W. This hangar is currently occupied by the Alaska Army National Guard and the 673 MXG (Air Force), under lease from the USAF. Previously, the AKARNG shared Elmendorf Hangar 6 with OSACOMM/OSAA until their departure in 2014. The AKARNG has shared occupancy of this hangar starting in 1983, but has not stored or used AFFF on site. Three model RMT 2000 portable firefighting units containing AFFF were purchased by OSACOMM/OSAA in 2009 and were maintained and tested annually by the OSACOMM/OSAA until 2014. Nozzle testing was performed to the west of the hangar until 2012, when testing was moved to the current FTA at JBER. Each of the three portable units were emptied every year during testing, a total of 10.5 gallons per year. The Air Force has provided all fire suppression equipment, consisting of 6 Halon fire extinguishers, since 2014, when the RMT 2000s were retired from use. This site was investigated during the JBER Site Inspection for AFFF Areas (USAF, 2018).

5.4 Old Fire Station 4

On old as-builts, Fire Station 4 is recorded as being north of BAAF runway 17-35 and the Davis Highway (DMVA, 2013). Geographic coordinates are 61.275283°N, -149.647055°W (**Figure 5-1**). Fire Station 4 would have been operational during the World War II era through the late 1970s and operated by the Army. It is assumed that when Fire Station 5 was built in 1981, that it became the emergency response center for BAAF. In interviews, it was recalled that the old Fire Station 4 was used as storage and for classrooms before it was demolished in the mid-1990s. Although the AKARNG did not use AFFF until the 1990s, active duty Air Force and Army used AFFF as early as the 1960s. Therefore, the years of operation of the Old Fire Station 4 could have overlapped with AFFF use, although no interviews confirmed the use of AFFF.

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at JBER, AK			
REVISED	1/3/2019	GIS BY	MS	1/3/2019
SCALE	1:10,800	CHK BY	CC	1/3/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, ©		PM	RG	1/3/2019

N

TITLE

Adjacent Sources

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

Q:\Projects\ENV\GEARS\GEO\ARNG PFAS\900-CAD-GIS\920-GIS or Graphics\MXD\AK\JBER_Figures\JBER_PA_Figures\Fig_5-1_JBER_Adjacent_Sources.mxd

6. Preliminary Conceptual Site Model

Based on the PA findings, two potential PFAS release areas were identified as an AOI at JBER-BAAF. This AOI encompasses BAAF Hangar 6 and the BAAF Fuel Truck Shed (**Figure 6-1**). A CSM identifies three components necessary for potentially complete exposure pathways related to a site: (1) source, (2) pathway, and (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways is sparse and continues to be the subject of PFAS toxicological study. Potential receptors at JBER include site workers (e.g., staff and visiting soldiers), construction workers, off-facility residents and off-facility recreational users. The CSM for AOI 1 indicate which specific receptors could potentially be exposed to PFAS.

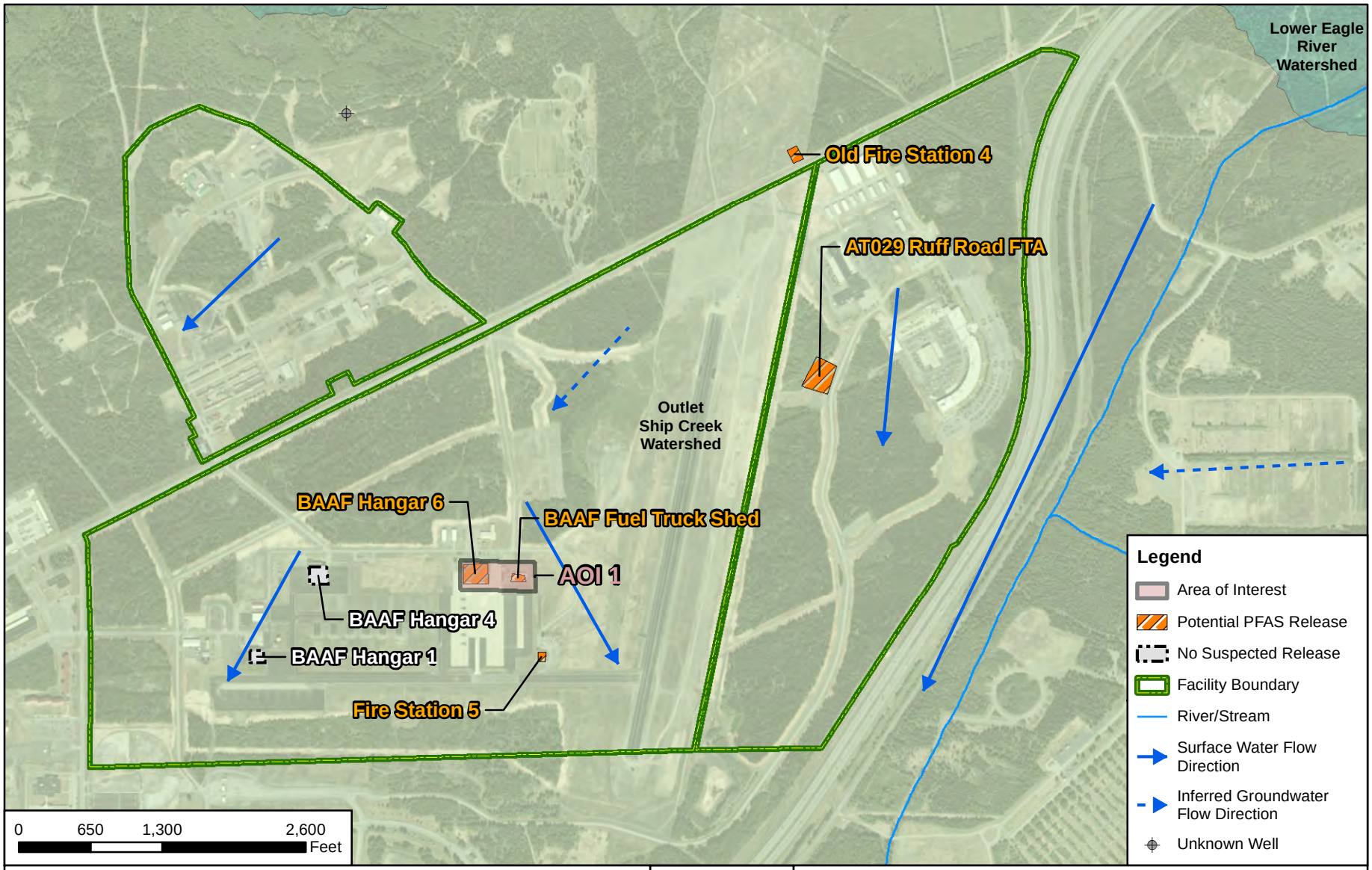
6.1 AOI 1: BAAF Hangar 6 and Fuel Truck Shed

During the early 2000s, testing of Tri-Max CAFs occurred outside at the south east corner of BAAF Hangar 6. During the 1990s and into 2018. AFFF was reportedly stored outside adjacent to the current site of the Fuel Truck Shed. AFFF was moved into the Fuel Truck Shed in 2018. Transfer of AFFF between vessels occurred at this site, though no leaks or spills have been reported. AFFF was potentially released to soil within the boundary of BAAF. A CSM was created based on preliminary data and assumed groundwater and surface water flow directions.

Ground-disturbing activities at this AOI could result in site worker, construction worker, and trespasser exposure to potential PFAS contamination via inhalation of dust or ingestion of surface soil. Ground-disturbing activities to subsurface soil also could result in construction worker exposure via accidental ingestion of subsurface soil and shallow groundwater.

In their anionic forms, PFAS are water soluble and can migrate readily from soil to groundwater or surface water via leaching and run-off. Given the length of time since the potential AFFF releases, the average precipitation at the facility, high degree of soil permeability, and existing data from the JBER PA, potential PFAS contamination at AOI 1 may have migrated from the soil to groundwater (USAF, 2018). The suspected releases on this site are thought to be of a small quantity (one training per year, 2-3 seconds of release per technician). Most surface water runoff remains on-site at BAAF, where it infiltrates into the ground surface; however, during spring melting, when soils are frozen, surface water can potentially migrate off BAAF. Therefore, the ingestion exposure pathways for surface water and sediment are potentially complete for site workers, construction workers, off-facility residents, trespassers, and off-facility recreational users.

Most drinking water on JBER comes from facilities at Ship Creek Reservoir, approximately 2.5 miles south of BAAF, upgradient and on JBER land. The remaining drinking water comes from 3 wells on the facility, in the Knik outwash deposit within a confined aquifer, and is supplied to BAAF and Camp Carroll (Doyon, 2018). The shallow and deep aquifers in the area are believed to have no connection (USAF, 2018). Based on a 2016 report, 18 JBER water supply wells were sampled for PFBS, PFOS and PFOA, and all of the results were reported as nondetect (USAF, 2018). Therefore, the ingestion exposure pathway for groundwater is incomplete for site workers, construction workers, trespassers, residents, and recreational users. AOI 1 is shown on **Figure 6-1** and the CSM is presented in **Figure 6-2**.



CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at JBER, AK			
REVISED	1/3/2019	GIS BY	MS	1/3/2019
SCALE	1:15,600	CHK BY	CC	1/3/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/3/2019

N

TITLE

Area of Interest

AECOM 12420 Milestone Center Drive Germantown, MD 20876

Figure 6-1

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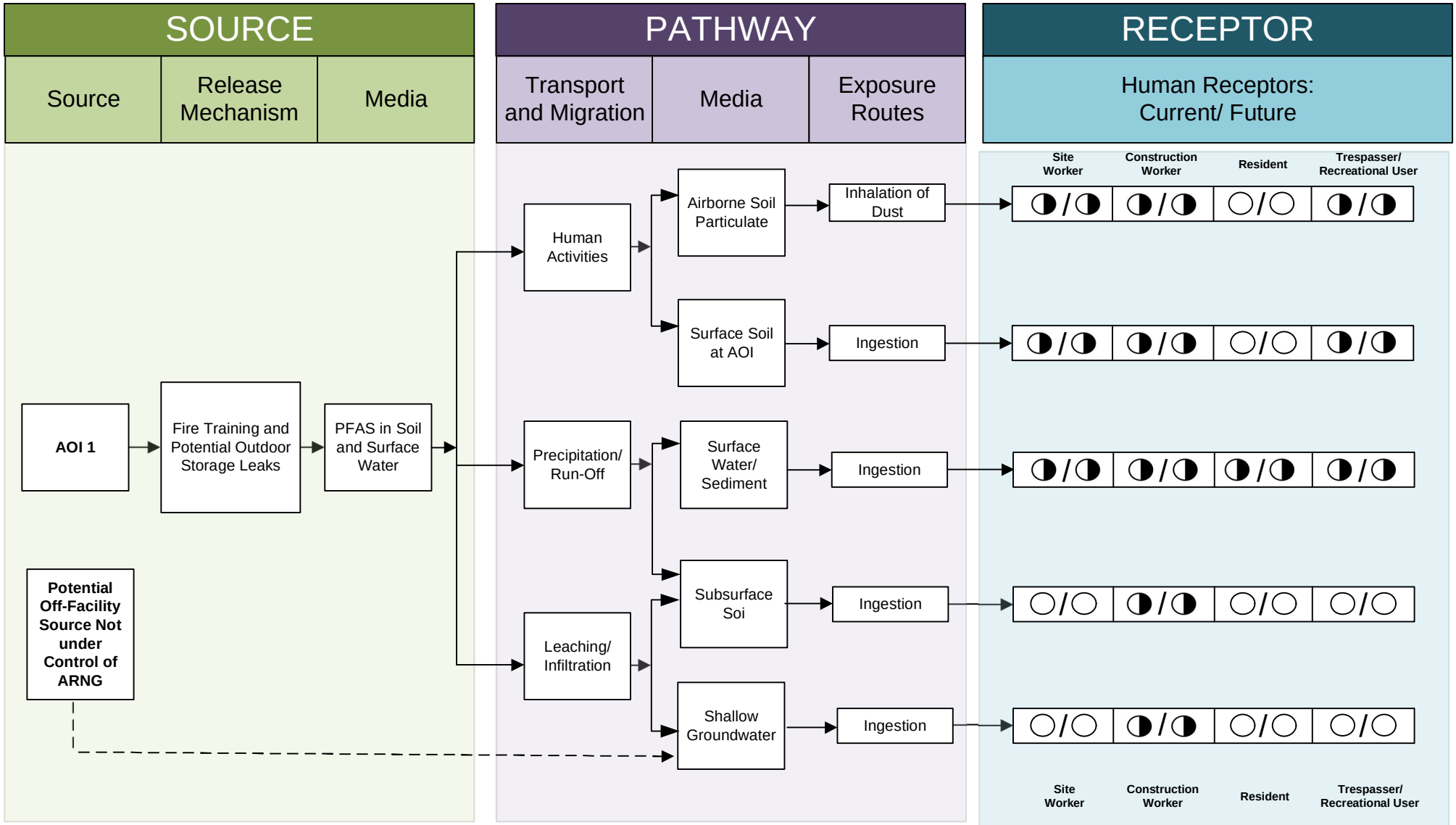

LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Complete Pathway

Notes:
1. The resident and recreational user receptors refer to an off-site resident and recreational user.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 BAAF Hangar 6 and Fuel Truck Shed

7. Conclusions

This report presents a summary of available information gathered during PA efforts on the use and storage of AFFF at AKARNG locations on JBER. The PA findings are based on personnel interviews, environmental investigations and reports, historical documents, and the VSI.

7.1 Findings

One AOI related to PFAS releases (**Table 7-1**) were identified at JBER based on PA data (**Figure 7-1**).

Table 7-1: AOIs at JBER-Bryant Army Field

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	BAAF Hangar 6	AKARNG	1990s - Present

Based on potential PFAS releases at this AOI, there is potential for exposure to PFAS contamination in surface soil to site workers, construction workers, and trespassers via ingestion, and inhalation; subsurface soil and shallow groundwater to construction workers via accidental ingestion; and intermittent surface water and sediments to site workers, construction workers, trespassers, off-facility residents and off-facility recreational users.

Although three locations with the storage of AFFF were observed on BAAF, there is no evidence to suggest a PFAS release has occurred. Adjacent sites have confirmed or unknown releases of AFFF.

The following areas discussed in **Section 2** through **Section 5** were determined to have no suspected PFAS releases to the environment (**Table 7-2**).

Table 7-2: No Suspected Release Areas

No Suspected Release Area	Used by	Rationale for No Suspected Release Determination
Hangar 1 Storage	AKARNG	Tri-Max CAFs were stored inside during the winter and there is no record of release or reported leaks.
Hangar 4 Storage	AKARNG	Tri-Max CAFs were stored inside and there is no record of release or reported leaks.

7.2 Uncertainty

A number of information sources were investigated during this PA to determine the potential for PFAS-containing materials to have been present, used, or released at the facility. Historically, documentation of PFAS use was not required because PFAS were considered benign. Therefore, records were not typically kept by the facility of available during the PA on the use of PFAS in training, other non-traditional activities, or on its disposition.

The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use at the facility. Sometimes the

provided information was vague or conflicted with other sources. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS was first used, and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, retired and current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-3** table summarizes the uncertainties associated with the PA. Potential and known PFAS release areas exist adjacent to the BAAF. Because these areas include property upgradient of the facility, it is unknown whether or not the adjacent sources affect BAAF.

Table 7-3: Uncertainties

Area of Interest/ Adjacent Potential and Known Sources	Source of Uncertainty
AOI 1	AFFF was stored outside from the mid-1990s - 2018 before the Fuel Truck Shed was built. There was no record of leaks, AFFF was transferred between containers without the use of secondary containment; therefore, it is likely that small spills occurred. Although leaks or spill have not been reported, given the storage of AFFF containers outdoors the integrity of the contains may have been compromised by the severe weather conditions.
Emergency Response Area – C-23 Sherpa	It is unknown whether or not AFFF was used as a precaution during the emergency response.
Adjacent Source AT029 Ruff Road FTA	This known release area is upgradient of BAAF and has already been investigated.
Adjacent Source Fire Station 5	This known release area is upgradient of BAAF and has already been investigated.
Adjacent Source Elmendorf Hangar 6	This known release area has already been investigated.
Adjacent Source Previous Fire Station 4	This adjacent site is thought to be downgradient of BAAF. AFFF use is unknown, though suspect due to historical designation as a fire station. It is unknown if users of this site would have trained on BAAF property. Exact dates of operation of the fire station are unknown.

7.3 Potential Future Actions

Interviews and records (covering 1990s to present) indicate that ARNG activities may have resulted in potential PFAS releases at the AOI identified during the PA. Based on the CSM developed for the AOIs, there is potential for receptors to be exposed to PFAS contamination in soil, surface water, and sediment. **Table 7-4** summarizes the rationale used to determine if the

AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

ARNG evaluates the need for an SI at the AASF based on the presence of a PFAS release, possible receptors, and the migration potential of PFAS contamination to receptors.

Table 7-4: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 BAAF Hangar 6	61.265041°N 149.663672°W	Fire training activities occurred outside, at the south east corner of BAAF Hangar 6. The BAAF Fuel Truck Shed is an open-air, covered storage area, and store AFFF outside on the asphalt to the north of its current location from the mid-1990s to 2018.	Proceed to an SI, focus on soil, groundwater, surface water, sediment

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at JBER, AK			
REVISED	1/3/2019	GIS BY	MS	1/3/2019
SCALE	1:15,600	CHK BY	CC	1/3/2019
Base Map: Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community		PM	RG	1/3/2019

N

TITLE

Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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8. References

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Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for Joint Base Elmendorf-Richardson include:

Environmental Data Resources Report

- 2018 EDR Summary Radius Map Report with GeoCheck; Aerial Photo Decade Package; Certified Sanborn Map Report; & EDR PUR-IQ Report; Target Property Bryant Army Airfield, 47430 Westbrook Ave, JBER, AK 99505.

Informational Reports

- Northern Land Use Research Alaska, LLC, 2017, Cultural Resource Survey of Camp Denali, Joint Base Elmendorf-Richardson (JBER), Alaska

Leasing Information

- Support Agreement JBER-IAA-106-FY13
- Department of the Air Force Permit – No. FXSB 2001-06-04, DACA85-4-07-0 145. Property located on Elmendorf AFB, Alaska.
- Memorandum for 3 MXG/CC – Decision for Space Assignment
- Memorandum for 673 CES/CC – Approval and Execution of 25-year License to the State of Alaska, Joint Base Elmendorf-Richardson (JBER), AK

Miscellaneous Data Resources

- JBER Doyon Utilities Water Well Location Map
- Field Maps
- Miller, Robert D., and Dobrovolny, Ernest., 1959, Surficial Geology of Anchorage and Vicinity Alaska – Geological Survey Bulletin. United States Government Printing Office, Washington.
- Pages from Final SPCC Plan - AKARNG Bryant AASF 1-26-18 with Cover
- Alaska Department of Environmental Conservation, Per- and Polyfluoroalkyl Substances (PFAS) Regulations

Fax To: AECOM
Contact: Brittany Kirchmann
Fax : 000-000-0000
Date: 10/31/2018

Fax From: Sean McLaughlin
EDR
Phone: 1-800-352-0050

EDR PUR-IQ® Report

"the intelligent way to conduct historical research"

for
Bryant Army Airfield
47430 Westbrook Ave
Jber, AK 99505
Lat./Long. 61.264716 / 149.668109
EDR Inquiry # 5471178.2s

The EDR PUR-IQ report facilitates historical research planning required to complete the Phase I ESA process. The report identifies the *likelihood* of prior use coverage by searching proprietary EDR-Prior Use Reports® comprising nationwide information on: city directories, fire insurance maps, aerial photographs, historical topographic maps, flood maps and National Wetland Inventory maps.

Potential for EDR Historical (Prior Use) Coverage - Coverage in the following historical information sources may be used as a guide to develop your historical research strategy:

1. City Directory: Coverage may exist for portions of Anchorage Borough, AK.

2. Fire Insurance Map: When you order online any EDR Package or the EDR Radius Map with EDR Sanborn Map Search/Print, you receive site specific Sanborn Map coverage information at no charge.

3. Aerial Photograph: Aerial photography coverage may exist for portions of Anchorage Borough. Please contact your EDR Account Executive for information about USGS photos available through EDR.

4. Topographic Map: The USGS 7.5 min. quad topo sheet(s) associated with this site:

Historical: Coverage exists for ANCHORAGE County

Current: Target Property: N/A

EDR's network of professional researchers, located throughout the United States, accesses the most extensive national collections of city directory, fire insurance maps, aerial photographs and historical topographic map resources available for Jber, AK. These collections may be located in multiple libraries throughout the country. To ensure maximum coverage, EDR will often assign researchers at these multiple locations on your behalf. Please call or fax your EDR representative to authorize a search.

EDR - HISTORICAL SOURCE(S) ORDER FORM

AECOM
Brittany Kirchmann
Account # 1861179

Bryant Army Airfield
47430 Westbrook Ave
Jber, AK 99505
ANCHORAGE County
Lat./Long. 61.264716 / 149.668109
EDR Inquiry # 5471178.2s

Should you wish to change or add to your order, fax this form to your EDR account executive:

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Ph: 1-800-352-0050 Fax: 1-800-231-6802

Reports

___ EDR Sanborn Map® Search/Print

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___ EDR City Directory Abstract

___ EDR Aerial Photo Decade Package

___ USGS Aerial 5 Package

___ USGS Aerial 3 Package

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___ NJ MacRaes Industrial Directory Report

___ EDR Telephone Interview

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Thank you

Bryant Army Airfield
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Inquiry Number: 5471178.3
October 31, 2018

Certified Sanborn® Map Report

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Toll Free: 800.352.0050
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10/31/18

Site Name:

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47430 Westbrook Ave
Jber, AK 99505
EDR Inquiry # 5471178.3

Client Name:

AECOM
12120 Shamrock Plaza
Omaha, NE 68154
Contact: Brittany Kirchmann

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Project Bryant Army Airfield

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- ☑ Library of Congress
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Bryant Army Airfield

47430 Westbrook Ave

Jber, AK 99505

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November 12, 2018

The EDR Aerial Photo Decade Package

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EDR Aerial Photo Decade Package

11/12/18

Site Name:

Bryant Army Airfield
47430 Westbrook Ave
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Client Name:

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Contact: Brittany Kirchmann

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Search Results:

Year	*Scale*	*Details*	*Source*
1990	1"=750'	Flight Date: August 12, 1990	USGS
1984	1"=1000'	Flight Date: August 12, 1984	USGS
1978	1"=500'	Flight Date: August 25, 1978	USGS
1974	1"=500'	Flight Date: August 21, 1974	USGS
1953	1"=500'	Flight Date: June 27, 1953	USGS

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YEAR: 1990

= 750'

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INQUIRY #: 5471178.5

YEAR: 1984

= 1000'

N

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INQUIRY #: 5471178.5

YEAR: 1978

= 500'

N

EDR

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INQUIRY #: 5471178.5

YEAR: 1974

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5471178.5

YEAR: 1953

= 500'

N

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Inquiry Number: 5471178.2s
October 31, 2018

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Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

47430 WESTBROOK AVE
JBER, AK 99505

COORDINATES

Latitude (North):	61.2647160 - 61° 15' 52.97''
Longitude (West):	149.6681090 - 149° 40' 5.19''
Universal Tranverse Mercator:	Zone 6
UTM X (Meters):	356917.7
UTM Y (Meters):	6794991.5
Elevation:	341 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	N/A
Source:	U.S. Geological Survey

MAPPED SITES SUMMARY

Target Property Address:
47430 WESTBROOK AVE
JBER, AK 99505

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	FORT RICHARDSON MILI		DOD	Same	1 ft.
1	JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	SHWS	Higher	1 ft.
A2	JBER-FT. RICH BLDG 4	ROOSEVELT DRIVE AND	SHWS	Higher	1 ft.
A3	JBER-FT. RICH BLDG 4	RANDALL ROAD N. OF B	SHWS	Higher	1 ft.
B4	JBER-FT. RICH TU009	NW CORNER OF DAVIS H	SHWS	Higher	1 ft.
C5	JBER-FT. RICH BLDG 4	WESTBROOK AVE. BRYAN	SHWS	Lower	1 ft.
A6	JBER-FT. RICH BLDG 4	NEAR BLDG 47431; ROO	SHWS, LUST, INST CONTROL	Higher	1 ft.
B7	JBER-FT. RICH TU036	RANDALL ROAD & DAVIS	SHWS, INST CONTROL	Higher	1 ft.
C8	JBER-FT. RICH TU037	BLDG 47-438 WESTBROO	SHWS, INST CONTROL	Lower	1 ft.
D9	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	LUST	Lower	1 ft.
D10	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD S. O	SHWS	Lower	1 ft.
D11	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	SHWS	Lower	1 ft.
E12	JBER-FT. RICH TU069	RANDALL ROAD N. OF B	SHWS	Higher	1 ft.
E13	JBER-FT. RICH BLDG 4	SOUTH SIDE OF DAVIS	SHWS	Higher	1 ft.
F14	NATIONAL GUARD OMS 6	ACCESS RD CAMP CARRO	LUST	Lower	1 ft.
15	JBER-FT. RICH BLDG 4	NEAR BLDG 47431 WEST	SHWS, LUST	Higher	1 ft.
16	JBER-FT. RICH AFFF A	EASTERN SIDE OF BRYA	SHWS	Higher	1 ft.
17	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	SHWS	Lower	1 ft.
18	JBER-FT. RICH AKARNG	WESTBROOK AVENUE, FO	SHWS	Higher	1 ft.
C19	JBER-FT. RICH AKARNG	FORMERLY FORT RICHAR	LUST	Lower	1 ft.
F20	JBER-FT. RICH AKARNG	AASF BRYANT AIRFIELD	SHWS	Lower	1 ft.
C21	JBER-FT. RICH BLDG 4	WESTBROOK AVE. BRYAN	LUST	Lower	1 ft.
C22	JBER-FT. RICH AKARNG	FORMERLY FORT RICHAR	SHWS	Lower	1 ft.
D23	JBER-FT. RICH TU057	WESTBROOK AVE. & W.	SHWS, INST CONTROL	Lower	1 ft.
D24	JBER-FT. RICH BLDG 4	WESTBROOK AVE. SOUTH	SHWS, LUST	Lower	1 ft.
F25	JBER-FT. RICH AKARNG	AASF BRYANT AIRFIELD	LUST	Lower	1 ft.
F26	NATIONAL GUARD OMS 6	ACCESS RD CAMP CARRO	SHWS	Lower	1 ft.
G27	JBER-FT. RICH CHARLI	CHARLIE ROW, FORMERL	SHWS	Lower	1 ft.
G28	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD, N.	SHWS	Lower	1 ft.
29	JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	LUST	Higher	43, 0.008, NW
30	JBER-FT. RICH BLDG 5	NE SIDE OF BLDG. 57-	SHWS	Higher	267, 0.051, NNW
31	JBER-FT. RICH AFFF A	GRAVEL PITS E. OF BR	SHWS, INST CONTROL	Higher	578, 0.109, ENE
32	JBER-FT. RICH FTR198	AREA BOUNDED BY D ST	SHWS	Lower	628, 0.119, SW
33	JBER-FT. RICH SS013	WEST OF 6TH STREET N	SHWS	Lower	1194, 0.226, WSW
H34	JBER-FT. RICH BLDG 9	FIRST STREET	LUST	Lower	1199, 0.227, West
H35	JBER-FT. RICH BLDG 9	FIRST STREET, FORMER	SHWS	Lower	1204, 0.228, West
H36	JBER-FT. RICH BLDG 9	1ST STREET FAC ID 0-	SHWS	Lower	1204, 0.228, West
I37	JBER-ELMENDORF ST430	F-15E FUEL TANK STOR	LUST	Lower	1362, 0.258, WSW
I38	JBER-ELMENDORF ST430	F-15E FUEL TANK STOR	SHWS	Lower	1364, 0.258, WSW

MAPPED SITES SUMMARY

Target Property Address:
47430 WESTBROOK AVE
JBER, AK 99505

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
I39	JBER-FT. RICH TU058	6TH STREET FAC ID 0-	SHWS	Lower	1364, 0.258, WSW
I40	JBER-FT. RICH TU058	EAST OF C & 2ND STRE	SHWS	Lower	1364, 0.258, WSW
41	JBER-FT. RICH SS119	WEST OF 5TH STREET &	SHWS	Lower	1375, 0.260, WSW
42	JBER-FT. RICH OUD DU	OTTER LK-ROOSEVELT R	SHWS	Higher	1457, 0.276, NNW
43	AKARNG FT. RICHARDSO	BLDG. 57112, DAVIS H	SHWS	Higher	1535, 0.291, NE
44	JBER-FT. RICH FTR269	5TH STREET AND D STR	SHWS	Lower	1692, 0.320, WSW
J45	JBER-FT. RICH TU053	DAVIS HIGHWAY FTRS-5	SHWS, INST CONTROL	Lower	1778, 0.337, West
46	JBER-FT. RICH BLDG 4	BUILDING 49000 E OF	LUST	Higher	1830, 0.347, ENE
K47	EARECKSON AIR STATIO	AIRCRAFT MOCKUP/DRUM	SHWS, INST CONTROL	Lower	1861, 0.352, WSW
J48	JBER-FT. RICH BLDG 7	5TH STREET & DAVIS H	SHWS	Lower	1870, 0.354, West
49	JBER-FT. RICH SS090	6TH AND A STREETS, F	SHWS	Lower	1950, 0.369, SW
K50	JBER-FT. RICH BLDG 7	5TH & D STS. NE CORN	LUST	Lower	1959, 0.371, WSW
K51	JBER-FT. RICH BLDG 7	5TH & D STS., NE COR	SHWS	Lower	1962, 0.372, WSW
52	FTRS-007-R-01 RIFLE	5312 KENNEY AVE	UXO	Lower	1977, 0.374, SSW
K53	JBER-FT. RICH BLDG 7	5TH & D STS., NE COR	SHWS	Lower	2010, 0.381, WSW
L54	JBER-FT. RICH OUD BL	5TH & DAVIS HWY., N.	SHWS, LUST	Lower	2011, 0.381, WNW
55	JBER-FT. RICH AFFF A	N. OF MAIN CANTONMEN	SHWS, INST CONTROL	Lower	2018, 0.382, NW
L56	EARECKSON AIR STATIO	USTS 605-1 THROUGH -	SHWS	Lower	2084, 0.395, WNW
57	JBER-FT. RICH BLDG 7	5TH ST. & DAVIS HWY.	SHWS, LUST	Lower	2107, 0.399, WSW
M58	JBER-FT. RICH BLDG 7	D STREET & FIFTH STR	SHWS	Lower	2171, 0.411, WSW
N59	JBER-FT. RICH AT035	E SIDE OF 5TH STREET	SHWS	Lower	2190, 0.415, WSW
N60	JBER-FT. RICH AT035	~350 FT SW OF WAREHO	SHWS	Lower	2190, 0.415, WSW
M61	JBER-FT. RICH BLDG 7	D & 5TH STS. SW CORN	LUST	Lower	2231, 0.423, WSW
M62	JBER-FT. RICH BLDG 7	D & 5TH STS., SW COR	SHWS	Lower	2231, 0.423, WSW
63	JBER-FT. RICH OUD GR	OLD FT. RICH. LANDFI	SHWS, ENG CONTROLS, INST CONTROL	Higher	2351, 0.445, NW
O64	JBER-FT. RICH TU073	CIRCLE DRIVE AND NOR	SHWS	Lower	2379, 0.451, WNW
O65	JBER-FT. RICH BLDG 9	CIRCLE DRIVE AND NOR	SHWS	Lower	2379, 0.451, WNW
P66	JBER-FT. RICH BLDG 9	5TH STREET FAC ID 0-	SHWS, INST CONTROL	Lower	2384, 0.452, West
Q67	JBER-FT. RICH TU074	WAREHOUSE STREET, CI	SHWS, INST CONTROL	Lower	2469, 0.468, West
Q68	JBER-FT. RICH BLDG 9	CIRCLE DRIVE	LUST	Lower	2478, 0.469, West
69	JBER-FT. RICH TU117	5TH & D STS. FAC ID	SHWS	Lower	2490, 0.472, WSW
R70	JBER-FT. RICH BLDG 3	FTRS-84 SITE SUMMIT	LUST	Lower	2517, 0.477, SW
R71	JBER-FT. RICH BLDG 3	FTRS-84 SITE SUMMIT	SHWS	Lower	2520, 0.477, SW
72	JBER-FT. RICH TU949	5TH & D STS., SW COR	SHWS, INST CONTROL	Lower	2526, 0.478, WSW
R73	FTRS-003-R-01 GREZEL	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R74	FTRS-005-R-01 MAHON	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R75	FTRS-009-R-01 MORTAR	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R76	FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R77	FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW

MAPPED SITES SUMMARY

Target Property Address:
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JBER, AK 99505

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
R78	FTRS-004-R-01 MCGEE	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
P79	JBER-FT. RICH TU066	BLDG 975	LUST	Lower	2536, 0.480, West
80	JBER-FT. RICH BLDG 7	DAVIS HIGHWAY AND 5T	LUST	Lower	2545, 0.482, West
P81	JBER-FT. RICH TU066	BLDG 975, FORMERLY F	SHWS, INST CONTROL	Lower	2551, 0.483, West
S82	JBER-FT. RICH FTR266	S OF LADUE RD; N OF	SHWS	Lower	2583, 0.489, WNW
83	JBER-FT. RICH TU066	DAVIS HWY. & 5TH STR	SHWS, INST CONTROL	Lower	2602, 0.493, West
S84	JBER-FT. RICH BLDG 9	NEAR NORTH WAREHOUSE	SHWS	Lower	2636, 0.499, WNW
85	JBER-FT. RICH BLDG 7	DAVIS HIGHWAY & 5TH	SHWS, INST CONTROL	Lower	2914, 0.552, WSW
86	JBER-FT. RICH TU075	CIRCLE DRIVE AND NOR	SHWS	Lower	3311, 0.627, WNW
T87	JBER-FT. RICH BLDG 9	BLDG 962; N WAREHOUS	SHWS	Lower	3329, 0.630, West
T88	JBER-FT. RICH SS120	SOUTH SIDE OF CIRCLE	SHWS	Lower	3415, 0.647, West
U89	JBER-FT. RICH TU046	2ND & D STS., NW COR	SHWS, INST CONTROL	Lower	3538, 0.670, WSW
90	JBER-FT. RICH SO030	DAVIS HWY., 5TH STRE	SHWS, INST CONTROL	Lower	3581, 0.678, West
U91	JBER-FT. RICH BLDG 7	2ND ST. BETWEEN D ST	SHWS, LUST	Lower	3657, 0.693, WSW
U92	JBER-FT. RICH BLDG 7	BUILDING 756 ALT ID	SHWS, LUST	Lower	3795, 0.719, WSW
93	JBER-FT. RICH SS019	2ND STREET BETWEEN D	SHWS, INST CONTROL	Lower	3837, 0.727, WSW
94	JBER-FT. RICH OUD OL	CIRCLE ROAD N. OF MA	SHWS, INST CONTROL	Lower	3843, 0.728, WNW
95	FORT RICHARDSON (USA		NPL, SEMS, US ENG CONTROLS, US INST CONTROL, ROD	Lower	3885, 0.736, WSW
96	JBER-FT. RICH ADAL C	5TH STREET & CHILKOO	SHWS	Lower	3962, 0.750, SW
97	JBER-FT. RICH TU082	CIRCLE DRIVE	SHWS	Lower	3973, 0.752, West
98	JBER-FT. RICH BLDG 4	BLDG 47-799 STOCKADE	SHWS	Lower	4004, 0.758, WSW
99	JBER-FT. RICH BLDG 9	CIRCLE DRIVE	SHWS	Lower	4082, 0.773, WNW
100	JBER-FT. RICH LANDFI	CIRCLE ROAD FTRS-40,	SHWS	Lower	4098, 0.776, WNW
V101	JBER-FT. RICH BLDG 7	BUILDING 750 ALT ID	SHWS, LUST	Lower	4182, 0.792, WSW
V102	JBER-FT. RICH BLDG 7	D & 2ND STS., NW COR	SHWS	Lower	4182, 0.792, WSW
103	FTRS-011-R-01 PISTOL	5312 KENNEY AVE	UXO	Lower	4697, 0.890, SSW
104	JBER-FT. RICH TU085	BLDG 972, FORMERLY F	SHWS, LUST, INST CONTROL	Lower	4717, 0.893, West
105	JBER-FT. RICH BLDG 9	CIRCLE LOOP ROAD, FO	SHWS	Lower	5142, 0.974, WNW
106	JBER-FT. RICH TU064	1ST & D STREETS FTRS	SHWS, INST CONTROL	Lower	5181, 0.981, WSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Facilities

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
UST ---------- Underground Storage Tank Database
AST ---------- Regulated Aboveground Storage Tanks
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ---------- Voluntary Cleanup Program sites
INDIAN VCP ---------- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---------- Identified and/or Proposed Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY ---------- Recycling Facilities
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
CDL ---------- Illegal Drug Manufacturing Sites
US CDL ---------- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---------- CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ---------- Hazardous Materials Information Reporting System

SPILLS ..... Spills Database
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem
US MINES ..... Mines Master Index File
ABANDONED MINES ..... Abandoned Mines
FINDS ..... Facility Index System/Facility Registry System
ECHO ..... Enforcement & Compliance History Information
DOCKET HWC ..... Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
AIRS ..... AIRS Facility Listing
COAL ASH ..... Coal Ash Disposal Sites
DRYCLEANERS ..... Drycleaner Facility Listing
Financial Assurance ..... Financial Assurance Information Listing
NPDES ..... Wastewater Discharge Permit Listing
UIC ..... UIC Information

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ..... EDR Exclusive Historical Cleaners

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---------- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 07/17/2018 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON (USA		***WSW 1/2 - 1 (0.736 mi.)***	***95***	***602***
Cerclis ID:: 1001455				
EPA Id: AK6214522157				

State- and tribal - equivalent CERCLIS

SHWS: State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with where cleanup will be paid for by potentially responsible parties.

A review of the SHWS list, as provided by EDR, and dated 09/25/2018 has revealed that there are 82 SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	0 - 1/8 (0.000 mi.)	1	8

Facility Status: Cleanup Complete
Hazard ID: 934
Hazard ID: 24076

JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 3019	ROOSEVELT DRIVE AND	0 - 1/8 (0.000 mi.)	A2	11
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 3018	RANDALL ROAD N. OF B	0 - 1/8 (0.000 mi.)	A3	18
JBER-FT. RICH TU009 Facility Status: Cleanup Complete Hazard ID: 25861	NW CORNER OF DAVIS H	0 - 1/8 (0.000 mi.)	B4	29
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 25064	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***40***
JBER-FT. RICH TU036 Facility Status: Cleanup Complete Hazard ID: 2763	***RANDALL ROAD & DAVIS***	***0 - 1/8 (0.000 mi.)***	***B7***	***43***
JBER-FT. RICH TU069 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2756	RANDALL ROAD N. OF B	0 - 1/8 (0.000 mi.)	E12	69
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 2405	SOUTH SIDE OF DAVIS	0 - 1/8 (0.000 mi.)	E13	82
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 25063	***NEAR BLDG 47431 WEST***	***0 - 1/8 (0.000 mi.)***	***15***	***87***
JBER-FT. RICH AFFF A Facility Status: Active Hazard ID: 26758	EASTERN SIDE OF BRYA	0 - 1/8 (0.000 mi.)	16	88
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 2729	WESTBROOK AVENUE, FO	0 - 1/8 (0.000 mi.)	18	94
JBER-FT. RICH BLDG 5 Facility Status: Cleanup Complete Hazard ID: 2575	NE SIDE OF BLDG. 57-	NNW 0 - 1/8 (0.051 mi.)	30	121
JBER-FT. RICH AFFF A Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2777	***GRAVEL PITS E. OF BR***	***ENE 0 - 1/8 (0.109 mi.)***	***31***	***131***
JBER-FT. RICH OUD DU Facility Status: Cleanup Complete Hazard ID: 2779	OTTER LK-ROOSEVELT R	NNW 1/4 - 1/2 (0.276 mi.)	42	239
AKARNG FT. RICHARDSO Facility Status: Cleanup Complete Hazard ID: 944	BLDG. 57112, DAVIS H	NE 1/4 - 1/2 (0.291 mi.)	43	243
JBER-FT. RICH OUD GR Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 430	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***360***

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4	WESTBROOK AVE. BRYAN	0 - 1/8 (0.000 mi.)	C5	39

Facility Status: Cleanup Complete Hazard ID: 23910				
JBER-FT. RICH TU037 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 4087	***BLDG 47-438 WESTBROO***	***0 - 1/8 (0.000 mi.)***	***C8***	***51***
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1486	BRYANT AIRFIELD S. O	0 - 1/8 (0.000 mi.)	D10	64
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 24121 Hazard ID: 23640	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	D11	68
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1230	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	17	92
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 24618	AASF BRYANT AIRFIELD	0 - 1/8 (0.000 mi.)	F20	95
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 24824	FORMERLY FORT RICHAR	0 - 1/8 (0.000 mi.)	C22	97
JBER-FT. RICH TU057 Facility Status: Cleanup Complete Hazard ID: 939	***WESTBROOK AVE. & W.***	***0 - 1/8 (0.000 mi.)***	***D23***	***99***
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 23874	***WESTBROOK AVE. SOUTH***	***0 - 1/8 (0.000 mi.)***	***D24***	***114***
NATIONAL GUARD OMS 6 Facility Status: Cleanup Complete Hazard ID: 23032	ACCESS RD CAMP CARRO	0 - 1/8 (0.000 mi.)	F26	116
JBER-FT. RICH CHARLI Facility Status: Cleanup Complete Hazard ID: 1493	CHARLIE ROW, FORMERL	0 - 1/8 (0.000 mi.)	G27	116
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1494	BRYANT AIRFIELD, N.	0 - 1/8 (0.000 mi.)	G28	119
JBER-FT. RICH FTR198 Facility Status: Active Hazard ID: 26084	AREA BOUNDED BY D ST	SW 0 - 1/8 (0.119 mi.)	32	161
JBER-FT. RICH SS013 Facility Status: Active Hazard ID: 26056	WEST OF 6TH STREET N	WSW 1/8 - 1/4 (0.226 mi.)	33	166
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 23314	FIRST STREET, FORMER	W 1/8 - 1/4 (0.228 mi.)	H35	194
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 2035	1ST STREET FAC ID 0-	W 1/8 - 1/4 (0.228 mi.)	H36	195
JBER-ELMENDORF ST430	F-15E FUEL TANK STOR	WSW 1/4 - 1/2 (0.258 mi.)	I38	198

Facility Status: Cleanup Complete Hazard ID: 23421				
JBER-FT. RICH TU058 Facility Status: Cleanup Complete Hazard ID: 2033	6TH STREET FAC ID 0-	WSW 1/4 - 1/2 (0.258 mi.)	I39	204
JBER-FT. RICH TU058 Facility Status: Cleanup Complete Hazard ID: 2754	EAST OF C & 2ND STRE	WSW 1/4 - 1/2 (0.258 mi.)	I40	217
JBER-FT. RICH SS119 Facility Status: Cleanup Complete Hazard ID: 26522	WEST OF 5TH STREET &	WSW 1/4 - 1/2 (0.260 mi.)	41	236
JBER-FT. RICH FTR269 Facility Status: Active Hazard ID: 25677	5TH STREET AND D STR	WSW 1/4 - 1/2 (0.320 mi.)	44	244
JBER-FT. RICH TU053 Facility Status: Cleanup Complete Hazard ID: 2753	***DAVIS HIGHWAY FTRS-5***	***W 1/4 - 1/2 (0.337 mi.)***	***J45***	***258***
EARECKSON AIR STATIO Facility Status: Active Hazard ID: 42	***AIRCRAFT MOCKUP/DRUM***	***WSW 1/4 - 1/2 (0.352 mi.)***	***K47***	***267***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 1491	5TH STREET & DAVIS H	W 1/4 - 1/2 (0.354 mi.)	J48	278
JBER-FT. RICH SS090 Facility Status: Active Hazard ID: 26005	6TH AND A STREETS, F	SW 1/4 - 1/2 (0.369 mi.)	49	282
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23958	5TH & D STS., NE COR	WSW 1/4 - 1/2 (0.372 mi.)	K51	300
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 1490	5TH & D STS., NE COR	WSW 1/4 - 1/2 (0.381 mi.)	K53	301
JBER-FT. RICH OUD BL Facility Status: Cleanup Complete Hazard ID: 23951	***5TH & DAVIS HWY., N.***	***WNW 1/4 - 1/2 (0.381 mi.)***	***L54***	***304***
JBER-FT. RICH AFFF A Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2793	***N. OF MAIN CANTONMEN***	***NW 1/4 - 1/2 (0.382 mi.)***	***55***	***307***
EARECKSON AIR STATIO Facility Status: Cleanup Complete Hazard ID: 40	USTS 605-1 THROUGH -	WNW 1/4 - 1/2 (0.395 mi.)	L56	326
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23635	***5TH ST. & DAVIS HWY.***	***WSW 1/4 - 1/2 (0.399 mi.)***	***57***	***335***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 4462	D STREET & FIFTH STR	WSW 1/4 - 1/2 (0.411 mi.)	M58	336
JBER-FT. RICH AT035 Facility Status: Cleanup Complete	E SIDE OF 5TH STREET	WSW 1/4 - 1/2 (0.415 mi.)	N59	338

Hazard ID: 26038				
JBER-FT. RICH AT035 Facility Status: Active Hazard ID: 25870	~350 FT SW OF WAREHO	WSW 1/4 - 1/2 (0.415 mi.)	N60	342
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23962	D & 5TH STS., SW COR	WSW 1/4 - 1/2 (0.423 mi.)	M62	359
JBER-FT. RICH TU073 Facility Status: Cleanup Complete Hazard ID: 26068	CIRCLE DRIVE AND NOR	WNW 1/4 - 1/2 (0.451 mi.)	O64	374
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26067	CIRCLE DRIVE AND NOR	WNW 1/4 - 1/2 (0.451 mi.)	O65	382
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 1792	***5TH STREET FAC ID 0-***	***W 1/4 - 1/2 (0.452 mi.)***	***P66***	***390***
JBER-FT. RICH TU074 Facility Status: Cleanup Complete Hazard ID: 1791	***WAREHOUSE STREET, CI***	***W 1/4 - 1/2 (0.468 mi.)***	***Q67***	***406***
JBER-FT. RICH TU117 Facility Status: Active Hazard ID: 2766	5TH & D STS. FAC ID	WSW 1/4 - 1/2 (0.472 mi.)	69	417
JBER-FT. RICH BLDG 3 Facility Status: Cleanup Complete Hazard ID: 23424	FTRS-84 SITE SUMMIT	SW 1/4 - 1/2 (0.477 mi.)	R71	459
JBER-FT. RICH TU949 Facility Status: Cleanup Complete Hazard ID: 1483	***5TH & D STS., SW COR***	***WSW 1/4 - 1/2 (0.478 mi.)***	***72***	***460***
JBER-FT. RICH TU066 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 23303	***BLDG 975, FORMERLY F***	***W 1/4 - 1/2 (0.483 mi.)***	***P81***	***473***
JBER-FT. RICH FTR266 Facility Status: Cleanup Complete Hazard ID: 25871	S OF LADUE RD; N OF	WNW 1/4 - 1/2 (0.489 mi.)	S82	476
JBER-FT. RICH TU066 Facility Status: Cleanup Complete Hazard ID: 2755	***DAVIS HWY. & 5TH STR***	***W 1/4 - 1/2 (0.493 mi.)***	***83***	***484***
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26050	NEAR NORTH WAREHOUSE	WNW 1/4 - 1/2 (0.499 mi.)	S84	495
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 2792	***DAVIS HIGHWAY & 5TH***	***WSW 1/2 - 1 (0.552 mi.)***	***85***	***503***
JBER-FT. RICH TU075 Facility Status: Cleanup Complete Hazard ID: 26069	CIRCLE DRIVE AND NOR	WNW 1/2 - 1 (0.627 mi.)	86	514
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 25998	BLDG 962; N WAREHOUS	W 1/2 - 1 (0.630 mi.)	T87	527
JBER-FT. RICH SS120	SOUTH SIDE OF CIRCLE	W 1/2 - 1 (0.647 mi.)	T88	535

Facility Status: Active Hazard ID: 26747				
JBER-FT. RICH TU046 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 1233	***2ND & D STS., NW COR***	***WSW 1/2 - 1 (0.670 mi.)***	***U89***	***537***
JBER-FT. RICH SO030 Facility Status: Cleanup Complete Hazard ID: 1232	***DAVIS HWY., 5TH STRE***	***W 1/2 - 1 (0.678 mi.)***	***90***	***547***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 24131	***2ND ST. BETWEEN D ST***	***WSW 1/2 - 1 (0.693 mi.)***	***U91***	***563***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 25061	***BUILDING 756 ALT ID***	***WSW 1/2 - 1 (0.719 mi.)***	***U92***	***564***
JBER-FT. RICH SS019 Facility Status: Cleanup Complete Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 1229 Hazard ID: 1240	***2ND STREET BETWEEN D***	***WSW 1/2 - 1 (0.727 mi.)***	***93***	***565***
JBER-FT. RICH OUD OL Facility Status: Active Hazard ID: 941	***CIRCLE ROAD N. OF MA***	***WNW 1/2 - 1 (0.728 mi.)***	***94***	***589***
JBER-FT. RICH ADAL C Facility Status: Cleanup Complete Hazard ID: 1236	5TH STREET & CHILKOO	SW 1/2 - 1 (0.750 mi.)	96	625
JBER-FT. RICH TU082 Facility Status: Cleanup Complete Hazard ID: 26066	CIRCLE DRIVE	W 1/2 - 1 (0.752 mi.)	97	627
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 23326	BLDG 47-799 STOCKADE	WSW 1/2 - 1 (0.758 mi.)	98	634
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26065	CIRCLE DRIVE	WNW 1/2 - 1 (0.773 mi.)	99	635
JBER-FT. RICH LANDFI Facility Status: Cleanup Complete Hazard ID: 2752	CIRCLE ROAD FTRS-40,	WNW 1/2 - 1 (0.776 mi.)	100	644
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 25062	***BUILDING 750 ALT ID***	***WSW 1/2 - 1 (0.792 mi.)***	***V101***	***669***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 24132	D & 2ND STS., NW COR	WSW 1/2 - 1 (0.792 mi.)	V102	670
JBER-FT. RICH TU085 Facility Status: Cleanup Complete Hazard ID: 23000	***BLDG 972, FORMERLY F***	***W 1/2 - 1 (0.893 mi.)***	***104***	***674***
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 22983	CIRCLE LOOP ROAD, FO	WNW 1/2 - 1 (0.974 mi.)	105	682
JBER-FT. RICH TU064	***1ST & D STREETS FTRS***	***WSW 1/2 - 1 (0.981 mi.)***	***106***	***684***

Facility Status: Cleanup Complete - Institutional Controls
Hazard ID: 1790

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Pollution Control & Ecology's LUST Notice Information.

A review of the LUST list, as provided by EDR, and dated 08/09/2018 has revealed that there are 20 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 eventid: 25064 Facility Status: Cleanup Complete	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***40***
JBER-FT. RICH BLDG 4 eventid: 25063 Facility Status: Cleanup Complete	***NEAR BLDG 47431 WEST***	***0 - 1/8 (0.000 mi.)***	***15***	***87***
JBER-FT. RICH BLDG T eventid: 24076 Facility Status: Cleanup Complete	ROOSEVELT & STAMBONE	NW 0 - 1/8 (0.008 mi.)	29	121
JBER-FT. RICH BLDG 4 eventid: 26881 Facility Status: Open	BUILDING 49000 E OF	ENE 1/4 - 1/2 (0.347 mi.)	46	267

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 eventid: 24121 eventid: 23640 Facility Status: Cleanup Complete	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	D9	64
NATIONAL GUARD OMS 6 eventid: 23032 Facility Status: Cleanup Complete	ACCESS RD CAMP CARRO	0 - 1/8 (0.000 mi.)	F14	86
JBER-FT. RICH AKARNG eventid: 24824 Facility Status: Cleanup Complete	FORMERLY FORT RICHAR	0 - 1/8 (0.000 mi.)	C19	95
JBER-FT. RICH BLDG 4 eventid: 23910 Facility Status: Cleanup Complete	WESTBROOK AVE. BRYAN	0 - 1/8 (0.000 mi.)	C21	97
JBER-FT. RICH BLDG 4 eventid: 23874 Facility Status: Cleanup Complete	***WESTBROOK AVE. SOUTH***	***0 - 1/8 (0.000 mi.)***	***D24***	***114***
JBER-FT. RICH AKARNG eventid: 24618 Facility Status: Cleanup Complete	AASF BRYANT AIRFIELD	0 - 1/8 (0.000 mi.)	F25	115
JBER-FT. RICH BLDG 9	FIRST STREET	W 1/8 - 1/4 (0.227 mi.)	H34	194

eventid: 23314
Facility Status: Cleanup Complete

JBER-ELMENDORF ST430 eventid: 23421 Facility Status: Cleanup Complete	F-15E FUEL TANK STOR	WSW 1/4 - 1/2 (0.258 mi.)	I37	198
JBER-FT. RICH BLDG 7 eventid: 23958 Facility Status: Cleanup Complete	5TH & D STS. NE CORN	WSW 1/4 - 1/2 (0.371 mi.)	K50	300
JBER-FT. RICH OUD BL eventid: 23951 Facility Status: Cleanup Complete	***5TH & DAVIS HWY., N.***	***WNW 1/4 - 1/2 (0.381 mi.)***	***L54***	***304***
JBER-FT. RICH BLDG 7 eventid: 23635 Facility Status: Cleanup Complete	***5TH ST. & DAVIS HWY.***	***WSW 1/4 - 1/2 (0.399 mi.)***	***57***	***335***
JBER-FT. RICH BLDG 7 eventid: 23962 Facility Status: Cleanup Complete	D & 5TH STS. SW CORN	WSW 1/4 - 1/2 (0.423 mi.)	M61	359
JBER-FT. RICH BLDG 9 eventid: 26869 Facility Status: Cleanup Complete	CIRCLE DRIVE	W 1/4 - 1/2 (0.469 mi.)	Q68	417
JBER-FT. RICH BLDG 3 eventid: 23424 Facility Status: Cleanup Complete	FTRS-84 SITE SUMMIT	SW 1/4 - 1/2 (0.477 mi.)	R70	459
JBER-FT. RICH TU066 eventid: 23303 Facility Status: Cleanup Complete - Institutional Controls	BLDG 975	W 1/4 - 1/2 (0.480 mi.)	P79	472
JBER-FT. RICH BLDG 7 eventid: 26867 Facility Status: Cleanup Complete	DAVIS HIGHWAY AND 5T	W 1/4 - 1/2 (0.482 mi.)	80	472

State and tribal institutional control / engineering control registries

A listing of sites with engineering controls in place included in the Contaminated Sites.

A review of the ENG CONTROLS list, as provided by EDR, and dated 09/25/2018 has revealed that there is 1 ENG CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH OUD GR Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 430	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***360***

EXECUTIVE SUMMARY

INST CONTROL: Contaminated sites that have institutional controls.

A review of the INST CONTROL list, as provided by EDR, and dated 09/25/2018 has revealed that there are 14 INST CONTROL sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***40***
Facility Status: Cleanup Complete Hazard ID: 25064				
JBER-FT. RICH TU036	***RANDALL ROAD & DAVIS***	***0 - 1/8 (0.000 mi.)***	***B7***	***43***
Facility Status: Cleanup Complete Hazard ID: 2763				
JBER-FT. RICH AFFF A	***GRAVEL PITS E. OF BR***	***ENE 0 - 1/8 (0.109 mi.)***	***31***	***131***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2777				
JBER-FT. RICH OUD GR	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***360***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 430				

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH TU037	***BLDG 47-438 WESTBROO***	***0 - 1/8 (0.000 mi.)***	***C8***	***51***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 4087				
JBER-FT. RICH TU057	***WESTBROOK AVE. & W.***	***0 - 1/8 (0.000 mi.)***	***D23***	***99***
Facility Status: Cleanup Complete Hazard ID: 939				
JBER-FT. RICH TU053	***DAVIS HIGHWAY FTRS-5***	***W 1/4 - 1/2 (0.337 mi.)***	***J45***	***258***
Facility Status: Cleanup Complete Hazard ID: 2753				
EARECKSON AIR STATIO	***AIRCRAFT MOCKUP/DRUM***	***WSW 1/4 - 1/2 (0.352 mi.)***	***K47***	***267***
Facility Status: Active Hazard ID: 42				
JBER-FT. RICH AFFF A	***N. OF MAIN CANTONMEN***	***NW 1/4 - 1/2 (0.382 mi.)***	***55***	***307***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2793				
JBER-FT. RICH BLDG 9	***5TH STREET FAC ID 0-***	***W 1/4 - 1/2 (0.452 mi.)***	***P66***	***390***
Facility Status: Cleanup Complete Hazard ID: 1792				
JBER-FT. RICH TU074	***WAREHOUSE STREET, CI***	***W 1/4 - 1/2 (0.468 mi.)***	***Q67***	***406***
Facility Status: Cleanup Complete Hazard ID: 1791				
JBER-FT. RICH TU949	***5TH & D STS., SW COR***	***WSW 1/4 - 1/2 (0.478 mi.)***	***72***	***460***
Facility Status: Cleanup Complete Hazard ID: 1483				
JBER-FT. RICH TU066	***BLDG 975, FORMERLY F***	***W 1/4 - 1/2 (0.483 mi.)***	***P81***	***473***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 23303				
JBER-FT. RICH TU066	***DAVIS HWY. & 5TH STR***	***W 1/4 - 1/2 (0.493 mi.)***	***83***	***484***
Facility Status: Cleanup Complete Hazard ID: 2755				

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON MILI		0 - 1/8 (0.000 mi.)	0	8

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 07/17/2018 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON (USA EPA ID:: AK6214522157		***WSW 1/2 - 1 (0.736 mi.)***	***95***	***602***

UXO: A listing of unexploded ordnance site locations

A review of the UXO list, as provided by EDR, and dated 09/30/2017 has revealed that there are 8 UXO sites within approximately 1 mile of the target property.

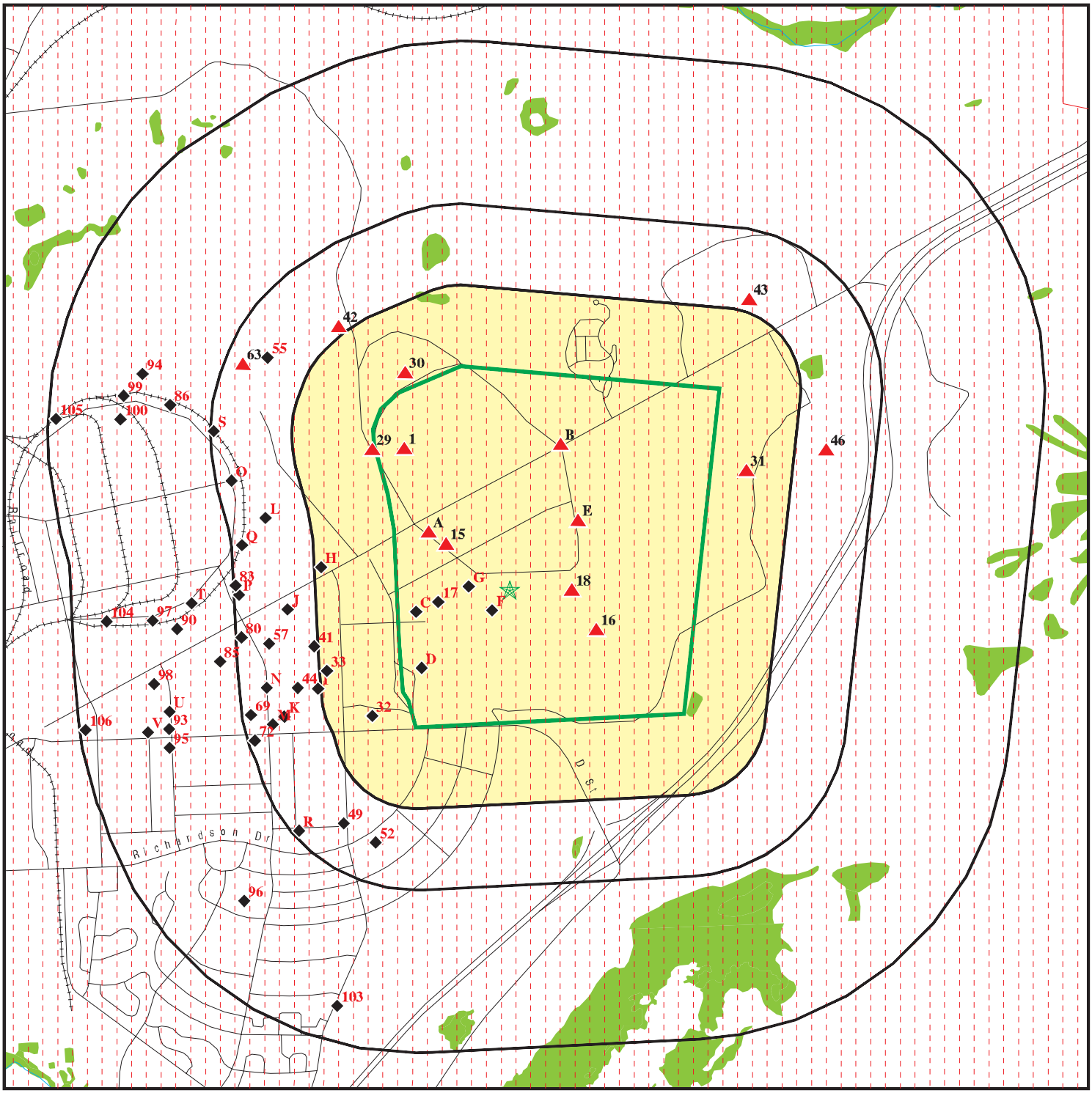
Lower Elevation	Address	Direction / Distance	Map ID	Page
FTRS-007-R-01 RIFLE	5312 KENNEY AVE	SSW 1/4 - 1/2 (0.374 mi.)	52	301
FTRS-003-R-01 GREZEL	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R73	470
FTRS-005-R-01 MAHON	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R74	471
FTRS-009-R-01 MORTAR	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R75	471
FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R76	471
FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R77	471
FTRS-004-R-01 MCGEE	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R78	472
FTRS-011-R-01 PISTOL	5312 KENNEY AVE	SSW 1/2 - 1 (0.890 mi.)	103	673

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 15 records.

Site Name	Database(s)
JBER-FT. RICH BLDG 750 UST 152	SHWS
JBER-FT. RICH BLDG 702 UST 72	SHWS
JBER-FT. RICH BLDG 756 UST 155	SHWS
JBER-FT. RICH BLDG 740 UST 151	SHWS
JBER-FT. RICH BLDG 755 UST 154	SHWS
JBER-FT. RICH BLDG 952 USTS 180 &	SHWS
JBER-FT. RICH BLDG 796 USTS 161 &	SHWS
JBER-FT. RICH BLDG 796 UST 160	SHWS
JBER-FT. RICH MORTAR RANGES 1A & 2	SHWS
FAA - ANCHORAGE AIR ROUTE TRAFFIC	VCP
FORT RICHARDSON BRYANT AIRFIELD IM	NPDES
AKANG - ARMY AVIATION STATION FACI	RGA LUST
AKANG - ARMY AVIATION STATION FACI	RGA LUST
AKANG - ARMY AVIATION SUPPORT FACI	RGA LUST
AKANG - ARMY AVIATION SUPPORT FACI	RGA LUST

OVERVIEW MAP - 5471178.2S

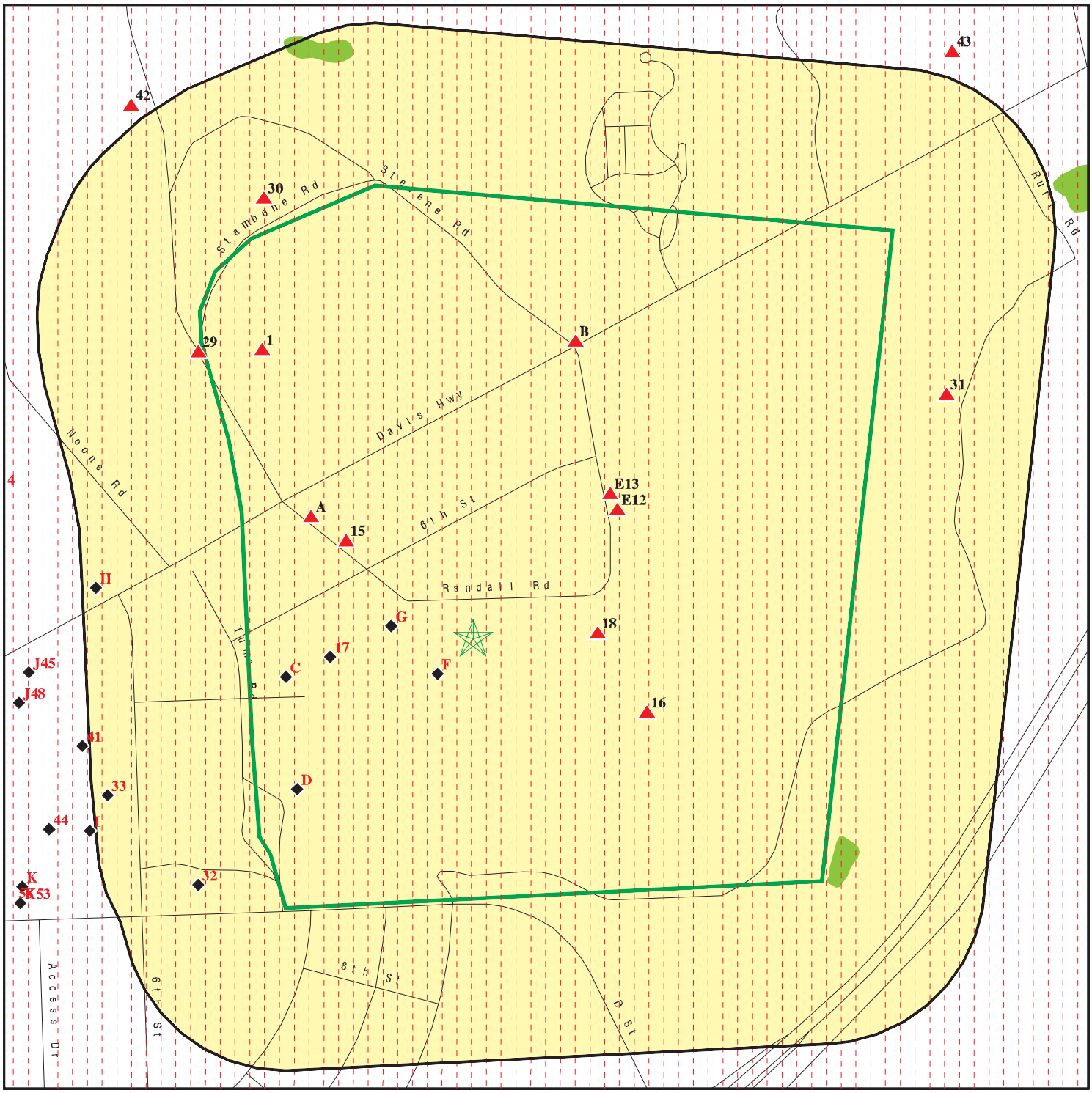


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:22 pm

DETAIL MAP - 5471178.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
		INQUIRY #:	5471178.2s
LAT/LONG:	61.264716 / 149.668109	DATE:	October 31, 2018 2:23 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	1	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		26	3	33	20	NR	82
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		9	1	10	NR	NR	20
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	1	NR	NR	1
INST CONTROL	0.500		5	0	9	NR	NR	14
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		1	0	0	0	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	1	NR	1
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	7	1	NR	8
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	41	4	60	23	0	128

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

DOD Region | **FORT RICHARDSON MILITARY RESERVATION** | **DOD** | **CUSA148534** | **N/A**

FORT RICHARDSON MILITARY (County), AK

< 1/8
1 ft.

DOD:
Feature 1: Army DOD
Feature 2: Not reported
Feature 3: Not reported
URL: Not reported
Name 1: Fort Richardson Military Reservation
Name 2: Not reported
Name 3: Not reported
State: AK
DOD Site: Yes
Tile name: AKANCHORAGE

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1 | **JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6** | **SHWS** | **S110144152**
ROOSEVELT & STAMBONE STS., FORMERLY FORT RICHARDSON BEFORE 1 | **N/A**

< 1/8 | **FORT RICHARDSON (JBER), AK 99505**
1 ft.

SHWS:

Relative: Higher
Actual: 347 ft.

File Number: 2102.38.048
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.271269
Longitude: -149.677365
Hazard ID: 934
Problem: 4 underground storage tanks (1 waste oil, 1 diesel, 2 gasoline) with soil contamination revealed from soil boring near tanks. Extent, amount of contamination, impact to human health unknown. Halogenated volatile organics and polychlorinated biphenyls found in soil above detectable limits. Last staff assigned was Howard.

Actions:

Action Date: 6/12/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: June 12, 1991 RCRA HW Mgt. Compliance Evaluation Inspection ReportAnother confusing EPA ID Number relationship is with the USPFO in Building 49-140 at Camp Denali on Fort Richardson. The USFPO has been issued EPA ID Number AK3211980039 as a transporter; however, it appears as though this Building 49-140 is on Fort Richardson,since Camp Denali is on Fort Richardson. It also appears that the Alaska Army National Guard in Building 60702 on Camp Carrol have been issued EPA ID Number AK1211800155 and this building is on Fort Richardson. It also appears as though a U.S. Army National Guard unit in Building 57112 on Camp Carroll has been issued EPA ID Number AK4211890047. There is a chance that the Alaska Army National Guard was also issued EPA ID Number AK2211800154 for a building on Fort Richardson. This definition of facility issue needs to be further investigated with the EPA personnel in Seattle that actually issue EPA ID Numbers.

Action Date: 5/8/1990
Action: Report or Workplan Review - Other
DEC Staff: Ron Klein
Action Description: ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6 (Continued) **S110144152**

April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection).
Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date: 4/9/1991
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Site ranked by staff.

Action Date: 4/12/1994
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: 279 tons of contaminated soils removed and incinerated. Letter sent to AKARNG Captain Lawrence Beck that the USTs project manifests were received and that the site is considered closed out. Closing out the site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that may cause an unacceptable risk to human health, safety or the environment, then ADEC may require additional investigation and/or remedial action.

Action Date: 12/22/1989
Action: Interim Removal Action Approved
DEC Staff: Louis Howard
Action Description: (Old R:Base Action Code = REM - Removal / Excavation). America North sent in tank closure/site assessment report for 2 gas tanks (57112C/57112D), 1 waste oil (57112A) and 1 diesel tank (57112C). The results from grab samples taken from beneath all 4 tanks indicated that soil contamination above ADEC cleanup target levels remains in

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6 (Continued) **S110144152**

the tank pits. Additional soils boring or soil gas probes could be used to delineate the extent of the plume.

Action Date: 11/26/1990
Action: Notice of Violation
DEC Staff: Rich Sundet
Action Description: NOV/Request for corrective action letter sent to the Alaska Department of Military Affairs Major General Schaffer. Pollution spill associated with a dry well connected to an oil/water separator in a building used in the past as a motor repair shop. Violations of AS 46.03.710, AS 46.03.740 were noted. AS 46.04.020(a) removal of oil discharges and AS 46.04.020(b) containment and cleanup activities must be carried out in a manner approved by ADEC. Letter quested a workplan be submitted for:Identification of the vertical and lateral level and extent of surface and subsurface contamination from the spill in a manner approved by the department. Cleanup of area soil and groundwater contaminated from site activities.Disposal of the contaminated materials.All workplans must be approved by the department prior to any further sampling, cleanup or disposal activities. All work plans to be accompanied by a quality assurance/quality control plan. Letter requested a written report to ADEC by December 14, 1990.

Action Date: 11/16/1990
Action: Notice of Violation
DEC Staff: John Halverson
Action Description: Notice of release sent to John Schaffer requesting that a qualified impartial 3rd party perform a site assessment to confirm the petroleum release and perform the cleanup of soil or groundwater contamination. Cleanup activities to be documented by a corrective action report submitted to ADEC within 45 days after the release confirmation date.

Action Date: 1/1/1992
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Not reported

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg T57112 Camp Carrol
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

File Number: 2102.26.071
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.271269
Longitude: -149.677365

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6 (Continued) **S110144152**

Hazard ID: 24076
Problem: Last staff assigned was Howard. Army POC Cristal Fosbrook 384-2713

Actions:

Action Date: 4/12/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: 279 tons of contaminated soils removed and incinerated.

Action Date: 12/22/1989
Action: Update or Other Action
DEC Staff: * Not Assigned
Action Description: REM; America North sent in tank closure/site assessment report for 2 gas tanks & 2 diesel tanks. The results from grab samples taken from beneath all 4 tanks indicated that soil contamination above ADEC cleanup target levels remains in the tank pits. Additional soils boring or soil gas probes could be used to delineate the extent of the plume.

Action Date: 11/15/1990
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 11/14/1990
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 1/11/2007
Action: Update or Other Action
DEC Staff: Aggie Blandford
Action Description: File number issued. Combined with Event ID 2772.

A2
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 P **SHWS S110144085**
ROOSEVELT DRIVE AND WESTBROOK CC-FTRS-10, FORMERLY FORT RICH **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 1 of 3 in cluster A

Relative: Higher
Actual: 341 ft.

SHWS:
File Number: 2102.38.012
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.267525
Longitude: -149.675379
Hazard ID: 3019
Problem: 500-gallon heating oil tank (HOT) closed on May 14, 1998. FTRS-78 Bldg 47431 Aircraft Maint Facility. FRSERA 2 Party site.

Actions:

Action Date: 8/5/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Post Wide Work Plan, Fort Richardson, AK dated July 2010. 1.0Introduction Page 1-1The text states: ???This Work Plan provides general overarching guidelines and appendices to be used as the basis for conducting environmental

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

support work at all FTR sites. ComprehensiveEnvironmental Response, Compensation, and Liability Act (CERCLA) procedures will be followed at each specific site to determine the nature and extent of potential contamination or the extent of remedial action needed. These procedures include, but are not limited to, site inspection (SI), remedial investigation (RI), interim removal action (IRA), and remedial action (RA) activities.???CERCLA procedures do not apply to releases from petroleum, oil or and/or lubricants sites which are covered by the Two-Party Agreements, 18 AAC 75, or 18 AAC 78 for Non-UST and UST releases associated with Non-CERCLA contaminants. In this case, ADEC environmental regulations, guidance (adopted by reference or not) and technical memoranda/policy will be applicable as the State of Alaska is the lead regulatory authority for such sites.ADEC assumes reference to ???all FTR sites??? in this document also includes MILCON sites (usually through the CORPS of Engineers) and those sites which are ???discovered??? by other tenants on Post (i.e. National Guard or a privatization contractor such as DOYON Utilities). ADEC is assuming the Site Inspection (SI) as it is being used in this work plan meets all of the requirements of a PSE (I and II) as defined and required by the 1994 Federal Facility Agreement (FFA). If not, then the SI shall be deleted from this work plan and PSE (I and II) shall be used in its place. According to the 1994 FFA for Fort Richardson:II. Definitions Page 7(o) Preliminary Source Evaluation and ???Preliminary Source Evaluation Report??? (PSE) shall mean the process (and resulting documentation) of evaluating releases or threatened releases of hazardous substances, pollutants, or contaminants from source areas with the potential to constitute a threat to public health, welfare, or the environment. A Preliminary Source Evaluation as described in Attachment I, may consist of two phases: an existing data evaluation (PSE 1) and/or a limited field investigation (PSE 2).???

Action Date: 8/31/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: On August 30, 1998, the ADEC received a copy of the site assessment report summarizing field activities and laboratory results associated with the HOT closure.

Action Date: 8/24/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP for PA/SIs at Sites SA034, SA033, AT035, and AT032 Site Characterization/Cleanup at Sites TA008, TU948, TU110, TU111, TU112, TU949, and SS001 Dated August 23, 2012 received.SA034 ??? TBD 2, Powerline Drum Site TU949 Building 770 UST Site (CC-FTRS-05) SS001 - Building 796 (Battery Shop) (FTRS-01) SA033 ??? TBD 3, Otter Lake Road Drum Site TA008 ???Biathlon Range Fuel Release (CC-FTRS-08) TU948 ???Building 57-428 UST Site (CC-FTRS-09) TU110 ???Building 47-431 Tanks E1 & E2 (CC-FTRS-10) TU111 ??? CC-FTRS-11, Tank E5 TU112 ??? CC-FTRS-12, Tank E7 AT035 ??? TBD 4 MEB Complex, COF (FTR269) AT032 ??? TBD 1, Airborne Training Facility (FTR255).At the Tank E2 site, two deep soil borings will be drilled to groundwater (approximately 110 feet bgs) to define the vertical extent of contamination, and four shallow soil borings will be drilled to 25 feet to define the lateral extent of contamination. For the deep borings, however, if the maximum vertical extent of the soil

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

contamination is reached (based on PID field screening and visual/olfactory evidence), two soil samples will be collected beyond the last evidence of contamination, and the boring will be terminated. For all borings, soil samples will be collected at 5-foot intervals between 5 and 25 feet bgs, then at 10-foot intervals from 25 feet bgs to the water table.If borings are advanced to groundwater, HydroPunch groundwater samples will be collected at the water table from each boring. However, if visual observations indicate the presence of potential contamination at or near the water table, monitoring wells may be installed in the soil borings. Excavation If soil contamination is found to pose unacceptable risk using HRC under Method 3, remedial options that address the compounds and exposure routes that contribute most significantly to the cumulative risk will be evaluated. If excavation is the selected alternative, the contaminated soil will be excavated up to a depth of 25 feet bgs, where possible, and thermally treated at ASR. The following decision rules will be used to determine whether excavation is necessary:? Soil contamination in the upper 15 feet bgs that creates unacceptable direct contact risk (i.e., the 95 percent upper confidence limit [UCL], approximately 10,250 mg/kg) will be excavated.? Soil contamination creating unacceptable vapor intrusion or migration-to-groundwater risk up to 25 feet bgs will be excavated if soil contamination below 25 feet bgs does not create unacceptable risk.

Action Date: 7/22/2005
Action: Site Added to Database
DEC Staff: Sarah Cunningham
Action Description: Site transferred from the LUST database Event ID 2277

Action Date: 5/15/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: Source removal; heating oil tank (HOT) was removed from the ground on May 14, 1998. Approximately 20 cy of excavated soils were transported off site for thermal treatment.

Action Date: 5/14/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: High concentrations of DRO contamination and Benzene contamination were found during the closure of the 500-gallon HOT.

Action Date: 5/13/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: This Work Plan, in conjunction with the addenda presented herein, will guide corrective actions to be performed at the Army Reserve Center (ARC) Tank E1, ARC Tank E2, ARC Tank E5, ARC Tank E7, Building 57-428 Tank, Building 987, Biathlon Range, & Fort Richardson Landfill sites in accordance with the requirements of the U.S. Environmental Protection Agency & Alaska Department of Environmental Conservation (ADEC) guidance documents.Soil will be removed from the ARC Tank E2 site. POL contaminated soil will be excavatedfrom an area 20 feet wide by 20 feet long by 10 feet deep. The location and boundaries of thesoil excavation will be determined in the field by USACE and Bristol personnel. A PID will be used to guide soil removal in the

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

horizontal and vertical direction. The PID calibration will be conducted at the start of each day of use and results will be documented in field notebooks, along with any deviations or repairs completed. The PID will be used to screen soil using a conservative level of 20 ppm to separate ???dirty??? soil from ???clean??? soil. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. The upper five feet of the excavation is considered ???clean??? and is expected to be re-used as backfill, unless PID field screening indicates suspected contamination is present. The total volume of stockpiled soil is expected to be 74 cubic yards.In accordance with the ADEC Draft Field Sampling Guidance (ADEC, 2010), PID field screening of the stockpiles will be conducted at a rate of 1 field screening sample per every 10 yards of soil (total of 8). Confirmation soil samples will be collected from the stockpile and submitted for laboratory analysis at a rate of 2 for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards of stockpiled soil (total of 3).Confirmation soil sampling from the stockpiled soil will also include the collection of a QCsample, MS/MSD samples, and a trip blank. Soil from 5 feet bgs to 10 feet bgs is contaminated. This soil will be excavated and directly transported off site for thermal treatment and recycling. Treated soil provided by ASR will be used to backfill the excavation. The backfill will be compacted by track-walking with heavy equipment. Compaction testing will not be required.In addition to soil removal, 4 soil borings will be advanced and sampled to the groundwatertable (approximately 100 feet bgs). Soil boring locations will be determined in the field byUSACE and Bristol personnel.Three of the 4 borings will have a monitoring well installed to a depth of 10 feet into groundwater (approximately 110 feet bgs).

Action Date: 4/26/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UST Corrective Actions Hot Tanks WP Rev. No. 2 received. Soil will be removed from the ARC Tank E2 site. POL contaminated soil will be excavatedfrom an area 20 feet wide by 20 feet long by 10 feet deep. The location and boundaries of thesoil excavation will be determined in the field by USACE and Bristol personnel.Soil from 5 feet bgs to 10 feet bgs is contaminated. This soil will be excavated and directlytransported off site for thermal treatment and recycling. Treated soil provided by ASR will beused to backfill the excavation. The backfill will be compacted by track-walking with heavyequipment. Compaction testing will not be required. After the excavation has been completed, soil from the sidewalls and bottom of the excavation will be field screened prior to sample collection for laboratory analysis.Soil confirmation samples for laboratory analysis will be collected from the floor andsidewalls of each excavation, after all of the PID field-screening samples are collected andmeasurements recorded. A total of 4 soil confirmation samples (excluding QC samples) areexpected to be collected from the 4 sidewalls (1 per every 20 linear feet of excavation). Inaddition, a total of 3 soil confirmation samples (excluding QC samples) will be collected fromthe base of excavation (2 for the first 250 square feet and 1 for each additional 250 square feet of excavation). The soil confirmation samples from the sidewalls and base of the excavation will be collected from field-screening locations having the highest PID

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

readings. Confirmation soil sampling will be performed in accordance with the ADEC Draft Field Sampling Guide (ADEC, 2010). Soil samples will be collected and submitted for laboratory analysis and analyzed for GRO, BTEX, DRO, RRO, and PAH. The excavated soils will be stockpiled in accordance with 18 AAC 78.274.The other three borings will be placed within the zone of contamination to gain information for the HRC, but in areas that will also provide good hydrogeologic information (e.g., the boringswill be placed in a square pattern instead of a linear pattern, so that potential monitoring wells can be used to collect hydrologic flow information).a total of five soil samples with the highest indication of contamination will be analyzed for EPH, VPH, and PAH (some of the EPH, VPH, and PAH samples may be collected from the excavation floor and sidewalls to reduce the difficulty of collecting the required amount of soil from the split spoons). If it appears that the fuel hydrocarbons have migrated to the water table, some of the soil samples will be collected at and below the water table to assess whether the source extends into the zone of seasonal water table fluctuation.Soil samples collected below the water table that are thought to be from the NAPL source zone will be analyzed for hydrocarbon concentrations (BTEX, GRO, DRO, RRO, and potentially PAH, VPH, and EPH). In addition, within the four site borings, a total of five samples from any location with no indication of contamination, but representative of the soil conditions in the contaminated zones, will be collected and analyzed for TOC. Some soil samples collected in the saturated zone below the NAPL source zone may be analyzed for TOC (DRO analysis may be used toconfirm that the TOC result is not due to hydrocarbons) to enable better retardation and half life calculations. Lastly, up to five geotechnical samples will be collected at each site,including approximately two from the saturated zone, and analyzed to assess PSD, moisturecontent, and bulk density.

Action Date:	4/22/2014
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Staff provided a cleanup complete determination for TU110 (E1 and E2)Contaminants of ConcernDuring the 2012 and 2013 site characterizations at TU110, the maximum concentration of diesel range organics (DRO) was detected at E1 at a concentration of 12,700 mg/kg (TU110-SB01), from 20 to 25 feet bgs. At boring TU110-SB11 the maximum concentration of DRO was 979 mg/kg from 15 to 20 feet bgs. The maximum concentration of DRO detected at E2 was 4,170 mg/kg from boring TU110-SB15 at 10 to 15 feet bgs. Groundwater sampling results did not have any exceedances for any contaminant concern. Groundwater is at approximately 150 feet bgs. ADEC does not recognize the Tables 5-7, 5-8 and 5-9 in 2013 Site Characterization report which lists concentrations for aromatics and aliphatics in groundwater or pore water concentrations under Method Three as cleanup levels for TU110. Current regulations do not list aromatic and aliphatic cleanup levels for groundwater in Table C. However, since groundwater results did not exceed Table C cleanup levels for any contaminant of concern, it is not an issue at TU110.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU110 is based on the ingestion pathway for the under 40??? Zone at 10,250 mg/kg. Soil is contaminated with higher levels of DRO at 12,700 mg/kg (20 to 25 feet bgs), but it is below 15 feet bgs, not likely to be excavated in the future as part of any military construction activities, and

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

sampling results shows there are no impacts to groundwater at 150 feet bgs and not likely to be impacted in the future. In accordance with 18 AAC 75.380(d)(1), after reviewing the site characterization report submitted under this section, ADEC has determined TU110 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU110. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU110. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 3/15/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: DEC Project manager issued a Notice of Release Letter to the Department of the Army. Notice of Release for Fort Richardson Facility ID 0-000788, Tank 214 (Alternate ID E2) LUST Event ID 2277. On August 31, 1998, the Alaska Department of Environmental Conservation (ADEC) received a site assessment report from the Department of the Army documenting the May 14, 1998, closure of a 500-gallon underground storage tank system (UST) located diagonally across the intersection of Westbrook and Roosevelt Drive from Building 47431, Fort Richardson, Alaska. The information presented in the report indicates a petroleum release to the environment has occurred at this site. This letter confirms the release was reported. The following information is provided as a summary of current laws, regulations and guidelines to assist you in responding to the release. Please read this information, and check to ensure you have performed or will be performing the required actions in order to comply with the Alaska Underground Storage Tank Regulations 18 ACC 78.Initial Abatement and Release InvestigationIf a release is confirmed, the owner or operator must conduct an Initial Abatement and Release Investigation, in accordance with 18 AAC 78.230 and 235. The Initial Abatement and Release Investigation includes, at a minimum, the following:1.Preventing further release of product,2.Continuing to monitor and reduce fire and safety

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

hazards,3.Storing excavated contaminated materials in a manner that prevents further migration of contaminants,4.Measuring the extent and location of soils and ground water contaminated by the release, and5.Investigating the possible presence of the free product and, if present, initiating removal of free product.In addition, the collection of field data and submittal of reports shall be conducted by, or supervised by, a qualified, impartial third party that has been currently approved and is one file with the Department. The Department may waive the requirement for an impartial third party under certain conditions. The Release Investigation report should be submitted to the Department within 45 days respectively after confirmation of the release.Corrective ActionIn addition, upon confirmation of a petroleum release, the owner or operator of the UST must undertake Corrective Action in accordance with 18 AAC 78.240. Corrective Action includes, at a minimum, the following:1.Determining the nature and amount of the release,2.Conducting a preliminary risk evaluation,3.Determining the full extent and location of soils contaminated by the release,4.Determining the presence and concentration of dissolved contamination in the ground water,5.Removing free product (if present) from soils and ground water,6.Treating or removing contaminated soil and ground water, and7.Treating and/or disposing of contaminated cleanup materials, including soil and/or water removed from the area affected by the release.Corrective actions must be documented in an Interim Corrective Action Report in accordance to [18 AAC 240(c)(1)]. The Corrective Action Report should be submitted to the Department within 60 days after the confirmation of a release.Based on available information, the Department may request submittal of additional information and/or work plans (not listed above) which are determined necessary to respond to this release. All work plans for site assessment, release investigation, and corrective action must be submitted to and approved by ADEC prior to implementation.You will satisfy both state and federal regulations by following the requirements outlined above.Cost RecoveryThe State considers you a responsible party (RP) and will cost recover all ???oversight??? costs if additional work is necessary to close out the site. The RP will be sent a letter from Department of Law along with a detailed invoice of oversight costs and associated activities. Oversight costs can include Department staff salaries, travel, equipment, supplies, contracts and services, and general program management. Typical cost expenditures for staff time can include, but are not limited to: performing plan reviews; drafting approval letters; attending site meetings; offering technical assistance via phone; and doing site visits or inspections. The State of Alaska is authorized, under Federal regulation 42 U.S.C. 699 1 b(h), to recover funds used during oversight of a petroleum cleanup from a leaking underground storage tank (LUST). The State is also authorized by the State of Alaska comes from the Alaska Statute 46.08.070 to recover money expended by the Department to contain or cleanup the release of oil or a hazardous substance, including petroleum.

Action Date: 2/8/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/19/2008

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY TU110 (Continued) **S110144085**

Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed.
Action Date:	1/24/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Kristin Thompson
Action Description:	Initial ranking with ETM completed for source area id: 73994 name: Underground tank. This is an auto action that was triggered by an administrative fix to correct reporting problems in the Unranked Sites Report. This is not an actual ETM ranking and no answers were altered within the ETM. The only part of the record affected by this fix may be the ranking dates. (Reese)

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 47431 HOT E2 UST 214 FRSERA 2 P
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

A3
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 P **SHWS** **S110144084**
RANDALL ROAD N. OF BLDG. 47431 CC-FTRS-10, FORMERLY FORT RIC **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 3 in cluster A

Relative: Higher
Actual: 341 ft.

SHWS:

File Number:	2102.38.053
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.267525
Longitude:	-149.675379
Hazard ID:	3018
Problem:	The site is located on Army National Guard Camp Carroll Reservation, north of Hangar Building 47-431. 500-gallon heating oil tank was removed from the ground on May 14, 1998. 20 cubic yards of excavated soil was transported off site for thermal treatment and the excavation was backfilled with clean soil. Residual contamination remains. TU110 47-431 Tanks E1 & E2 CC-FTRS-10 Building 47431 Tank E1 UST 213. FRSERA 2 Party Site W021, Aircraft Maintenance Facility, 1990 RFA SWMU 67.

Actions:

Action Date:	8/31/1998
Action:	Report or Workplan Review - Other
DEC Staff:	Tim Stevens
Action Description:	On August 31, 1998, the ADEC received the site assessment report summarizing activities that took place during the closure of the heating oil tank closure. Maximum contaminant level at tank

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

excavation: diesel range organics 4,820 mg/kg from a duplicate sample, 2,880 mg/kg from tank pit bottom center and 3,710 mg/kg from tank pit bottom end (08/31/1998).Based on the information presented in the site assessment report, the Department is requesting the Department of the Army to conduct a release investigation of the former UST site. The purpose of the release investigation is to determine the full extent of soil contamination found during the site assessment, and to demonstrate that the groundwater has not been impacted by past releases at this site. The release investigation must be conducted by a qualified, impartial third party in accordance with the UST Procedure Manual, dated December 10, 1998. Please submit a work plan to the Department outlining the proposed work to be conducted as part of the release investigation.

Action Date: 8/29/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In August 2008, a test pit was excavated in the area where the highest lead level had been collected. Five soil samples were collected from the surface (0-0.5 feet bgs) to 8.5 feet bgs. The maximum analytical result for lead was 10.8 mg/kg. The cleanup level for lead in soil is 400 mg/kg. Therefore, it was determined that the original lead result (34,500 mg/kg) was an anomaly of unknown origin. No additional testing for lead is planned.

Action Date: 8/24/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP for PA/SIs at Sites SA034, SA033, AT035, and AT032 Site Characterization/Cleanup at Sites TA008, TU948, TU110, TU111, TU112, TU949, and SS001 Dated August 23, 2012 received. SA034 ??? TBD 2, Powerline Drum SiteTU949 Building 770 UST Site (CC-FTRS-05)SS001 - Building 796 (Battery Shop) (FTRS-01)SA033 ??? TBD 3, Otter Lake Road Drum SiteTA008 ???Biathlon Range Fuel Release (CC-FTRS-08)TU948 ???Building 57-428 UST Site (CC-FTRS-09)TU110 ???Building 47-431 Tanks E1 & E2 (CC-FTRS-10)TU111 ??? CC-FTRS-11, Tank E5TU112 ??? CC-FTRS-12, Tank E7AT035 ??? TBD 4 MEB Complex, COF (FTR269)AT032 ??? TBD 1, Airborne Training Facility (FTR255)Site characterization/cleanup activities proposed in this Uniform Federal Policy QualityAssurance Project Plan (UFP-QAPP) for Site TU110 are being conducted to support site closurein accordance with the Alaska Department of Environmental Conservation???s (ADEC) cleanupprocess for petroleum-hydrocarbon contaminated sites. The overall objectives for the site are to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet these objectives, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of ADEC???s site cleanup process (18 AlaskaAdministrative Code [AAC] 75 Sections 325 to 390 and 18 AAC 78 Section 600). Soil sampling analytical approach??? Soil samples will be collected at 5-foot intervals from the ground surface to 25 feet bgs, and at 10-foot intervals from 25 feet bgs to the water table (approximately 100 feet bgs) from up to eight boreholes??? If, based on photoionization detector (PID) field screening and visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, two samples will be collected beyond the last evidence of contamination, and the

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

boring will be terminated. ??? Continuous logging of soil type and stratigraphy, moisture or groundwater, visual observations of staining or liquid-phase petroleum, PID readings, and other observations will be performed??? All soil samples collected (up to 52 primary samples, excluding quality control [QC]) will be analyzed for gasoline-range organics (GRO); DRO; residual-range organics (RRO); and volatile organic compounds (VOCs), excluding the chlorinated compounds.??? A subset of soil samples (as described in Worksheet 17 of this appendix) will be collected for additional analyses to facilitate HRC calculations. These analyses include polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbon (VPH), extractable petroleum hydrocarbon (EPH), fraction of organic carbon (foc), bulk density, grain size distribution, specific gravity, and moisture content.Groundwater sampling approach??? Groundwater samples will be collected from three monitoring wells (at theTank E1 site) and up to two soil borings (at the Tank E2 site) using a HydroPunch sampler. Groundwater samples will be analyzed for GRO, DRO, RRO, VOCs (excluding chlorinated compounds), PAHs, VPH, EPH, and total organic carbon (TOC). Additional data to be collected for HRC analysis include the following:? Soil source zone temperature (field measurement)? Average precipitation/infiltration (estimate from available regional information)? Aquifer hydraulic conductivity (estimate from literature values based on grain size distribution or from available aquifer testing data from a nearby site)If Method 2 criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method 3 will be used to assess whether site conditions meet ADEC risk criteria (in which case a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case remediation, ICs, or both may be required). If unacceptable risk is indicated by the HRC, then remedial options that address the compounds and exposure routes that contribute most significantly to the cumulative risk will be evaluated.

Action Date:	7/22/2005
Action:	Update or Other Action
DEC Staff:	Aggie Blandford
Action Description:	File number issued 2102.38.053

Action Date:	7/21/2005
Action:	Update or Other Action
DEC Staff:	Sarah Cunningham
Action Description:	Site still active-unknown whether cleanup action has been performed.

Action Date:	7/20/2005
Action:	Site Added to Database
DEC Staff:	Sarah Cunningham
Action Description:	Transferred to CS database from LUST database.

Action Date:	6/11/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the well decommissioning work plan. This letter formalizes ADEC???s concurrence to finalize the document for decommissioning wells associated with TU110 (HOT E-1 & E-2), TU111 (HOT E-5), TU112 (E-7), and TU071 Bldg. 962. ADEC has no comments on

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

the document. These wells are no longer needed as part of the 2-Party Agreement sites nor are they needed for monitoring at any CERCLA sites on JBER-Richardson. Any significant changes to the approved work plan will need to be resolved with ADEC prior to implementing the changes.

Action Date: 5/30/2007
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 2007, additional site characterization was conducted at this site. Three boreholes weredrilled near the location of the heating oil feed line to the former building. Six soil sampleswere collected from each borehole at 5-foot intervals beginning at 5 feet below groundsurface (bgs). Analytical results for the soil samples confirmed that DRO concentrations at all three borehole locations were greater than the ADEC cleanup level of 250 mg/kg. The maximum DRO concentration (5,800 mg/kg) was in a sample collected from 5 feet bgs. DRO ranged from 1,500 mg/kg to 2,900 mg/kg in samples collected from the bottom of the boreholes (30 to 32 feet bgs).All 19 soil samples, including duplicates, were also analyzed for metals. An unusual high lead value of 34,500 mg/kg was reported for one sample collected from a depth of 5 to 7 feet bgs. The next highest reported lead values were 210 mg/kg (15-17 feet bgs) and 121 mg/kg (10-12 feet bgs). Lead values reported for the other 16 samples were less than 10 mg/kg.

Action Date: 5/20/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft work plan for UST Corrective Actions HOT TANKS Dated March 2011 contract no. W911KB-10-C-0029.3.3.1 ARC Tank E1 Soil ExcavationThe text states contaminated and noncontaminated soil will be stockpiled separately (short-term) and characterized according to the ADEC Draft Field Sampling Guidance document (ADEC, 2010). ADEC wishes to inform the Army for projects where field screening is being conducted with a PID set at 20 ppm or any other numerical level, this field screening will not substitute for definitive laboratory data required to demonstrate whether ???clean??? stockpiled soil is suitable for use as backfill material.3.3.2 Soil Borings and Monitoring Well Installation At ARC Tank E1The text states if it appears that the fuel hydrocarbons may have migrated to the water table, some of the soil samples will be collected at and below the water table to assess if the source extends into the zone of seasonal water table fluctuation. ADEC requests the Army collect soil samples from within the first six inches of the vadose zone above the zone of seasonal water table fluctuation. There is no regulatory requirement to collect soil samples from below the water table. If there are not any indications from field screening for areas with the highest contamination, then ADEC recommends the Army take the five samples from areas based on visual observation, best professional judgment by the field sampler for analysis of GRO, DRO, RRO, BTEX and PAH. There are no ADEC regulatory cleanup levels for EPH or VPH.The text states In addition, within the 4 site borings, a total of 5 samples from any location with no indication of contamination but representative of the soil conditions in the contaminated zones, will be collected and analyzed for total organic carbon (TOC). ADEC requests clarification on what the purpose of collect TOC data if the excavated soil will be sent

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

off site for thermal treatment. TOC data cannot be taken from the contaminated site (i.e. the former excavation of the UST) using the same site borings for obtaining samples from contaminated soil. ADEC has specific guidelines for TOC collection (see ADEC Technical Memorandum 08-002 dated September 30, 2008). Please refer to and comply with all the requirements of the memorandum if TOC data collection is still something the Army wishes to pursue for this project.

Action Date: 5/14/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: A 300-gallon heating oil tank (Tank E1) located at Site TU110 was removed in 1998. While previous reports identified it as a 500-gallon tank, the tank dimensions (5 feet, 1 inch long and 3 feet, 3 inches in diameter) measured during the UST removal indicate that the volume was more likely 300 gallons (Oil Spill Consultants). During the UST removal, approximately 20 cubic yards of contaminated soil was excavated and transported offsite for thermal treatment at Alaska Soil Recycling, Inc. (ASR). Confirmation soil samples collected from the base of the UST excavation had DRO concentrations up to 4,820 milligrams per kilogram (mg/kg) (Oil Spill Consultants). DRO at 4,820 mg/kg remains in the soil.

Action Date: 5/13/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: This Work Plan, in conjunction with the addenda presented herein, will guide corrective actions to be performed at the Army Reserve Center (ARC) Tank E1, ARC Tank E2, ARC Tank E5, ARC Tank E7, Building 57-428 Tank, Building 987, Biathlon Range, & Fort Richardson Landfill sites in accordance with the requirements of the U.S. Environmental Protection Agency & Alaska Department of Environmental Conservation (ADEC) guidance documents.Although the original building served by former UST E1 has been demolished, the concrete slab & footings remain in place. The site is located on ANG Camp Carroll Reservation, north of Hangar Building 47-431. The GPS coordinates for UST E1 are Latitude 61.26695, Longitude -149.67389. A 500-gallon heating oil tank (Tank E1) was located at the site & removed in 1998. Roughly 20 cubic yards of overburden was removed & thermally treated, but residual diesel fuel contamination was not addressed during removal. The site was backfilled with clean soil, but diesel range organic (DRO) contamination remains at the site (approximately 4,820 milligrams per kilogram [mg/kg] in soil).In 2007, additional site characterization was conducted at this site. Three boreholes were drilled near the location of the heating oil feed line to the former building. Six soil samples were collected from each borehole at 5-foot intervals beginning at 5 feet below ground surface (bgs). Analytical results for the soil samples confirmed that DRO at all three borehole locations were greater than the ADEC cleanup level of 250 mg/kg. The maximum DRO (5,800 mg/kg) was in a sample collected from 5 feet bgs. DRO ranged from 1,500 mg/kg to 2,900 mg/kg in samples collected from the bottom of the boreholes (30 to 32 feet bgs).All 19 soil samples, including duplicates, were also analyzed for metals. An anonymously high lead value of 34,500 mg/kg was reported for one sample collected from a depth of 5 to 7 feet bgs. The next highest reported lead values were 210 mg/kg (15-17 feet bgs)

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& 121 mg/kg (10-12 feet bgs). Lead values reported for the other 16 samples were less than 10 mg/kg. In August 2008, a test pit was excavated in the area where the highest lead level had been collected. Five soil samples were collected from the surface (0-0.5 feet bgs) to 8.5 feet bgs. The maximum analytical result for lead was 10.8 mg/kg. The cleanup level for lead in soil is 400 mg/kg. Therefore, it was determined that the original lead result (34,500 mg/kg) was an anomaly of unknown origin. No additional testing for lead is planned.Soil will be removed from the ARC Tank E1 site. POL contaminated soil will be excavated from an area 20 feet wide by 20 feet long by 10 feet deep. The location & boundaries of the soil excavation will be determined in the field by USACE & Bristol personnel.photoionization detector (PID) will be used to guide soil removal in the horizontal & vertical direction. The PID calibration will be conducted at the start of each day of use, & results will be documented in field notebooks, along with any deviations or repairs completed. The PID will be used to screen soil using a conservative level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil. The ???dirty??? & ???clean??? soil will be placed into separate stockpiles. The upper five feet of the excavation is considered ???clean??? & is expected to be reused as backfill, unless PID field screening indicates suspected contamination is present. The total volume of stockpiled soil is expected to be 74 cubic yards.After the excavation has been completed, soil from the sidewalls & bottom of the excavation will be field screened prior to sample collection for laboratory analysis. As per the ADEC Draft Field Sampling Guidance (ADEC, 2010), sidewall field screening samples will be collected at a rate of 1 per every 10 linear feet of excavation. For a 20 foot by 20 foot excavation (80 linear feet), a total of 8 field screening samples will be collected from the excavation side walls. Field screening of the excavation base (400 square feet) will be conducted at a rate of 10 for the first 250 square feet of excavation, plus an additional sample for each additional 100 square feet of excavation, for a total of 4 excavation base field screening samples.In addition to soil removal, 4 soil borings will be advanced and sampled to the groundwater table (approximately 100 feet bgs). Soil boring locations will be determined in the field by USACE and Bristol personnel.Three of the 4 borings will have a monitoring well installed to a depth of 10 feet intogroundwater (approximately 110 feet bgs). The monitoring wells will be constructed ofSchedule 40 polyvinyl chloride (PVC) casing, and will have a 15-foot section of screenedcasing across the water table (5 feet above groundwater and 10 feet below groundwater).

Action Date: 4/4/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for E1 and E2 at Bldg. 47431 for review and comment.E1DRO in boring TU110-SB11: 15 to 20 feet bgs at 979 mg/kg. The soil sample from 20 to 25 feet bgs at TU110-SB01 detected DRO at 12,700 mg/kg, which exceeds the maximum allowable concentration for DRO of 12,500 mg/kg.E2DRO in boring TU110-SB15: 10 to 15 feet bgs at 4,170 mg/kg; 15 to 20 feet bgs at 4,060 mg/kg. GroundwaterGroundwater is present at approximately 152 feet bgs. Monitoring wells E1-A, E1-B, and E1-C were sampled for GRO, DRO, RRO, VOCs, PAHs, EPH, and VPH. Free product was not observed in the monitoring wells. Based on groundwater sample results, groundwater is not affected by petroleum

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hydrocarbons. Groundwater was not encountered during any investigations at Tank E2. The maximum depth of soil contamination (25 feet bgs) is approximately 125 feet above the estimated depth togroundwater (150 feet bgs at Tank E1).

Action Date: 4/26/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Revision no. 2 for Corrective Actions HOT Tanks received. Soil will be removed from the ARC Tank E1 site. POL-contaminated soil will be excavated from an area 20 feet wide by 20 feet long by 10 feet deep. The location & boundaries of the soil excavation will be determined in the field by USACE & Bristol personnel.Soil from 5 feet bgs to 10 feet bgs is contaminated. This soil will be excavated & directly transported off site for thermal treatment & recycling. Treated soil provided by ASR will be used to backfill the excavation. The backfill will be compacted by track-walking with heavy equipment. Compaction testing will not be required.Soil confirmation samples for laboratory analysis will be collected from the floor & sidewalls of each excavation, after all of the PID field-screening samples are collected & measurements recorded. A total of 4 soil confirmation samples (excluding QC samples) are expected to be collected from the 4 sidewalls (1 per every 20 linear feet of excavation). In addition, a total of 3 soil confirmation samples (excluding QC samples) will be collected from the base of excavation (2 for the first 250 square feet & 1 for each additional 250 square feet of excavation). Soil samples will be collected & submitted for laboratory analysis & analyzed for GRO, BTEX, DRO, RRO, & PAH. Quantities of primary, QC, MS/MSD, equipment blanks, & trip blank samples to be collected for each sample matrix are listed in the SAP in Appendix B.The excavated soils will be stockpiled in accordance with 18 AAC 78.274. Contaminated & non-contaminated soil will be stockpiled separately (short-term) & characterized according to the ADEC Draft Field Sampling Guidance document (ADEC, 2010). Contaminated soil (estimated 135 tons) will be thermally treated & recycled at ASR. The excavated area will be backfilled with clean backfill material (approximately 135 tons) & compacted.In addition to soil removal, 4 soil borings will be advanced & sampled to the groundwatertable (approximately 100 feet bgs). The locations may be modified in the field based on the real-time field observations or issues. In general, one boring will be located in the area of highest suspected contamination. The other three borings will be placed within the zone of contamination to gain information for the HRC, but in areas that will also provide good hydrogeologic information (e.g., the borings will be placed in a square pattern instead of a linear pattern, so that potential monitoring wells can be used to collect hydrologic flow information).Approximately three soil samples per boring (excluding QC samples) will be collected &submitted for laboratory analysis of GRO/BTEX, DRO, & RRO (yielding a total of 12 soilsamples in addition to the excavation confirmation samples). Most of the soil samplessubmitted for hydrocarbon concentration analysis will be from the non-aqueous phase liquid(NAPL)-contaminated soil source zone???to facilitate HRC calculations the goal is to have atotal of at least 10 excavation & soil boring samples from the NAPL-contaminated soilsource zone. In addition, a total of five soil samples with the highest indication ofcontamination will be analyzed for extractable petroleum hydrocarbons (EPH), volatilepetroleum hydrocarbons (VPH), &

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

PAH (some of the EPH, VPH, & PAH samples may becollected from the excavation floor & sidewalls to reduce the difficulty of collecting therequired amount of soil from the split spoons). If it appears that the fuel hydrocarbons have migrated to the water table, some of the soil samples will be collected at & below the water table to assess if the source extends into the zone of seasonal water table fluctuation. Soil sampling below the water table will allow the vertical extent of the source to be identified as required by the regulations. Soil samples collected below the water table that are thought to be from the NAPL source zone will be analyzed for hydrocarbon concentrations (BTEX, GRO, DRO, RRO, & potentially PAH, VPH, & EPH).In addition, within the 4 site borings, a total of 5 samples from any location with no indication of contamination, but representative of the soil conditions in the contaminated zones, will be collected & analyzed for total organic carbon (TOC). Some soil samples collected in the saturated zone below the NAPL source zone may be analyzed for TOC (DRO analysis may beused to confirm that the TOC result is not due to hydrocarbons) to enable better retardation& half-life calculations. Lastly, up to 5 geotechnical samples will be collected at each site, including approximately 2 from the saturated zone, & analyzed to assess the particle size distribution (PSD), moisture content, & bulk density. Three of the 4 borings will have a monitoring well installed to a depth of 10 feet into groundwater (approximately 110 feet bgs).

Action Date: 4/22/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for TU110 (E1 and E2)Contaminants of ConcernDuring the 2012 and 2013 site characterizations at TU110, the maximum concentration of diesel range organics (DRO) was detected at E1 at a concentration of 12,700 mg/kg (TU110-SB01), from 20 to 25 feet bgs. At boring TU110-SB11 the maximum concentration of DRO was 979 mg/kg from 15 to 20 feet bgs. The maximum concentration of DRO detected at E2 was 4,170 mg/kg from boring TU110-SB15 at 10 to 15 feet bgs. Groundwater sampling results did not have any exceedances for any contaminant concern. Groundwater is at approximately 150 feet bgs. ADEC does not recognize the Tables 5-7, 5-8 and 5-9 in 2013 Site Characterization report which lists concentrations for aromatics and aliphatics in groundwater or pore water concentrations under Method Three as cleanup levels for TU110. Current regulations do not list aromatic and aliphatic cleanup levels for groundwater in Table C. However, since groundwater results did not exceed Table C cleanup levels for any contaminant of concern, it is not an issue at TU110.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU110 is based on the ingestion pathway for the under 40??? Zone at 10,250 mg/kg. Soil is contaminated with higher levels of DRO at 12,700 mg/kg (20 to 25 feet bgs), but it is below 15 feet bgs, not likely to be excavated in the future as part of any military construction activities, and sampling results shows there are no impacts to groundwater at 150 feet bgs and not likely to be impacted in the future. In accordance with 18 AAC 75.380(d)(1), after reviewing the site characterization report submitted under this section, ADEC has determined TU110 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU110. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU110. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 3/5/2008
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: GPS on site by contractor during release investigation.

Action Date: 3/4/2008
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Tank E1 Release Investigation Report, Fort Richardson, AK February 2008.Without the completed sample chain of custody (COC) forms, ADEC cannot concur with the results of the report which state residual range organics, gasoline range organics, polynuclear aromatic hydrocarbons, benzene, toluene, ethylbenzene, total xylenes and the majority of metals were below ADEC soil cleanup levels. The report did not include any completed, signed and dated COC forms as an appendix to the document. ADEC will require submittal of all COC forms for review and its records associated with this site. ADEC concurs with the recommendations on the need for additional characterization at Tank E1 for both diesel range organics (DRO) and lead. Soil contamination for lead at 34,500 mg/kg may be considered a hazardous waste if it fails the toxicity characteristic leaching procedure (TCLP). Please note, ADEC review and comment on this report is to ensure that the work is done in accordance with State of Alaska environmental conservation laws and regulations. While ADEC may comment on other state and federal laws and regulations, our comments does not relieve the Army or its contractors, subcontractors, from the need to comply with other applicable laws and regulations. It is interesting to note photoionization detector (PID) results did not correlate with DRO lab results (i.e. low PID=low sample results or high PID=high sample results). For example, at E1-1 sample 07FR01SL, taken from five to seven feet below ground surface (bgs) had the highest level of DRO at

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

5,800 mg/kg, but field screening with a PID was zero (0) ppm. The second highest DRO levels were from sample 07FR03SL, taken from fifteen to seventeen feet bgs, with DRO results of 5,600 mg/kg and PID reading of 166 ppm. Alternatively, the highest PID reading of 254 ppm for E1-2 sample 07FR13SL, taken from thirty to thirty-two feet bgs had only DRO results of 1,500 mg/kg.

Action Date: 3/12/1999
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: Oil Spill Consultants sent a letter to Tim Stevens clarifying UST soil management for the site. OSC Inc. prepared site assessment reports for UST numbers E1, E2, E5, and E7 during August 1998. Section 2.4 states soil excavated for UST removal was shipped off-site for thermal treatment. It should instead read: The soil excavated for UST removal was stockpiled near Circle Drive at Fort Richardson, Alaska pending ADEC approval for off-site shipment to a thermal treatment facility in the Anchorage area.This statement accurately reflects the work performed as part of the UST removal process by Brown & Root Services Corporation. After received ADEC approval, Fort Richardson will arrange for another contractor to transport the soil to a thermal treatment facility (12 Mar 1999).

Action Date: 3/11/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: ADEC project manager issued a Notice of Release letter to the US Army that a release investigation is required at this site to find the full extent of the contamination found during the tank closure. Notice of Release for Fort Richardson Facility ID 0-000788, Tank 213 (Alternate ID E1) LUST Event ID 2276. On August 31, 1998, the Alaska Department of Environmental Conservation (ADEC) received a site assessment report from the Department of the Army documenting the May 14, 1998, closure of a 500-gallon underground storage tank system (UST) located at the corner of Westbrook and Roosevelt Drive, near Building 47431, Fort Richardson, Alaska. The information presented in the report indicates a petroleum release to the environment has occurred at this site. This letter confirms the release was reported. The following information is provided as a summary of current laws, regulations and guidelines to further assist you in responding to the release. Please read this information, and check to ensure you have performed or will be performing the required actions in order to comply with the Alaska Underground Storage Tank Regulations 18 ACC 78.Initial Abatement and Release InvestigationIf a release is confirmed, the owner or operator must conduct an Initial Abatement and Release Investigation, in accordance with 18 AAC 78.230 and 235. The Initial Abatement and Release Investigation includes, at a minimum, the following:1.Preventing further release of product,2.Continuing to monitor and reduce fire and safety hazards,3.Storing excavated contaminated materials in a manner that prevents further migration of contaminants,4.Measuring the extent and location of soils and ground water contaminated by the release, and5.Investigating the possible presence of the free product and, if present, initiating removal of free product.In addition, the collection of field data and submittal of reports shall be conducted by, or supervised by, a qualified, impartial third party that has been currently approved and is one file with the Department. The

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 PARTY TU110 (Continued) **S110144084**

Department may waive the requirement for an impartial third party under certain conditions. The Release Investigation report shall be submitted to the Department within 45 days respectively after confirmation of the release.Corrective ActionIn addition, upon confirmation of a petroleum release, the owner or operator of the UST must undertake Corrective Action in accordance with 18 AAC 78.240. Corrective Action includes, at a minimum, the following:1.Determining the nature and amount of the release,2.Conducting a preliminary risk evaluation,3.Determining the full extent and location of soils contaminated by the release,4.Determining the presence and concentration of dissolved contamination in the ground water,5.Removing free product (if present) from soils and ground water,6.Treating or removing contaminated soil and ground water, and7.Treating and/or disposing of contaminated cleanup materials, including soil and/or water removed from the area affected by the release.Corrective actions must be documented in an Interim Corrective Action Report (18 AAC 240(c)(1)) submitted to the Department within 60 days after the confirmation of a release.Based on available information, the Department may request submittal of additional information and/or work plans (not listed above) which are determined necessary to respond to this release. All work plans for site assessment, release investigation, and corrective action must be submitted to and approved by ADEC prior to implementation.You will satisfy both state and federal regulations by following the requirements outlined above.Please include the file number and the facility name shown at the top of this letter in any correspondence.Cost RecoveryThe State considers you a responsible party (RP) and will cost recover all ???oversight??? costs if additional work is necessary to close out the site. The RP will be sent a letter from Department of Law along with a detailed invoice of oversight costs and associated activities. Oversight costs can include Department staff salaries, travel, equipment, supplies, contracts and services, and general program management. Typical cost expenditures for staff time can include, but are not limited to: performing plan reviews; drafting approval letters; attending site meetings; offering technical assistance via phone; and doing site visits or inspections. The State of Alaska is authorized, under Federal regulation 42 U.S.C. 699 1 b(h), to recover funds used during oversight of a petroleum cleanup from a leaking underground storage tank (LUST). The State is also authorized by the State of Alaska comes from the Alaska Statute 46.08.070 to recover money expended by the Department to contain or cleanup the release of oil or a hazardous substance, including petroleum.

Action Date: 2/8/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/7/2011
Action: Exposure Tracking Model Ranking
DEC Staff: Bianca Reece
Action Description: Initial ranking with ETM completed for source area id: 73993 name: Underground tank

Contaminants:
Staff: Not reported

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Contaminate Name1: JBER-Ft. Rich Bldg 47431 HOT E1 UST 213 FRSERA 2 P
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

B4 **JBER-FT. RICH TU009 DAVIS HIGHWAY UST** **SHWS S111750317**
NW CORNER OF DAVIS HIGHWAY AND STEVENS ROAD INTERSECTION **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 2 in cluster B

Relative: Higher
Actual: 356 ft.

SHWS:
File Number: 2102.38.061
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.271181
Longitude: -149.663594
Hazard ID: 25861
Problem: On 16 September 2011, an underground storage tank was struck by an excavator during utility work to install an overhead power pole. Approximately 20 gallons of the contents were spilled, which affected approximately 50 square feet. The tank was nearly full and contained approximately 1,450 gallons of fuel. Based on the presumed age of the tank, proximity to the building foundation, field observations, and analytical results, the tank most likely contained diesel fuel for heating the former building.

Actions:
Action Date: 9/16/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: On 16 September 2011, the tank was struck by an excavator during utility work to install anoverhead power pole. Approximately 20 gallons of the contents were spilled, which affectedapproximately 50 square feet. The damaged area of the tank was patched with plumber???s puttyand the tank contents were immediately pumped out to prevent further spillage. The tank wasnearly full and contained approximately 1,450 gallons of fuel. This UST is located on U.S. Army land at the current entrance to the Camp Carroll facilitiesof the National Guard. Historical photographs from 1964 show what appears to be a guardstation immediately adjacent to where this UST was located. The concrete pad from thisbuilding remains onsite and currently has a vintage troop transport vehicle displayed on top.Small diameter copper piping was discovered leading from the UST to this concrete pad. A USACE Traverse Station survey marker (MB85) found on the concrete pad adjacent to the UST indicates an installation date of 1952. It is likely that the Davis Highway UST was installed around 1952 as well.Based on the copper piping, presumed age of the tank, the proximity of the tank to the concrete building foundation, field observations, and a cursory records review, it was concluded that the UST contained fuel for use as heating oil for the guard station.The

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

soil affected by the spill was excavated and contained in a lined stockpile onsite.

Action Date: 8/12/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the JBER responses to its comments on the draft UFP-QAPP for TU009 Davis Hwy UST and finds the responses adequate. Please finalize the document. ADEC approval of this site-specific UFP-QAPP is assumed by this email concurrence of the changes to the RTCs for TU009.

Action Date: 7/9/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft UFP-QAPP.Communication PathwaysQAPP Amendments The text states: ???Any major changes to the QAPP must be approved by the AFCEC COR/PM before they can be implemented.???JBER or AFCEC shall notify ADEC of any amendments or major changes to the final approved UFP-QAPP. ADEC will review and approve any/all QAPP amendments. This approval by ADEC is required in addition to any AFCEC COR/PM approvals to the final ADEC approved site-specific UFP-QAPP.Add new sectionStop work/initiate corrective actionRequested text: ???URS, JBER and AFCEC all have authority to stop work and initiate CAs should any one person believe there is a reason to do so. Whoever stops work or initiates CAs will inform all other interested parties immediately. ADEC must be notified as soon as possible, but not later than 24 hours after such stoppage of work. The notification requirement will apply to activities undertaken in furtherance of this site-specific UFP-QAPP (or as applicable to the Federal Facility Agreement) or any other circumstances or activities at the site creating an imminent and substantial endangerment to the health and welfare of the people on the site or in the surrounding area or to the environment. JBER, URS and/or AFCEC shall provide ADEC with written documentation of its analysis in reaching this work stoppage determination within five days of any such stoppage.??? Tables 12-1 and 12-2Accuracy and Precision Criteria for VOC and SVOC Analysis JBER, AlaskaPlease ensure following compounds (see Appendix G ADEC VI Guidance for Contaminated Sites October 2012) are included for groundwater analysis and in this table: n-Butlybenzene, sec-Butylbenzene, tert-Butylbenzene, cyclohexane, n-Hexane, Isopropylbenzene (Cumene), 1-Methylnaphthalene, n-Propylbenzene, Styrene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene. On Page 12-8, Table 12-2 should state SVOCs not VOCs. WS 17Sampling Design and RationaleDirect Push Soil BoringsThe text states: ???If contamination is encountered at the bottom of the boring (40 feet bgs), direct push soil sampling will continue, when technically feasible, to reach the bottom of contamination.??? ADEC will require two soil sampling intervals beyond the ???bottom??? of the contamination to demonstrate the extent of contamination has been reached for sites on JBER-R.The text shall state the following to be consistent with JBER-E UFP-QAPPs approved by ADEC regarding soil sampling from soil borings: ???Soil borings will be advanced two ???clean??? sample intervals beyond the bottom ofcontaminated soil, if the contamination does not extend to the water table, or toone ???clean??? sample interval below the bottom of contaminated soil if thecontaminated soil extends to or below the water

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

table.???Groundwater Monitoring WellsThe text states: ??????one sample will be collected from the smear zone (if present) just above the top of the water table from each well boring for chemical analysis. One well will be installed within the footprint of the excavation that held theformer UST. For this boring, soil sampling will be completed every five feet below a depth of 10 feet bgs, below the base of the backfill the entire depth for lithologic characterization and headspace analysis.???ADEC will require that one ???clean??? sample interval be collected below the bottom of contaminated soil if the contaminated soil extends to or below the water table. This is consistent with other UFP-QAPPs approved for JBER-E and shall be required for JBER-R.

Action Date: 7/2/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Work Plan for site received for review and comment.The purpose of this site characterization is to confirm the presence or absence of contaminationin soil and groundwater above cleanup levels related to releases from the UST described above.The scope includes the following activities:??? Develop a project-specific work plan (the PAWP), with DQOs, and supplemental plans, including a UFP-QAPP (URS 2013a) and HSP (URS 2013b).??? Collect additional physical and analytical data to further characterize the site, including the geology and hydrogeology, and confirmation of the presence or absence of soil andgroundwater contamination. Additional data to be collected include soil and groundwateranalytical data, lithologic data, location survey data, and water level data.??? Prepare a Site Characterization Report that includes recommendations for further investigation(s), interim remedial action, remedial action, and/or no further action for closure.The Davis Highway UST site is a State-regulated site. This site characterization is beingcompleted in accordance with Title 18 of the Alaska Administrative Code (AAC) Chapter 78.??? Soil analytical and groundwater, including chemical analysis for benzene, toluene,ethylbenzene, and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), and totalpetroleum hydrocarbons (TPH) ??? diesel???range organics (DRO). The types and mediaspecificquantities, along with specific analytical methods are detailed in the UFP-QAPP.??? Lithology??? Water level data??? Location survey data. Accuracy requirements for location survey data are reported in theUFP-QAPP.

Action Date: 3/30/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC review commetns on the draft Site Assessment for the Davis Highway UST. GeneralConceptual Site ModelADEC requests JBER provide an updated conceptual site model based on the information gathered to date in accordance with ADEC???s Policy on Developing Conceptual Site Models (October 12, 2010). 1.0IntroductionFort Richardson Post Wide Work Plan (August 2010) references out of date regulations (e.g. 18 AAC 75 October 2008). 18 AAC 75 Oil and Other Hazardous Substances Pollution Control has been revised as of October 1, 2011. Field sampling should be conducted in accordance with ADEC???s draft Field Sampling Guidance (May 2010) and, where applicable, ADEC???s UST Procedure Manual (November 7, 2002). State in the text that the site assessment was conducted at this site in accordance with the

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

requirements of the 1994 State-Fort Richardson Environmental Restoration Agreement. 1.3Site CharacterizationADEC requests JBER provide a reference for the depth of groundwater at 70 feet bgs (e.g. based on the water level from the nearest monitoring well MW-123, located 1,320 feet to the northwest). 2-1Soil Sampling And ResultsADEC requests JBER provide the depth of the sample taken from contaminated soil in the excavation near the piping. Table 2-1Field Screening and DRO ResultsADEC requests JBER include depth below ground surface for location IDs: F1, F2, F3, F4, P2, W1, W2, W3, W4, and W5. Figure 2-1Sample LocationsSee comment 4 regarding including information regarding depth of samples. Table 2-2Soil Exceedance SummaryADEC requests text be added for 11DUST-STKP1-SO indicating the depth of the sample or where on the excavation wall the sample was taken. Simply stating ???These samples were collected from sufficient depth to capture volatile compounds?????? does not give the reader enough information on the exact depth the sample was collected from the excavation wall. 2.4Groundwater MonitoringDepth to groundwater is inferred at 70 feet based on unknown information that is not presented in this report. ADEC disagrees that migration to groundwater of contaminants is not a concern. Diesel range organics (DRO) is well above the 250 mg/kg migration to groundwater cleanup level (17,700 mg/kg, 13,900 mg/kg, 9,520 mg/kg and 9,010 mg/kg). The extent of contamination (both horizontally and vertically) has not been fully characterized. ADEC request JBER provide information regarding: horizontal distance from the site to surface water and water supply intakes, the potential for surface water run-off from the site, whether or not there are any occupied buildings within 30 feet, soil type(s) of fill material and native soil (18 AAC 75.341 Soil Cleanup Levels Figure 1) and the potential for surface water or sediment contamination.5.0ReferencesADEC requests the reference to 18 AAC 75 be updated (the regulations have been revised as of 2011) to read:ADEC. 2011 (October). 18 AAC 75. Oil and Other Hazardous Substances Pollution Control.

Action Date:	3/29/2012
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 79277 name: JBER-Ft. Rich Davis Highway UST

Action Date:	3/28/2012
Action:	Spill Transferred from Prevention Preparedness and Response Program
DEC Staff:	Mitzi Read
Action Description:	Spill transferred by PERP staff Michele Sherwood. Spill no. 11239925901; spill date = 9/16/11; substance = diesel; quantity ~20 gallons.

Action Date:	3/28/2012
Action:	Site Added to Database
DEC Staff:	Mitzi Read
Action Description:	A new site has been added to the database

Action Date:	3/19/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Davis Highway UST Removal & Site Assessment received. The Davis Highway UST (10’ 2 Long 4’ 6 tall) was inspected by Jacobs

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

Engineering Group (Jacobs) on 18 October 2011. The tank was partially exposed, and the overburden soil had a slight fuel odor. Approximately 5 gallons of liquid remained in the tank. There was piping approximately 1 inch above the tank leading from the adjacent concrete pad. Soil staining was observed near the piping for the tank and a strong fuel odor was present. On 1 November 2011, one field screen (P1) was taken and an analytical sample collectedfrom the contaminated soil in the excavation near the piping. The sample was analyzed for waste characterization as required by the thermal treatment facility (Alaska Soil Recycling [ASR]). It was found to contain DRO at a concentration of 8,870 mg/kg.Excavation was 10' wide x 16' long x 8' deep and top of tank was 2' below ground surface. Analytical results indicate that one wall sample, two floor samples, and the sample taken at the pipe exceed the most stringent ADEC Method Two under 40-inch zone cleanup levels for benzene, DRO, 1- and 2-methylnapthalene, and naphthalene.11DUST-STKP1-SO STKP1 Pipe/Pile 1 26.6 ppm (PID) 8,870 mg/kg DRO JTE = Result estimated due to cooler temperature blank that exceeds 6 degrees Celsius. 11DUST-STKP2-SO S5 Stockpile 2 83.5 ppm (PID) 13,900 mg/kg DRO11DUST-F1-SO F3 Floor, S/SE 244.0 ppm (PID) 9,010 mg/kg DRO, 1-Methylnaphthalene 31.2 mg/kg, 2- Methylnaphthalene 52 mg/kg, naphthalene 21.2 mg/kg, benzene 0.052 mg/kg11DUST-F2-SO F4 Floor, E/NE 257.0 ppm (PID) 2,220 mg/kg DRO, 1-Methylnaphthalene 8.8 mg/kg, 2- Methylnaphthalene 15 mg/kg.11DUST-PIPE-SO* P2* Feed Pipe * 17,700 mg/kg DRO11DUST-W1-SO W1 Wall, W 87.6 ppm 9,520 mg/kg DROThe Work Plan specified that samples should be collected at 18 inches below the stockpilesurface. However, the following deviations occurred:??? On 1 November 2011, prior to tank removal, waste characterization sample 11DUSTSTKP1-SO was collected from 3 inches to 6 inches into the excavation wall at the location showing the highest signs of contamination.??? On 8 November 2011, field screens and analytical sample 11DUST-STKP2-SO were collected 12 inches below the surface of Stockpile 1, and intermittently from the excavator bucket while Stockpile 2 was formed.These samples were collected from sufficient depth to capture volatile compounds given theshort time the soil had been out of the ground before sampling as well as the cold soil and airtemperatures. Furthermore, according to the ADEC Draft Field Sampling Guidance, ???Stockpile soils that are to be taken to an ADEC approved treatment facility are excluded from the field screening and laboratory sampling frequency??? (ADEC 2010). The stockpiled soils from the UST removal site were taken to ASR, an ADEC-approved thermal treatment facility after initial laboratory sampling confirmed fuel contamination.Lastly, according to the Work Plan and the ADEC Draft Field Sampling Guidance (ADEC 2010), excavations between 125 and 250 square feet require one field screening sample per 25 square feet, for a total of six from a 143-square-foot excavation. In this case, four field screening samples were collected from the floor of the excavation. The field team directed the excavator to take scoops for the collection of field screening samples. They subsequently collected analytical samples from the areas of highest suspected contamination from the portions of soil in the excavator bucket that appeared to be most contaminated as guided by staining. Therefore, although the number of field screening samples collected is deficient, the most contaminated areas at the site are represented. Additionally, the data results indicate that the site is highly contaminated and additional samples would not have aided characterization of the excavation floor.Groundwater was not

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

encountered during the UST removal process and no groundwater samples were collected. AP-3905 is located less than &188; mile southwest along the Davis Highway and the groundwater level in that well occurs at a depth of more than 160 feet bgs. Migration of contaminants was not investigated during this site assessment, but is considered unlikely given the depth to groundwater.The UST discovered and punctured during permitted construction activities in September 2011 was successfully removed and recycled in November 2011. In addition, 35 cy of contaminated soil was removed and thermally treated. Contamination is still known to be present at the site, as indicated by analytical samples collected during the removal. The current extent of contamination is unknown. The site is recommended to be added to the ADEC Contaminated Sites Program and the JBER land use control database. In accordance with State regulation, a release investigation will be necessary to determine the extent of contamination.

Action Date: 3/12/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for TU009. The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the referenced site known as the Davis Highway UST (TU009). This decision document memorializes the site history, cleanup actions, cleanup complete determination, and standard conditions for long-term site management for CS DB Hazard ID 25861 and file number 2102.38.061.Contaminants of Concern1-methylnaphthaline, 2-methylnaphthalene, and diesel range organics (DRO).Cleanup LevelsThe Method Three alternative cleanup level for soils at TU009 containing 1-methylnaphthalene contamination is 760 mg/kg in the Under 40-inch Zone based on the inhalation pathway. The Method Three alternative cleanup level for soils at the site containing 2-methylnaphthalene contamination is 750 mg/kg in the Under 40-inch Zone based on the inhalation pathway. The Method Three alternative cleanup level for soils at the site containing DRO contamination is 10,300 mg/kg in the Under 40-inch Zone based on the inhalation pathway. Based on the analytical data for soil samples collected, groundwater samples collected, Method Three Calculator results based on the residential land use scenario, residual DRO, 1-methylnaphthalene, and 2-methylnaphthalnene in soil at the site does not pose a migration to groundwater concern.The Method Three Online Calculator was used to evaluate risk from petroleum contamination at TU009.Based on a hypothetical residential scenario (most conservative), the cumulative cancer risk for the site was calculated to be 7x10-7, and the cumulative hazard index for the site was calculated to be 0.5.for petroleum hydrocarbons. An ecoscoping form was completed for TU009 and no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed and that the site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that the site known as the Davis Highway UST (TU009) has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

75.380(d)]. A ???cleanup complete??? designation will be entered for the site in the Contaminated Sites Database1.Any proposal to transport soil or groundwater off-site from the Davis Highway UST (TU009) requires ADEC approval in accordance with 18 AAC 75.325. A ???site??? [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.2.Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. 3.Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process.

Action Date: 2/9/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Air Force's revisions and responses are acceptable to ADEC. Finalize the document and provide ADEC with one hard copy and complete electronic copy on CD for this site. A Cleanup Complete letter will be forthcoming shortly for the site once the final documents are received by ADEC.

Action Date: 12/17/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the SC report. 4.2Potential Exposure PathwaysADEC will require a new section (4.3) where there is discussion regarding ecological receptors and the results of the ecoscoping form (referenced in an NEW Appendix F) completed for the site. For example, as is done for other SC reports when discussing ???Ecological Risk Evaluation??? section, ADEC is looking for similar text as follows: In accordance with 18 AAC 75.325 and ADEC???s ecological risk guidance, a site is considered protective of the environment based on the following criteria:??? No visible staining of surface soils.??? No observed stunted vegetation. Plants do not significantly take up or accumulate hydrocarbons in their tissues.??? No significant surface water runoff or sediment transport from the site to surface water bodies.??? Groundwater is not likely to cause a violation of the water quality standards in 18 AAC 70 for surface water or sediment.??? Petroleum hydrocarbon???contamination in soil is less than 0.5 acre (considered insignificant).Ecological risk evaluation conclusions for Davis Highway UST are as follows:??? No visible staining of surface soils was observed at the site.??? No stunted vegetation was observed at the site.??? There is no significant surface water runoff or sediment transport from the site to surface water bodies. The nearest surface water bodies to Davis Highway UST are Ship Creek, which is X.X miles south of the site, and NO NAME Lake, which is 1.4 miles northwest of the site. ??? Groundwater is not likely to cause a violation of the water quality standards in 18 AAC 70 for surface water or sediment. Groundwater at the site is not closely connected hydrologically to nearby surface water and does not discharge to surface water near to the site. Groundwater was not encountered during the investigation.??? Petroleum hydrocarbon contamination in soil is less than 0.5 acre and is therefore considered insignificant.??? All potentially complete ecological exposure pathways are considered insignificant because of the small size of the site, the location within the community, and

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

the presence of more optimal habitat nearby.??? The ADEC Ecoscoping form was completed for Davis Highway UST, and it is presented in Appendix F.Davis Highway UST achieved the ???off-ramp??? in Part 3 Habitat of the Ecoscoping form, indicating that exposure pathways and routes for ecological receptors are incomplete, which demonstrates that ecological risk is not of concern.Remedial Action AlternativesHRC is discussed as a remedial action alternative. ADEC requests the Air Force delete all reference to the HRC and instead mention develop alternative cleanup levels using the ADEC Method Three Online Calculator. If HRC is to be used at this site, then the Air Force would be required to remobilize in 2015 to collect EPH/VPH data in and around the direct push location DHUST-DS01 where PID results at 3??? below ground surface were 215 ppm, 1-methylnaphthalene was detected at 6.5 mg/kg at 8??? bgs and 2-methylnaphthalene was detected at 15??? bgs at 9.4 mg/kg5.4Hydrocarbon Risk CalculatorADEC recommends the Air Force instead use the ADEC Method Three Calculator to generate ACLs with existing data to demonstrate no risk is present at concentrations detected on site. If HRC is chosen, then additional data is needed for VPH and EPH analyses. Conclusions and RecommendationsLast ParagraphADEC does not concur with the use of the HRC at this site based on the data collected to date. Additional data will be required and ADEC recommends the Air Force include the following: a completed ecoscoping form, discussion (see above in Comment 1) regarding ecological receptors, Method Three Calculator results demonstrating no exceedances of cumulative cancer risk of 1 x 10-5 or hazard index of one with the most conservative residential approach, no buildings are present within 30??? of the site,ACLs for 1-methylnaphthalene, 2-methylnaphalene set at the inhalation cleanup level,no exceedances of Table C groundwater cleanup levels at the site,and any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. Using the existing data, ADEC has come up with some preliminary ACLs for the site after inputting the data into the Method Three Calculator: Based on inhalation pathway for 1-Methylnaphthalene the ACL will be 760 mg/kg. Based on inhalation pathway for 2-Methylnaphthalene the ACL will be 750 mg/kg.Based on ingestion pathway for DRO the ACL will be 10,250 mg/kg.Then the Air Force may request ADEC approve a ???cleanup complete??? request in the revised document.

Action Date: 12/16/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SC Report received for review and comment. Soil Results1-methylnaphthalene concentration of 6,500 micrograms per kilogram (&181;g/kg), exceeding the cleanup level of 6,200 &181;g/kg; a 2-methylnaphthalene concentration of 11,000 &181;g/kg, exceeding the cleanup level of 6,100 &181;g/kg; and a DRO concentration of 3,700 milligrams per kilogram (mg/kg), exceeding the cleanup level of 250 mg/kg. The sample collected from 15 feet bgs at DHUST-DS01 exhibited a2-methylnaphthalene concentration of 9,400 &181;g/kg, exceeding the cleanup level of 6,100 &181;g/kg,and a DRO concentration of 5,900 mg/kg, exceeding the cleanup level of 250 mg/kg. The sample collected from 18 feet bgs at DHUST-DS01 exhibited a DRO concentration of 920 mg/kg, exceeding the cleanup level of 250 mg/kg.Conclusions and RecommendationsA total of 10 direct push borings were completed at the Davis Highway UST site to determinethe

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

lateral and vertical extent of fuel contamination remaining in subsurface soil at the site. Field screening and analytical results indicate that approximately 250 cubic yards of soil with 1-methylnaphthalene, 2-methylnaphthalene, and DRO above ADEC cleanup levels remains belowthe southern footprint of the UST excavation area. Benzene and naphthalene were identified asCOCs in soil following sampling completed after excavation activities. However, benzene andnaphthalene were not detected above ADEC cleanup levels in any soil samples collected duringthe site characterization activities.Three monitoring wells were installed at the Davis Highway UST site to determine impacts togroundwater, if any, from contamination encountered during excavation activities. Only tolueneas detected in groundwater at concentrations below ADEC cleanup levels. Therefore,groundwater does not appear to have been impacted by soil contamination.Based on the limited amount and depth of soil contamination remaining at the site and the remotelocation of the site (limiting exposure receptors), evaluation using the HRC is recommended forthe Davis Highway UST site. If the HRC shows that there is no current or future risk to humanhealth at the site, the site would be recommended for closure. If the HRC shows that current orfuture risk to human health is present at the site, one of the three previously discussedalternatives may be implemented.

Action Date: 10/31/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Technical Memorandum for Davis Highway UST Removal Work Plan received. Based on the condition of the UST, it is anticipated that the tank can be removed intact. The excavation area will be approximately 15-feet by 15-feet by 8-feet bgs (1,800 cubic feet) toremove the UST and associated piping. This will result in approximately 50 cubic yards (75 tons) of contaminated soil that will need to be treated or disposed. These quantities were determined based on the volume of soil that has already been excavated and the volume still remaiining above the tank. Approximately 70 cubic yards of clean fill will be required to backfill the excavation. Waste soil and tank sludge will be thermally treated or disposed of, depending on the analytical results. Sampling PlanThe Air Force has determined that the UST probably contained heating oil. According to Appendix F ofthe Draft Field Sampling Guidance (Alaska Department of Environmental Conservation (ADEC 2010), the contaminants of potential concern for the site and the associated laboratory test methods are as follows:??? GRO (AK101)??? DRO (AK102)??? RRO (AK103)??? VOC (SW8260), BTEX only??? PAH (SW8270-SIM)Following the UST removal and excavation of any visibly contaminated soils, and analytical samples will be collected at the frequencies listed in Section C of the Sampling Guidance using the field scree soil field screening Draft Field Sampling Guidance using the field screening and sampling procedures detailed in the Post Wide Work Plan (USACE 2010). Based on the estimated excavation size of 15’ x 15’, samples for laboratory analyses will be as follows:Two samples collected fromt he excavated (waste) soil and five samples plus one duplicate sample collected from the excavation floors and sidewalls. Data will be evaluated using the processes listed in the Post Wide Work Plan (USACE 2010). Analytical results will be compared to the most stringent soil cleanup levels for the under 40 Inch Zone listed in Title 18 of the Alaska Administrative Code, Chapter 75 for assessment purposes (ADEC

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

2008). The final report will describe the tnak removal and excavation activities, soil treatment, analytical results and data quality assessment.

Action Date: 1/7/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Davis Highway UST Removal Site Assessment (final) dated August 2011 received. On 8 November 2011, the field crew removed contaminated soil from the top and sides of the UST. All fuel lines were disconnected, the tank was removed from the excavation with a cable attached to the excavator bucket, and the tank placed near the excavation for cleaning. After removal of the tank, the field crew noticed visible staining along with a strong fuel odorbeneath the fill pipe on the north end of the excavation. Given that the tank was full of fluid when it was struck, it is likely that the tank was fully intact and free of defects until it was struck by the electrical contractor. However, the amount of contamination near the fill pipe indicates that the pipe or connection to the tank may have been leaking slowly for an extended period of time.The most contaminated soil as determined by visual cues (primarily from beneath the fill pipeat the northwest corner and the floor) was removed until a total of 35 cubic yards (cy) wasexcavated and stockpiled for disposal. An unknown volume of contaminated soil was left inplace. Additional characterization will need to be conducted at the site to characterize theextent of contamination.Soil removed from above and around the UST was transported to ASR for thermal treatment. Weight tickets are presented in Appendix E. Treated soil from ASR was used to backfill the excavation and was topped with 10 cy of topsoil. The backfill was compacted with the excavator tracks.The UST discovered and punctured during permitted construction activities in September 2011 was successfully removed and recycled in November 2011. In addition, 35 cy of contaminated soil was removed and thermally treated. Contamination is still known to be present at the site, as indicated by analytical samples collected during the removal. The current extent of contamination is unknown. A conceptual site model has been developed with the information currently available for the site. The site is recommended to be added to the ADEC Contaminated Sites Program and the JBER land use control database. In accordance with State regulation, a release investigation will be necessary to determine the extent of contamination.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU009 Davis Highway UST
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

JBER-FT. RICH TU009 DAVIS HIGHWAY UST (Continued) **S111750317**

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU009 Davis Highway UST
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

C5 **JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PAR** **SHWS S110144148**
WESTBROOK AVE. BRYANT AIRFIELD, FORMERLY FORT RICHARDSON BEF **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 5 in cluster C

Relative: SHWS:
Lower
Actual: File Number: 2102.26.040
331 ft. Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.263872
Longitude: -149.676933
Hazard ID: 23910
Problem: Last staff assigned was Howard.Point of contact is Mark Prieksat 384-3042

Actions:

Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date: 7/13/1991
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 7/12/1991
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 2/5/1995

JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PARTY (Continued) **S110144148**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met: Tanks65A, 67 A, 68A & 69A- These tanks have a four(4) inch liquid level gage, and a two (2) inch manual gauging pipe, located inside the STI-86 containment system manhole surrouilding the fill pipe. This system appears to meets the spill containment requirements of a catchement basin. These tanks are also connected to an ILS-250 interstitial monitor/overfill alarm system.

Action Date: 11/29/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: CLOS; No further action required.

A6 **JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 P** **SHWS** **S110144158**
NEAR BLDG 47431; ROOSEVELT DR & WESTBROOK CC-FTRS-10, FORMER **LUST** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505** **INST CONTROL**
1 ft.

Site 3 of 3 in cluster A

Relative: Higher
Actual: 341 ft.

SHWS:
File Number: 2102.38.012
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.267523
Longitude: -149.675378
Hazard ID: 25064
Problem: A 500-gallon heating oil tank (Tank E2) located at Site TU110 (west side of Roosevelt Drive) was removed in 1998. While previous reports identified it as a 300-gallon tank, the tank dimensions (6 feet, 2 inches long and 3 feet. 11 inches in diameter) measured during the UST removal indicate that the volume was more likely 500 gallons. During the UST removal, approximately 20 cubic yards of contaminated soil was excavate and transported offsite for thermal treatment at ASR. Confirmation soil samples collected at the base of the excavation had DRO concentrations up to 8,570 mg/kg. No additional investigations have been conducted at Tank E2.

Actions:
Action Date: 8/31/1998
Action: Underground Storage Tank Site Characterization or Assessment
DEC Staff: * Not Assigned
Action Description: On August 30, 1998, the ADEC received a copy of the site assessment report summarizing field activities and laboratory results associated with the HOT closure.While previous reports identified it as a 300-gallon tank, the tank dimensions (6 feet, 2 inches long and 3 feet. 11 inches in diameter) measured during the UST removal indicate that the volume was more likely 500 gallons (Oil Spill Consultants, 1998). During the UST removal, approximately 20 cubic yards of contaminated soil was excavated and transported offsite for thermal

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY DUPLI (Continued) **S110144158**

treatment at ASR. Confirmation soil samples collected at the base of the excavation had DRO concentrations up to 8,570 mg/kg (Oil Spill Consultants, 1998). No additional investigations have been conducted at Tank E2.

Action Date:	8/27/2012
Action:	Institutional Control Record Removed
DEC Staff:	Louis Howard
Action Description:	Institutional Controls have been removed.

Action Date:	8/13/1999
Action:	Cleanup Complete Determination Issued
DEC Staff:	Tim Stevens
Action Description:	No futher action required. Followup investigation found no contaminants above applicable cleanup levels.

Action Date:	5/14/1998
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	Louis Howard
Action Description:	Source removal; HOT was removed from the ground on May 14, 1998. Approximately 20 cy of excavated soils were transported off site for thermal treatment.

Action Date:	5/14/1998
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	3/15/1999
Action:	Report or Workplan Review - Other
DEC Staff:	Tim Stevens
Action Description:	ADEC Project manager issued a Notice of Release Letter to the Department of the Army. On August 31, 1998, the Alaska Department of Environmental Conservation (ADEC) received a site assessment report from the Department of the Army documenting the May 14, 1998, closure of a 500-gallon underground storage tank system (UST) located diagonally across the intersection of Westbrook and Roosevelt Drive from Building 47431, Fort Richardson, Alaska. The information presented in the report indicates a petroleum release to the environment has occurred at this site. This letter confirms the release was reported. The following information is provided as a summary of current laws, regulations and guidelines to assist you in responding to the release. Please read this information, and check to ensure you have performed or will be performing the required actions in order to comply with the Alaska Underground Storage Tank Regulations 18 ACC 78.Initial Abatement and Release InvestigationIf a release is confirmed, the owner or operator must conduct an Initial Abatement and Release Investigation, in accordance with 18 AAC 78.230 and 235. In addition, the collection of field data and submittal of reports shall be conducted by, or supervised by, a qualified, impartial third party that has been currently approved and is one file with the Department. The Department may waive the requirement for an impartial third party under certain conditions. The Release Investigation report should be submitted to the Department within 45 days respectively after confirmation of the release.Corrective ActionIn addition, upon confirmation of a petroleum release, the owner or operator of the UST must undertake Corrective Action in

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 PARTY DUPLI (Continued) **S110144158**

accordance with 18 AAC 78.240. Corrective actions must be documented in an Interim Corrective Action Report in accordance to [18 AAC 240(c)(1)]. The Corrective Action Report should be submitted to the Department within 60 days after the confirmation of a release.Based on available information, the Department may request submittal of additional information and/or work plans (not listed above) which are determined necessary to respond to this release. All work plans for site assessment, release investigation, and corrective action must be submitted to and approved by ADEC prior to implementation.You will satisfy both state and federal regulations by following the requirements outlined above.Please submit reports to the undersigned at the following location:Alaska Department of Environmental ConservationStorage Tank Program555 Cordova StreetAnchorage, Alaska 99501Please include the file number and the facility name shown at the top of this letter in any correspondence.Cost RecoveryThe State considers you a responsible party (RP) and will cost recover all ???oversight??? costs if additional work is necessary to close out the site. The RP will be sent a letter from Department of Law along with a detailed invoice of oversight costs and associated activities. Oversight costs can include Department staff salaries, travel, equipment, supplies, contracts and services, and general program management. Typical cost expenditures for staff time can include, but are not limited to: performing plan reviews; drafting approval letters; attending site meetings; offering technical assistance via phone; and doing site visits or inspections. The State of Alaska is authorized, under Federal regulation 42 U.S.C. 699 1 b(h), to recover funds used during oversight of a petroleum cleanup from a leaking underground storage tank (LUST). The State is also authorized by the State of Alaska comes from the Alaska Statute 46.08.070 to recover money expended by the Department to contain or cleanup the release of oil or a hazardous substance, including petroleum.

LUST:

Facility Name:	JBER-FT. RICH BLDG 47431 HOT #E2 UST 214 FRSERA 2 PARTY DUPLICATE
Facility Status:	Cleanup Complete
Record Key:	199821X013402
File ID:	2102.38.012
Oname:	U.S. Air Force
Lat/Lon:	61.26752 -149.6753
Lust Event ID:	2277
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	WGS84

Inst Control:

Hazard ID:	25064
Facility Status:	Cleanup Complete
Action:	Institutional Control Record Removed
Action Date:	8/27/2012
File Number:	2102.38.012

B7 **JBER-FT. RICH TU036 BLDG 47022 UST** **SHWS** **S110144183**
RANDALL ROAD & DAVIS HWY., FORMERLY FORT RICHARDSON BEFORE 1 **INST CONTROL** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 2 in cluster B

Relative: Higher
Actual: 357 ft.

SHWS:

File Number:	2102.38.010
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.267179
Longitude:	-149.674424
Hazard ID:	2763
Problem:	1,000 gallon heating oil LUST with documented release of petroleum contaminated soils. No groundwater impacts detected at site. All contamination has been dealt with to the maximum extent practicable, no further action required or planned. UST Facility ID 788.EPA ID: AK6214522157

Actions:

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/14/2001
Action:	Institutional Control Record Established
DEC Staff:	Louis Howard
Action Description:	Institutional controls (ICs) report received for several sites which include this building. Diesel range organics (DRO) was detected at 2,000 mg/kg, a leachability study was used to obtain site closure (NFA actually). This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health or the environment. ADEC requests any monitoring wells installed as a part of the investigation be added to the Post-wide monitoring network established under the CERCLA Federal Facility Agreement. ICs tracked under Fort Richardson Master Plan (GIS).This site as well as all other closed underground storage tank system sites will need to be referenced in the final Record of Decision (ROD) for the Post (currently OU E).

Action Date:	8/15/1997
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Site added to database by staff. Heating oil contaminated soils.

Action Date:	6/9/2014
Action:	Institutional Control Record Removed
DEC Staff:	Louis Howard
Action Description:	Institutional Controls have been removed.

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

Action Date:	6/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan received for review and comment.Performance Objective: Site Closure (CRP). Performance Indicators:&183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by September 2013&183; Complete an approved Characterization/Cleanup Report by March 2014&183; Achieve SC in 2014Potential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the Period of Performance.Date of achieving performance objective: 2nd Quarter 2014.Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date:	6/4/2014
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Cleanup complete determination given for the site by ADEC. The cleanup level for the site containing DRO contamination in the Under 40-Inch Zone for the ingestion pathway is 10,250 mg/kg for soil. Migration to groundwater soil cleanup levels are not applicable in this circumstance, because groundwater is not likely to be impacted by petroleum contamination, based on the depth to groundwater (150 feet below ground surface) and maximum depth of contamination (20 feet below ground surface). Based on a review of the environmental records, ADEC has determined that TU036 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???Closed??? designation will be entered for TU036 in the Contaminated Sites Database, subject to the following standard conditions.

Action Date:	6/22/2012
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the draft Project mgt. plan.2.3Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers and contracting staff:???Coordinate schedules with ADEC in advance and throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad and other Technical Project Planning team meetings, etc.). ???Plan and maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version and a final review and approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review and Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both interim and final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment and Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state and federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date:	6/10/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 73739 name:

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

auto-generated pm edit Ft. Rich Bldg. 47022 UST

Action Date: 5/3/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the UFP-QAPP SC Work Plan for Building 47022 TU036 ADEC CS DB Hazard ID 2763 on JBER-Richardson on April 18, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 4/15/1998
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Soil contamination is present at 15’ 2000 mg/kg DRO. Level C requires 1000 mg/kg DRO at the site. SESOIL/AT123D modeling shows that groundwater at 135’ will not be impacted from contamination at the site. Army requests ADEC approval of ACL (2000 mg/kg) for this site. Site was briefed to management on 4/10/98 (Roberts and L. Kent) for approval. Concurrence received and all closed out LUSTs to be referenced in final OU D ROD that sites were addressed adequately in the USTMP two party agreement. Soil contamination is to be institutionally controlled in place by Post.

Action Date: 3/4/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft UFP-QAPPWS 6Communication PathwaysProject Scope ChangesThe text states: ???JBER/AFCEE will inform the WESTON Team Project Manager of any project scope changes.???ADEC expects JBER project manager or WESTON Team Project Manager to notify ADEC of any project scope changes after the site-specific UFP-QAPP is approved. Approval of QAPP AmendmentsThe text states: ???Approval of any/all QAPP amendments by AFCEE is required prior to the implementation of any modifications to the QAPP.???ADEC will review and approve any/all QAPP amendments. This approval by ADEC is required prior to the implementation of any modification to the final ADEC approved site-specific UFP-QAPP.Recommendations to stop work and initiation of CAsThe text states: ???The WESTON Team and AFCEE all have authority to stop work and initiate CAs should any one person believe there is a reason to do so. Whoever stops work or initiates CAs will inform all other interested parties immediately.??? ADEC requests WESTON Team and/or AFCEE or JBER notify ADEC as soon as possible, but not later than 24 hours after such stoppage of work. This notification requirement will apply to activities undertaken in furtherance of this site-specific UFP-QAPP or any other circumstances or activities at the Site are creating an imminent and substantial endangerment to the health or welfare of the people on the Site or in the surrounding area or to the environment. JBER, WESTON Team and/or AFCEE shall provide ADEC with documentation of its analysis in reaching this work stoppage determination within five (5) days of any such stoppage. Distribution

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

of analytical dataThe text states: ???The WESTON Team will receive all deliverables from the subcontracted laboratory, review/verify the data, and distribute data to JBER/AFCEE and any other interested parties.???Per the State/Fort-Richardson Environmental Restoration Agreement-Sampling and Data/Document Availability: 54. The parties (WESTON/JBER) shall make available to each other (ADEC), quality-assured results of sampling, tests, or other data generated by or on behalf of any party (JBER) under this agreement (site-specific UFP-QAPP) within sixty (60) days of the submittal of samples to the laboratory. If quality assurance is not completed within sixty (60) days, preliminary data or results shall be made available within the sixty (60) day period and quality assured data or results shall be submitted as they become available but in no event later than one hundred and twenty (120) days after the submittal of samples to the laboratory. These periods can be extended upon mutual agreement among the project managers (WESTON Team, JBER/AFCEC and ADEC).WS 10Conceptual Site ModelPotential Receptors and Exposure PathwaysPage 14See comment 2 above regarding ADEC???s requirements for ICs. 2nd ParagraphThe text states: ???In addition, the site must (1) meet the ???migration to groundwater??? criteria, which indicate that the dissolution (leaching) of chemicals from soil will not cause groundwater to exceed 18 Alaska Administrative Code (AAC) 75 Table C groundwater criteria for ingestion risk, and (2) concentrations in soil must not exceed the maximum allowable concentrations.??? ADEC also wishes to inform JBER that the vadose zone soils shall not exceed maximum allowable concentrations (MAC) for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination above Table C cleanup levels. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC. Last ParagraphThe text states: ???There are no drinking water wells in the shallow groundwater at this time.??? ADEC requests JBER provide information (e.g. location and well construction) on the nearest (within &189; mile of Building 47022 site) drinking water [Base] well or standby drinking water well that may be used on a temporary, intermittent or permanent basis. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC.

Action Date:	3/18/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the draft Site Characterization Report. Summary of 2013 Site Characterization ActivitiesThe text states: ???Five soil borings were drilled by GeoTek Alaska, Inc. to depths ranging from 25 to 35 feet bgs. Twenty-two primary soil samples were collected and submitted to Applied Science Laboratories for analysis of gasoline range organics (GRO), DRO/RRO, petroleum-related VOCs, extractable petroleum hydrocarbon (EPH), volatile petroleum hydrocarbon (VPH), and PAHs.???Please state here and elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.Nature and ExtentThe text states: ???DRO was detected above screening levels and identified as the primary COPC at the site.??? Please state in the text what screening levels were used (i.e. migration to groundwater cleanup level listed

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

in Table B1). The reader may not know what the basis of the project screening levels are and if they are either the migration to groundwater, direct contact, or the outdoor inhalation cleanup levels. Risk EvaluationThe text states: ???Potential risks to human health and the environment were evaluated within the framework of ADEC???s site cleanup rules.???The text shall state: ???Potential risks to human health and the environment were evaluated within the framework of ADEC???s site cleanup rules under Method Three.???Environmental/Ecological Risk EvaluationThe text states: ???In accordance with ADEC 18 AAC 75.325 and ADEC ecological risk guidance, the site is considered protective of the environment based on the following criteria:??????Please provide the results of the completed ecological scoping evaluation (Appendix C Ecoscoping Form from ADEC???s January 2012 Ecoscoping Guidance) with preliminary screening which shows that exposure pathways and routes for ecological receptors are incomplete. ADEC has developed a scoping document designed to quickly eliminate sites that are unlikely to pose a risk to the environment. Such sites would exit the ERA process without further evaluation and the evaluation would be in accordance with ADEC ecological guidance. NOTE: This needs to be done for every site on JBER not under the Fort Richardson Federal Facility Agreement or the Elmendorf Federal Facility Agreement. The results from the Ecoscoping form may be added as an appendix to the document/report. Soil SamplingThe text states: ???Table 3-1 presents a summary of the soil samples collected during the 2013 investigation and submitted to Applied Sciences Laboratory (ASL)...???Please state here and elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.The text states: ???Four types of field quality control (QC) samples were also collected to meet data quality standards: three FDs, one matrix spike/matrix spike duplicate (MS/MSD), two equipment blanks (EBs), and three trip blanks (TBs) were submitted for analysis. While the field QC samples for TU036 alone do not meet the required frequency for FDs according to the data quality evaluation (DQE), the work at this site was performed as part of a larger program, and overall the program meets the QC requirements outlined in the Basewide QAPP (USAF, 2013a).???ADEC disagrees. The site specific UFP-QAPP field quality controls as agreed to in the final work plan UFP-QAPP for each site shall be applicable. The fact that the work is being performed as part of a larger program has no bearing on complying with QC requirements for a specific site???s QA requirements.

Action Date: 2/24/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Characterization report (draft) received for review and comment. In June, July, and September 2013, additional activities were conducted to fully characterize the nature and extent of contaminants of potential concern (COPCs) in soil at TU036 and to evaluate potential risks to human health and the environment. DRO was detected above screening levels and identified as the primary COPC at the site. Although historical source boring location AP-3799 was not specifically replicated in 2013, the results from TU036-SB01 and TU036-SB02 (within 10 feet of AP-3799) suggest that the historical DRO concentrations in the former UST area have a very limited lateral extent to the south, west, north, and northeast. The highest concentration of DRO detected at the site (5,777 mg/kg) was in 1996

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

from soils beneath the edge of the UST. In 2013, the highest concentration of DRO (3,000 mg/kg) was detected directly east of the location of the former UST, at boring TU036-SB03. DRO was not detected above screening levels in lateral extent borings TU036-SB04 or TU036-SB05.Based on the results from borings surrounding TU036-SB03, the DRO contamination does not cover a large area, and for purposes of assessing risk from the site, the lateral and vertical extent of DRO in soil has been delineated. The soil source area (defined as the three-dimensional soilvolume with DRO concentrations greater than 250 mg/kg) begins at approximately 10 feet bgs,extends vertically to approximately 20 feet bgs, and covers an area approximately 54 by 10 feet(for an approximate volume of 5,400 cubic feet, or 200 cubic yards).In 1996 and 1997, DRO was detected beneath the former UST at concentrations of5,777 mg/kg and 2,000 mg/kg, respectively.??? In 2013, DRO was detected in soil at concentrations above project screening levels in one boring to the east of the former UST excavation (TU036-SB03).??? DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 54 by 10 feet and extends from approximately 10 to 20 feet bgs (or an approximate volume of 5,400 cubic feet, or 200 cubic yards). The maximum vertical extent of DRO at the site (20 feet bgs) is approximately 130 feet above the water table.??? Groundwater was not encountered during the investigation.??? The estimated rounded cumulative cancer risk for the current industrial and hypotheticalresidential exposure scenarios is below the regulatory risk standard of 1E-05.??? The estimated cumulative noncancer HI for the current industrial and hypothetical residentialexposure scenarios is below the regulatory risk standard of 1. The site meets the ADEC riskcriteria for bulk hydrocarbons.??? No potential risks to the environment/ecological receptors were observed, and petroleumhydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).Recommendations for TU036 are as follows:??? No further investigation or cleanup of soil or groundwater.??? ADEC to document an unlimited use and unrestricted exposure or ???Cleanup Complete without ICs??? designation because the site meets the criteria established for site closure.Performance-based

Action Date:	2/12/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft UFP-QAPP SC work plan received. One boring will be drilled near former boring AP-3799 to investigate the nature of residualcontamination at the location of the former UST. The proposed new boring is located where thevadose zone is interpreted to be contaminated. The soil boring will be advanced using a direct-push technology drill rig to depths up to 25 feet bgs (contamination is expected at 15 feet bgs). Soil samples will be collected at 5-foot intervals to the total depth of the boring. Soil cores will be examined for evidence of hydrocarbons (e.g., staining or odor) and will be screened for organic vapors using a PID.For this boring, if the maximum vertical extent of the soil contamination (approximately 15 to20 feet bgs) is reached (based on PID field-screening and visual/olfactory evidence), then twosoil samples will be collected beyond the last evidence of contamination, and the boring will beterminated. If the boring is advanced to groundwater (not expected at this site), a HydroPunchgroundwater sample will be collected at

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

the water table. However, if visual observations indicate the presence of potential contamination at or near the water table, then monitoring wells may be installed in the soil borings.Based on field observations and the results of the PID screening, soil samples within eachplanned sampling interval throughout the boring will be selected for laboratory analyses. All soil samples (up to five primary samples) will be analyzed for GRO, DRO, RRO, and petroleum-related VOCs.One boring will be drilled east of former boring AP-3799 to assess the lateral extent ofcontamination northeast of the tank.The soil boring will be advanced using a direct-push technology drill rig to depths up to 25 feet bgs. Soil samples will be collected at 5-foot intervals to the total depth of the boring. Soil cores will be examined for evidence of hydrocarbons (e.g., staining or odor) and will be screened for organic vapors using a PID. Lithologic descriptions, observations of staining or odor, and the results of field screening with the PID will be recorded on borehole log forms.For this boring, if the soil boring has reached a total depth of 15 feet bgs and soil contamination has not been encountered (based on PID field-screening and visual/olfactory evidence), then two soil samples will be collected beyond the last evidence of contamination.

Action Date: 11/24/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army draft decision document received. ALTERNATIVE CLEANUP LEVEL APPROVAL FOR PETROLEUM CONTAMINATED SOILS BLDG 47-022 November 24, 1997BACKGROUND-Building 47022 is located in the southeast quadrant of the intersection of Randall Road and the Davis Highway. The building was demolished in 1991 and a 1,000 gallon UST was removed in 1997. Cleanup levels using soil matrix would have been level ???C??? 1000 mg/kg DRO, 500 mg/kg GRO, 50 mg/kg BTEX. SITE HISTORY-Only one sample for DRO exceeds level C at a maximum detected value of 2,000 mg/kg at 15'. All other samples collected at the site were below level ???C??? criteria. There are no current human or ecological receptors in the area. The depth to groundwater is estimated to be approximately 135 feet below ground surface. ISSUE-Army wishes to pursue ACLs for the site based on available information without conducting a leaching assesssment or risk assessment. Analyses were conducted for DRO for the aromatic and aliphatic fractions and the levels detected did not exceed any levels found in table B for either fraction. Maximum values for levels found at 20-25' for aliphatic and aromatic fractions were 43 mg/kg and 12 mg/kg respectively versus the values listed in the table of 20000 mg/kg and 100 mg/kg for the same fractions.CURRENT STATUS-The surface soils meet cleanup criteria and there are no current or future plans to expose the subsurface soils at the site. ALTERNATIVES CONSIDERED-None. Propose closeout via ACLs. ALTERNATIVE SELECTED/BASIS-No further action close out site. Levels of contaminants are below levels that are proposed in the 18 AAC 75 draft regs for maximum allowable concentrations 12,500 mg/kg total C10-C25 and Benzene or total BTEX does not come close to exceeding level ???A??? criteria. Analysis of aliphatic and aromatic fractions show no exceedances of either when compared to values found in table B for Migration to Groundwater in an ???under 40 zone???. RECOMMENDATION-Approve levels as an ???alternative cleanup level???.

Action Date: 11/15/1997

JBER-FT. RICH TU036 BLDG 47022 UST (Continued) **S110144183**

Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Release Investigation received and reviewed by staff. Soil contamination is present at 15' 2000 mg/kg DRO. Level C requires 1000 mg/kg DRO at the site. SESOIL/AT123D modeling shows that groundwater at 135' will not be impacted from contamination at the site. Army requests ADEC approval of ACL (2000 mg/kg) for this site.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU036 Bldg 47022 UST
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 2763
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 9/14/2001
File Number: 2102.38.010

Hazard ID: 2763
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 6/9/2014
File Number: 2102.38.010

C8 **JBER-FT. RICH TU037 BRYANT army AIRFIELD JP-4** **SHWS S107029066**
BLDG 47-438 WESTBROOK AVE NEAR TUMA RD., FORMERLY FORT RICHA **INST CONTROL N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 5 in cluster C

Relative: Lower
Actual: 332 ft.

SHWS:
File Number: 2102.38.051
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Cleanup Complete - Institutional Controls
Latitude: 61.263977
Longitude: -149.676803
Hazard ID: 4087
Problem: Approximately 300 gallons of JP-4 fuel spilled while filling Tank 2. Tank 3 overfilled through the hydrant system and discharged contents. Because of the presence of numerous pipelines and electrical lines both above and below ground surface, resampling of the former excavation (source area) was not possible. Concentrations of DRO, GRO, BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene from 2004 investigation remain at the site above 18 AAC 75.342(c) Table B1 soil cleanup levels. BTEX, 1-methylnaphthalene,

JBER-FT. RICH TU037 BRYANT army AIRFIELD JP-4 (Continued) **S107029066**

2-methylnaphthalene, and naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30 feet of Building 47438. Therefore, the vapor intrusion exposure pathway is considered potentially complete. However, Building 47438 is not currently occupied.

Actions:

Action Date: 9/28/2004
Action: Site Ranked Using the AHRM
DEC Staff: Sarah Cunningham
Action Description: Initial ranking.

Action Date: 9/28/2004
Action: GIS Position Updated
DEC Staff: Sarah Cunningham
Action Description: Used TopoZone Pro to obtain latitude and longitude, NAD27.

Action Date: 9/22/2004
Action: Site Added to Database
DEC Staff: Sarah Cunningham
Action Description: JP-4. NOTE TO FILE: Jet Fuel (JP-4) may contain variable amounts of kerosen, hydrotreated naphtha (Heavy), Naphtha (Light), and benzene.

Action Date: 8/31/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Interim Spill Response Report for Bryant Army Airfield Bldg. 47-438 received. A backhoe was used to scarify the surface of the ground to loosen up the contaminated soil. The contaminated soil was shoveled by hand into the bucket of the 950 loader & then transferred to the 10-yard dump for hauling. Approximately 10 cy of soil was removed from the excavation. The depth of excavation was limited to the removal of the surface fill material only to approximately 40 inches. The excavation did not penetrate into the sand bedding material for fear of destabilizing the in place UST's & piping.Soil within the excavation area was primarily local fill material from local Fort Richardson sources. This material consists of poorly sorted sediments glacial alluvium material composed of cobbles, sands & fine-grained silts. Very little organic material was found in this material.
Beneath the surface layer, the site consisted of graded sand bedding material used in the construction of the fuel facility. The UST's, underground piping & buried utilities were placed in this sand bedding material during the construction.Per direction from the AKNGB, only the contaminated soil found in the surface layer material located above the sand bedding material was removed. After covering the contaminated soil in accordance with 18 AAC 75.360(4)(D) & 18 AAC 60.015, the end dump hauled the contaminated soil to ASR for thermal treatment. One truckload of contaminated soil, estimated at 10 cy was dispatched to ASR. ASR treated 16.08 tons of contaminated material that came from this site.Four confirmation analytical soil samples were collected upon completion of the excavation in areas where the highest concentrations of remaining contamination were expected based on results of the PID scan. The confirmation samples were sent to North Creek Analytical Laboratories & analyzed for DRO, GRO via AK 101 & AK 102, PAHs via SW8270C, & BTEX via AK 101 in accordance with 18 AAC 75.341.FTR-POL 01 2,500 mg/kg GRO (above MAC), 1,870 mg/kg DRO, 0.804 mg/kg benzene (detection limit), 7.8 mg/kg toluene, 13.8 mg/kg ethylbenzene, 86.6 mg/kg total xylenesFTR-POL 02 873 mg/kg GRO,

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

1,340 mg/kg DRO, 0.342 benzene (detection limit)FTR-POL 03 833 mg/kg GRO, 2,840 mg/kg DRO, 0.604 mg/kg benzene, 12.8 mg/kg Toluene, 11.5 mg/kg ethylbenzeneFTR-POL 04 690 mg/kg GRO, 3,680 mg/kg DRO, 0.239 mg/kg benzene, 13.4 mg/kg Toluene, 9.48 mg/kg ethylbenzene. No GW samples were taken due to insufficient GW found in the monitoring wells. The four wells each had less than two inches of GW at the bottom of the well. This was determined to be an insufficient amount to adequately sample.The analytical confirmation samples collected after the removal action show that the site remains contaminated from residual JP-4. This site exceeds the 18 AAC 75.341 Method One regulatory criteria. Therefore, the removal action was only successful in removing a very specific amount of the contaminated soil at the site. Determination of further site restoration needs to be resolved with the ADEC. Due to the secured nature & limited access to the site, contamination exposure to personnel is limited. Unless further contaminated material is removed from the site, it is recommended that the ANGB negotiate with US Army Garrison Alaska & this site be incorporated into the existing Fort Richardson Long-term GW Program.

Action Date: 7/7/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC email Petit to Howard.They have removed 10 yards of contaminated soil and as of yesterday, there were to be some additional testing done of remaining soils on site. According to Norm Straub, while there are still indications that contamination remains, the integrity of the tanks would be questioned if additional removal is undertaken. I'm sure the additional testing will help here. It seems logical that this would be a straight move from our section to yours as emergency efforts are exhausted and this will remain a CS issue in the future.

Action Date: 7/7/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from DPW (Prieksat) to ADEC (Howard): Ft. Richardson AKARNG ReleaseThis is an AKNG obligation and USAG-AK is not the RP. We have a meeting with the AKNG this morning and will let them know that it will transfer to CS for further consideration. From my understanding, they don't have DSMOA agreements so not sure how they plan to handle it.

Action Date: 7/30/2004
Action: Interim Removal Action Approved
DEC Staff: David Allen
Action Description: Excavated 10 cubic yards around piping and tanks.

Action Date: 7/1/2004
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Frank Wesser
Action Description: The Alaska Army National Guard requests authorization to transport approximately 10 cubic yards JP4 contaminated soil from the Bryant Army Airfield on Fort Richardson to the thermal treatment operated by Alaska Soil Recyclers, Inc., 1040 O'Malley Road, Anchorage as required by 18 AAC 75.370(b).The excavation and transport activities are planned for Friday July 2, 2004. The prime and subcontractors for the removal action (Weston Solutions, Inc. and Weldin Construction)

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

shall insure covered loads during transportation in full compliance with 18 AAC 60.015 requirements.Wesser (PERP) approves request for transport.

Action Date: 7/1/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: WESTON Memorandum to Norm Straub (AANG): Bryant Army Airfield JP-4 Spill - Authorization to Remove Contaminated Soil. WESTON proposes to excavate up but not exceeding 10 yards (15 tons) of known JP-4 contaminatedsoil adjacent to Building 47-438, Bryant Army Airfield Fuel Facility. It is our intention to primarily hand excavate the contaminated material from the area Immediate adjacent to Building 47-438 and Underground Storage Tank 1 and 2 with some use of a mini-excavator where appropriate. Our immediate concern is with safely working near and the close proximity to active piping, tanks and electrical conduits within the area presumed to be contaminated. Weston proposes to begin excavation of the contaminated sol at the site on the morning of 2 July 2004 and transport to Alaska Soil Recycling for treatment during the afternoon of the same day. Excavation will only begin onsite with the understanding that AKNGB is in receipt of approval from Alaska Department of Environmental Conservation for transportation and treatment of contaminated material and receipt of a USARAK Excavation Permit. We also propose to sample the site on or about 6 July 2004 with site approval from the AKNGB Point of Contact. Site closure w8J be completed with approval of AKNGB and appropriate regulatory agency.

Action Date: 6/4/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the monitoring well installation plan for TU037.

Action Date: 6/30/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email AANG (Straub) to WESTON and ADEC (Petit): Bryant Removal Action StartupThanks for the earlier call about the receipt of the RFP. I hope this means Weston has a Task Order and there are efforts underway to procure your subcontractor. I look forward to seeing what you have in your Task Order SOW so that I can work within its prescription. I prepared the request for transport authorization and faxed it to DEC. Bob Petit is holding up the signature based on a need for a quantity and date of transport. Per our phone conversation, I left a message with him that detailed ten cubic yards for transport on Friday, July 2 to ASR. I am not sure if he will be in the office today to perform the authorization or not, so I will wait and see for an hour or two and then call somebody else in DEC for assistance.We are describing this to ADEC as an Interim Removal Action under 18 AAC 75.330. Subsection (c) of .330 requires prior approval (by DEC) of the proposed action. And this requires some kind of plan of attack and process. I assume that you will prepare this document and that it will include all of the elements of a full-blown work plan, albeit on a much smaller scale: schedule, sampling and analysis plan, waste mgmt plan, and a treatment/disposal method. Be sure to include the identity of the qualified person who is

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

overseeing operations.I know this may seem onerous, but as a responsible person under the DEC Cleanup Rules, it is incumbent upon me to perform in this role. I look forward to working with your team.

Action Date: 6/30/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: WESTON Tech. Approach & Cost Proposal Byrant Army Airfield Fueling Facility Bldg. 47-438. Weston Solutions, Inc, (WESTON) is furnishing this proposal pursuant to the Air Force Education and Training Command (AETC) Request for Proposal entitled, Interim Remedial Action/Site Clean-up and Release Determination for JP-4 Spill at Bryant Anny Airfield Fuel Facility, Fort Richardson, AK, dated 30 June 2004. The project is directed and coordinated by the Defense Energy Support Center-Alaska (DESC-AK). WESTON proposes to execute this Release Investigation and Interim Removal Action as requested and authorized by ADEC. The goal of this project is to perform a release investigation and interim removal action in response to an approximately 500-gallon JP-4 fuel spill that occurred at Bryant Army Airfield, on or about 1 July 2004.As described by the DESC-AK, a critical element of this project is to accomplish removal of fuel contaminated soils and complete backfilling the excavation in as expeditiously as possible to alleviate further migration of fuel and extent of soil contamination. Based on verbal communication, limited site reconnaissance and initial response reports provided by US Army Garrison - Alaska (USAG-AK), the contamination appears to be limited to the immediate area surrounding the west end of Tank 2, and at the base of Tank 2 vent adjacent to Building 47-438, Bryant Army Airfield Refueling System.Work under this TO will be accomplished by executing the following tasks:1. Preparation of Site Technical Memorandum and Health and Safety Plan.2. Excavation and removal of approximately 10 yards of fuel-contaminated soils.3. Transportation of contaminated soils to the designated offsite treatment site.4. Collection of confirmatory soil samples from excavation site. Collection of Groundwaterfrom the four monitoring wells adjacent to the fuel tanks.S. Backfilling of excavated areas.6. Assessment and repair of existing Veeder-Root Tank Monitoring System.7. Preparation and submission of site closure report.Specific activities have been categorized into the following tasks:Task l Project Management l Status Reports/MeetingsTask 2 Excavation, Site Sampling of Groundwater and Contaminated Soll, andBackfllling of Excavated AreasTask 3 Transportation of Contaminated Soil for Off Site TreatmentTask 4 Assessment and repair of existing Veeder Root Tank Monitoring SystemTask 5 Report Preparation

Action Date: 6/30/2004
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: AANG (Straub) letter to ADEC (Petit) requesting approval for transport.The Alaska Army National Guard requests authorization to transport contaminated son from TheBryant Anny Airfield on Fort Richardson to the thermal treatment unit at Alaska Soil Recyclers InAnchorage as required by 18 AAC 75.370(b).The date of the transport activities is not currently known, as the removal action is slated to begin on Thursday July 1, 2004. The prime and subcontractors for the removal action (WestonSolutions, Inc. and Weldin Construction) shall Insure covered loads during tranapo1tatlon In fullcompliance With 18

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

AAC 60.015 requirements.

Action Date: 6/21/2004
Action: Underground Storage Tank Site Characterization or Assessment
DEC Staff: Louis Howard
Action Description: DPW (Prieksat) to ADEC (Howard) re: fuel spill Bryant army airfield.Several conditions lead to the release, but simple fact is that the 2 pump was left on and a check valve failed allowing fuel to flow from Tank 2 into the Tank 3. NGB is very fortunate that the tanks weren't full or the facility would be gone. Approximate 300 gallons of JP-4 were forced out of the Mag Probe access during overfilling of Tank 3.Tank 3 is an end tank and accessible. DESC has contracted with Weston to investigate the spill. Anticipate that Weston would like to excavate soil from around the top of the tank to get a better idea of soil contamination. There are several down gradient and cross gradient wells at the site that will be sampled. One of the wells is only about 25 feet away from the release location and should be a good indicator if groundwater has been contaminated.

Action Date: 6/17/2004
Action: Update or Other Action
DEC Staff: Frank Wesser
Action Description: Spill report for AANG Bryant Army Air Filed release on June 16, 2004 between 4:30 p.m. and 8:30 p.m. Location of discharge: underground southern-most tank (tank 3). 400 gallons jet fuel. Mechanical failure of check valve on tank 3. Check valve failed and fuel leaked from Tank 2 into Tank 3, overfilling it. Contaminated soil visible in gravel surrounding an opening to the tank that holds the fuel level sensor. It is currently assumed that the remaining fuel is underground surrounding the UST. Some Fuel has been pumped back into tank 2 to remove tank 3 from overfill status. Currently less than 90 full. An emergency response action is currently being planned and will be mounted by contracting with outside resources through federal procurement. NO recovery has started yet.

Action Date: 6/17/2004
Action: Update or Other Action
DEC Staff: Frank Wesser
Action Description: Second spill report for same spill filed by Clay Bates Date & time of spill: 6/16/04 6:30 p.m.discovered: 6/17/2004 7:00 a.m.Reported 6/17/2004 10:33 a.m.estimated 500 gallons spilled. PRP: National Defense Support Energy. Fuel on Army land. They are still sorting the responsible party out. 33,000 gallon tank over pressurized during the evening. Tank over pressurized during the evening and found in the morning. Still investigating. Norman (Straub) is the investigator. Will have more info. In a few hours. Petit is on site. THey do have 4 monitoring wells.

Action Date: 6/13/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Draft SC work plan comments provided by staff. WS 6Communication PathwaysSince this is a site-specific UFP-QAPP it should be tailored to the specific requirements of the site which is petroleum related with no CERCLA hazardous substances. Project Scope ChangesChange text to read: ??????WESTON Team Project Manager and ADEC of any project scope changes.???Approval of UFP-QAPP amendmentsChange text to read:

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

??????JBER/AFCEC, and ADEC prior to the implementation of any modifications to the UFP-QAPP.???WS 14/16Building Vapor Intrusion SurveyThe text states: ???A copy of the pump house???s foundation as-builts will be obtained from the USAF and will be assessed for potential for vapor intrusion. In addition, the occupancy of the building, the types of chemicals used within, and the type of ventilation and/or heating system installed will be researched.???In addition to any research and assessment conducted, an ADEC Building Inventory And Indoor Air Sampling Questionnaire (Appendix I ADEC VI Guidance for Contaminated Sites (October 2012) will be filled out by the Air Force for this site. This form should be prepared by a person familiar with indoor air assessments with assistance from a person knowledgeable about the building. Complete this form for each building where interior samples (e.g., indoor air, crawl space, or subslab soil gas samples) will be collected. Section I of this form should be used to assist in choosing an investigative strategy during workplan development. Section II should be used to assist in identification of complicating factors during a presampling building walk-through.WS 17Sampling Design & RationaleSite Specific Sampling PlanADEC requests that an additional soil boring be placed at the location closest to the FTR-POL-01 location where the MAC for GRO is exceeded at 2,500 mg/kg and Outdoor Inhalation level is exceeded at 86.6 mg/kg. This would be five soil borings instead of the minimum of four borings proposed. The depth of petroleum contamination exceeding MAC (GRO) and outdoor inhalation values (xylenes) associated with FTR-POL-01 will not be captured with borings TU037-SB01 or TU037-SB02. WS 20Field QC SummaryThe text states: ???The anticipated number of duplicates and MS/MSD samples are presented in Table 20-1 (a lower number of duplicates and MS/MSD samples may be collected if the TU037 samples are collected as part of a program and submitted for laboratory analysis with samples from other sites).???ADEC will require that all QC samples (e.g. duplicates, MS/MSD, etc) be collected as required by the UST Procedure Manual Table 4 on a site-specific basis (no pooling will be allowed of QC samples as part of a ???program??? or submitted with samples from other sites as part of a larger ???JBER Project???).Table 4 shows the minimum level of sample QC scrutiny that must be applied to field sampling. A description of each type of field QC sample appears in Sections 9.1.2. - 9.1.5 of this chapter. Delete reference to lower number of duplicates and MS/MSD samples may be collected. A lower number of duplicates and MS/MSD samples will not be acceptable to ADEC on TU037 or any other site, regardless if collected part of a program or JBER Project.

Action Date: 5/27/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft work plan received for TU037.The objective at TU037 is to perform site characterization to accomplish the following:(1) assess the nature and extent of residual petroleum contamination, and (2) use the Hydrocarbon Risk Calculator (HRC) to determine whether soil contamination presentsunacceptable risks. The HRC is an alternative, peer-reviewed model used for calculating site-specific risks to human health under 18 Alaska Administrative Code (AAC) 75 MethodThree (18 AAC 75.340[e]).The planned scope entails advancing four borings to 25 feet below ground surface (bgs) to assessthe lateral and vertical extent of contamination. Soil samples will be collected and analyzed

JBER-FT. RICH TU037 BRYANT army AIRFIELD JP-4 (Continued) **S107029066**

fordiesel-range organics (DRO); gasoline-range organics (GRO); residual-range organics (RRO);benzene, toluene, ethylbenzene, and xylenes (BTEX); BTEX and naphthalene (BTEXN); polycyclic aromatic hydrocarbons (PAHs); extractable petroleum hydrocarbons (EPH); volatile petroleum hydrocarbons (VPH); and soil geotechnical properties.Data gaps specific to TU037 include the following:??? Lateral and vertical extent of contamination west of Building 47438.??? Sufficient, more recent PAH data for soils.??? VPH or EPH data for soils (used to characterize the aromatic and aliphatic equivalent carbon distribution of GRO, DRO, and RRO).??? Sufficient, more recent DRO, GRO, RRO, and BTEXN data for soil (used to characterize the contaminated soil source area).

Action Date: 3/3/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Based on the information provided, the DEC agrees that groundwater is not contaminated. There is residual soil contamination as previously noted in the decision document letter of January 29, 2015 which prevents unlimited use/unrestricted exposure at the site. The site status will remain unchanged in the database as ???cleanup complete with institutional controls???. The DEC has no additional comments on the document, finalize the document for monitoring well installation.

Action Date: 3/11/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed the site characterization redline version of the report and approved it as a final version.

Action Date: 2/8/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/4/2015
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: Institutional Controls established and entered into the database.

Action Date: 2/11/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The results of a groundwater sample collected from new monitoring well TU037-MW01 demonstrate that petroleum contamination, including benzene, has not impacted groundwater at TU037 at concentrations above 2014 ADEC Table C groundwater cleanup levels. These results indicate that the conservative input parameters (highest benzene concentrations in soil) used in the HRC resulted in the overestimation of the predicted benzene concentration in groundwater at TU037. Therefore, based on these results, land use controls for groundwater are not necessary at TU037.Concentrations of BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene remain at the site above 18 AAC 75.342(c) Table B1 soil cleanup levels (USAF, 2015a). The remaining soil contamination is located within 30 feet of Building 47438 and could pose a potential vapor intrusion risk. Therefore, TU037 does not meet the criteria for site closure.

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

Action Date: 12/30/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SC report received for review and comment.The COPCs identified in 2004 included GRO, DRO, BTEX, 1-methylnaphthalene, and 2-methylnaphthalene. The 2014 soil data collected adjacent to the former excavation indicatedthat DRO and benzene are still present above screening levels. Because of the presence ofnumerous pipelines and electrical lines both above and below ground surface, resampling ofthe former excavation (source area) was not possible. Therefore, GRO, DRO, BTEX,1-methylnaphthalene, and 2-methylnaphthalene remain COPCs for TU037.??? Petroleum-contaminated soil with concentrations of DRO, GRO, toluene, ethylbenzene, xylenes, 1-methylnaphthalene, and 2-methylnaphthalene has been laterally defined at the site. The vertical extent of petroleum-contaminated soil remains unclear because of drilling restrictions imposed by the presence of numerous above- and belowground utilities; however, the limited soil contamination observed in source area boring SB01 and SB02 suggests the vertical extent of contamination is limited to approximately 25 feet bgs, which also correlates with a perching layer known to exist at that approximate depth.??? Benzene-contaminated soil has been defined north and west of the site, but has not beencompletely defined in the southern portion of the site. The lateral extent of benzenecontaminatedsoil to the south is expected to only extend just beyond TU037-SB02.??? Cumulative carcinogenic risk and noncarcinogenic HI estimates meet the regulatory riskstandards for all scenarios.??? Modeled impacts to groundwater by DRO and GRO are considered negligible. Benzene ismodeled to potentially impact groundwater (at 0.0114 mg/L) with a concentration greater thanthe cleanup level (0.005 mg/L). However, the model uses the maximum detected concentrationin soil from the 2004 excavation (0.604 mg/kg) and does not take into account the potentialimpact caused by the presence of a perching layer known to exist at approximately 20 to 25 feetbgs.??? BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30 feet of Building 47438. Therefore, the vapor intrusion exposure pathway is considered potentially complete. However, Building 47438 is not currently occupied. Risks from the vapor intrusion exposure pathway will need to be quantitatively evaluated if the occupancy of the building changes or if a new building is constructed.No potential risks to ecological receptors were observed, and petroleum hydrocarboncontamination in soil is less than 0.5 acre.The following are recommended for TU037:??? No further investigation of contaminated soil is warranted.??? Achieve a ???Cleanup Complete with ICs??? designation.??? Establish an IC signifying the need to quantitatively assess VI if the building occupancychanges or new construction is planned because of the potential future exposure through theindoor air pathway from contaminated soil.??? Establish a groundwater IC to prevent potential future groundwater ingestion as the HRCmodeled a potential impact to groundwater and groundwater was not encountered during thisinvestigative effort.??? To achieve ???Cleanup Complete??? (without ICs), concentrations of BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene in soil need to attenuate or be remediated to levels shown not to cause groundwater ingestion risks, and the VI pathway should be further assessed to confirm that soil gas concentrations are below shallow soil gas target levels.

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

Action Date:	10/26/2004
Action:	Update or Other Action
DEC Staff:	Jim Frechione
Action Description:	AANG (Straub) sends letter to ADEC (Friechone) re: IRA Report. The Alaska Army National Guard Environmental Section is pleased to submit the attached interimremoval action report.The July 2004 removal and sampling event described in this report provides details about theresponse actions and impacts associated with the June 16, 2004 release of approximately 450gallons of jet fuel.The Alaska Army National Guard requests a status review and identification of regulatoryrequirements for this site at the earliest convenience of the Department of EnvironmentalConservation.I am available to discuss any questions you may have regarding this site. I can be reached byphone at 428-6766 or email at norm_straub@fmd.dmva.state.ak.us.

Action Date:	1/29/2015
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided a cleanup complete with institutional controls decision reiterating that ICs are still required for the site. This decision document memorializes the site history, cleanup actions, cleanup complete determination/institutional controls (ICs), & standard conditions for long-term site management. Contaminants of Concern: Gasoline Range Organics (GRO), benzene, Diesel Range Organics (DRO), ethylbenzene, toluene, xylenes, 1-Methylnapthalene & 2-Methylnaphthalne Cleanup Levels: The cleanup level for soils at TU037 containing GRO contamination is 1,400 mg/kg in the Under 40-inch Zone based on the ingestion & inhalation pathways within the 0 to 15??? interval below ground surface (bgs) & maximum allowable concentration. Based on the migration to GW pathway: the cleanup level for soil containing benzene is 0.025 mg/kg, ethylbenzene is 6.9 mg/kg, toluene is 6.5 mg/kg, xylene is 63 mg/kg, DRO is 250 mg/kg, 1-Methylnaphthalene is 6.2 mg/kg, 2-Methylnapthalene is 6.1 mg/kg in the Under 40-inch Zone.Cumulative Risk Evaluation: The estimated rounded cumulative cancer risk at TU037 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (5 x 10-6 & 8 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer hazard index (HI) at TU037 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (0.1 & 0.3 respectively) is below the regulatory risk standard of 1. TU037 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO/GRO aromatic & aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for TU037 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed & that the TU037 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that TU037 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete with ICs subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. Additionally, JBER shall quantitatively assess vapor intrusion (VI)

JBER-FT. RICH TU037 BRYANT army AIRFIELD JP-4 (Continued) **S107029066**

if the building occupancy changes at TU037 or new construction is planned because of the potential future exposure through the indoor air pathway from contaminated soil. JBER shall also establish a groundwater IC to prevent potential future groundwater ingestion as the HRC modeled a potential impact to groundwater. JBER shall provide written confirmation to ADEC that these ICs are in place within sixty (60) days of receipt of this letter.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1:	> Vapor Migration to Indoor Air
Contaminate Media1:	Indoor Air
Control Type:	Not reported
Control Details Description1:	Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Because of the presence of numerous pipelines and electrical lines both above & below ground surface, resampling of the 2004 excavation samples was not possible. Therefore, BTEX, 1-methylnaphthalene, & 2-methylnaphthalene remain COCs for TU037.
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1:	> Vapor Migration to Indoor Air
Contaminate Media1:	Indoor Air
Control Type:	Not reported
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Because of the presence of numerous pipelines and electrical lines both above & below ground surface, resampling of the 2004 excavation samples was not possible. Therefore, BTEX, 1-methylnaphthalene, & 2-methylnaphthalene remain COCs for TU037.
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1:	> Vapor Migration to Indoor Air
Contaminate Media1:	Indoor Air
Control Type:	Not reported
Control Details Description1:	Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	BTEX, 1-methylnaphthalene, 2-methylnaphthalene, & naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30' of Bldng 47438. Therefore, the VI exposure pathway is considered potentially complete. However, Bldg 47438 is not currently occupied.
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: > Vapor Migration to Indoor Air
Contaminate Media1: Indoor Air

Control Type: Not reported
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: BTEX, 1-methylnaphthalene, 2-methylnaphthalene, & naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30' of Bldng 47438. Therefore, the VI exposure pathway is considered potentially complete. However, Bldg 47438 is not currently occupied.

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Not reported
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Not reported
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: > Vapor Migration to Indoor Air
Contaminate Media1: Indoor Air

Control Type: Not reported
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: BTEX, 1-methylnaphthalene, 2-methylnaphthalene, & naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30' of Bldg 47438. Therefore, the VI exposure pathway is considered potentially complete. However, Bldg 47438 is not currently occupied.

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: > Vapor Migration to Indoor Air
Contaminate Media1: Indoor Air

Control Type: Not reported
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: BTEX, 1-methylnaphthalene, 2-methylnaphthalene, & naphthalene were detected above 18 AAC 75.342(c) Table B1 soil cleanup levels in soil within 30' of Bldg 47438. Therefore, the VI exposure pathway is considered potentially complete. However, Bldg 47438 is not currently occupied.

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: > Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Not reported
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: 2004 GRO at 3.3' 2,500 mg/kg. Because of the presence of numerous pipelines and electrical lines both above & below ground surface, resampling of the 2004 excavation samples was not possible. GRO remains a COC.

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU037 Bryant Army Airfield JP-4
Contaminate Level Description1: > Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Not reported
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: 2004 GRO at 3.3' 2,500 mg/kg. Because of the presence of numerous pipelines and electrical lines both above & below ground surface, resampling of the 2004 excavation samples was not possible. GRO remains a COC.

Inst Control:
Hazard ID: 4087
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 2/4/2015
File Number: 2102.38.051

D9 **JBER-FT. RICH BLDG 47642 UST 94 W. OF AERO. HNGR U** **LUST** **S108941495**
BRYANT AIRFIELD SW CORNER SOUTH OF WESTBROOK AVE. **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 5 in cluster D

Relative: LUST:
Lower

Facility Name:	JBER-FT. RICH BLDG 47642 UST 94 W. OF AERO. HNGR USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199121X025303
File ID:	2102.26.042
Oname:	U.S. Air Force
Lat/Lon:	61.26147 -149.6764
Lust Event ID:	263
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	WGS84

Actual:
325 ft.

Facility Name:	JBER-FT. RICH BLDG 47641 UST 70, AEROCLUB HANGAR
Facility Status:	Cleanup Complete
Record Key:	199221X022564
File ID:	2102.26.047
Oname:	U.S. Air Force
Lat/Lon:	61.26143 -149.6758
Lust Event ID:	311
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	Not reported

D10 **JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY** **SHWS** **S110144111**
BRYANT AIRFIELD S. OF WESTBROOK AVE. FTRS-56, FORMERLY FORT **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 5 in cluster D

Relative: SHWS:
Lower

File Number:	2102.26.047
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.261431
Longitude:	-149.675868
Hazard ID:	1486
Problem:	Fall of 1989 Fort Richardson removed a fuel oil/diesel fuel UST 70 from ground at Building 47641. Also known as Site I, Former Aero Club. Conflicting information on the USTs' s either 5 or 70. Cleanup levels not exceeded site closed out. FTRS-56 Bldg 47641 Site R094, A.K.A. Flying Club,1990 RFA SWMU 84. POC for the Army Cristal Fosbrook 384-2173. Last staff assigned was Howard. UST Facility ID 788.EPA ID: AK6214522157

Actual:
325 ft.

Actions:

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance

JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY (Continued) **S110144111**

agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/20/1995
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: Staff received and reviewed the site assessment for Bldg. 47641 Tank 70a on September 14, 1995. Staff concurred that level C cleanup criteria was not exceeded. Based on the data presented in the document, it appears that the site does not exceed the most stringent matrix level A criteria. DEC will grant a no further remedial action designation for this site. If in the future, additional contamination is discovered at this site, further investigation and/or remedial actions may be requested of the Army by DEC. DEC reserves its rights, under 18 AAC 75, 18 AAC 78 and AS 46.03 to require the Army to conduct additional assessment and/or corrective actions in the future if information indicates the site conditions pose a risk to public health or the environment.

Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date: 9/14/1995
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Bldg. 47-641, the former Aero Club, was located on the southwest corner of Bryant Army Airfield, until it was demolished during the summer of 1995. Tank 70, a 1,000 gallon heating oil underground storage tank (UST), was removed and replaced in 1989. A site assessment of contamination at the site was not conducted during the removal because ADEC had not promulgated the requirement under the UST regulations. In November 1993, the site was added for an investigation to the Fort Richardson-ADEC UST Compliance Agreement. Two soil borings were installed during the Release investigation to a depth of 22' bgs. No contaminants of concern were detected in the soil or groundwater above Level A criteria. Recommend closure.

Action Date: 8/9/2005

JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY (Continued) **S110144111**

Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Fax sent to Sam Swearingen (Ft. Richardson). ADEC sent the following comments and requests for further information regarding the most recent submittal on the USTMP quarterly report. Please send FY 97,98,99,2000 budget regarding LUST work anticipated at Fort Richardson so ADEC can budget man hours for review periods.Bldg. 47641 UST 94 correspondence indicates that 4/95 (See accompanying letter) a siteassessment waiver was granted pending confirmation sampling to verify level A cleanup criterfrom in-situ bioventing remedial action already in place. No review comments on closure will beforthcoming since this site is undergoing corrective action. ADEC looks forward to reviewingthe interim report on this site.

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date: 5/9/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the UST Release Investigation A Seven Fuel Tank locations Buildings 47662 and 47641 Draft RI report, Fort Richardson AlaskaThe Alaska Department of Environmental Conservation-Defense Facilities Oversight group(ADEC) has received on April 25, 1994 a copy of the document referenced above. ADECconsiders the document final and looks forward to the draft corrective action plan for building47662 for review and comment. Building 47641 is considered by ADEC to not require any further remedial action. However, closing out of this site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that may cause risk to human health or the environment, then future investigation andlor remedial actions may be required by ADEC.

Action Date: 3/6/1990
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Fuel oil/diesel fuel tank was removed in 1989 and approximately 50 cubic yards of petroleum impacted soil was excavated and stockpiled. Soil samples were collected from the excavation which contained levels ranging from N.D. to 700 mg/kg TPH (EPA 418.1) Per letter dated 3/23/90 additional surface excavation was planned.

Action Date: 3/28/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Letter sent to Jennifer Roberts RE: Memorandum for the Record-UST Remediation Phase III. This memorandum references a meeting between Jennifer Roberts and John Halverson and Lori Tussy Lay, this office, March 13, 1990 regarding UST remediation. Seven USTs were removed in 1989. Excavation of soil was to proceed until the excavation site was free of contamination (less than 50 ppm TPH for fuel and less than 100 ppm for TPH for waste oil). However, in most cases, a clean

JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY (Continued) **S110144111**

reading could not be obtained. Due to contract obligations, the ADEC allowed the sites to be backfilled with the understanding the Army would further remediate at another time. ADEC will require surface excavation. Remove surface soil until the portable photoionization detector registers a clear reading. Take 3 soil samples at this point. If the sample results are below 50 ppm TPH, the area may be backfilled. If the results are greater than 50 ppm TPH, the excavation will continue.

Action Date: 2/23/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter to Army RE: December 8, 1993 Work Plan UST Release Investigation A Seven Fuel Tank Locations Contract No. DACA 85-93-D-008, Dames and Moore. Staff received the document on January 28, 1994. It contains the plans for release investigation work at: Bldg. 712, 762, 782, 8102, 27004, 47622, and 47633. ADEC, DPW and the contractor have previously met at our office and discussed the draft work plan proposals for this investigation. The document appears to have addressed ADEC's concerns. Being that the field work has already been conducted, the department will not provide review and approval of the work plan, but will review the draft release investigation report which is to be submitted within 100 days of completion of field work.

Action Date: 11/8/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Letter to Army re: Draft Corrective Action Plan - UST Sites Dated September 14, 1993. We received the document on September 28, 1993 and met with you, Harding Lawson and the CORPS to discuss the project on October 21, 1993. The document appears to meet the requirements for a release investigation report, but does not appear to be a corrective action plan. A corrective action plan should contain details on how remedial action will be conducted. Site specific CAPs will be necessary for each site requiring action. Section 5.10 Site I Bldg. 47641 Former Aero Club- A 1,000 gallon gasoline UST was removed in 1991. The excavation was reported to be approximately 36' x 38' x 20' in depth. Three soil borings ware installed during the release investigation. One was drilled to 21' in depth and the other two were drilled to 26'. Several of the samples appear to have been collected from what should have been clean backfill material from the tank closures. It appears the borings should have been installed to a greater depth to ensure samples were collected from native soils rather than imported backfill. Additional explanation of field observations and the sampling rationale should be included in the final report.

Action Date: 1/1/1992
Action: Site Added to Database
DEC Staff: John Halverson
Action Description: Not reported

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 47641 Aeroclub USTA 2 Party

JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY (Continued) **S110144111**

Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

D11
< 1/8
1 ft.

JBER-FT. RICH BLDG 47641 UST 70, AEROCLUB HANGAR **SHWS S110144144**
BRYANT AIRFIELD SW CORNER; SOUTH OF WESTBROOK AVE., FORMERLY **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 3 of 5 in cluster D

Relative: Lower
Actual: 325 ft.

SHWS:
File Number: 2102.26.042
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.261475
Longitude: -149.676484
Hazard ID: 24121
Problem: USTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:
Action Date: 9/11/1991
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 9/10/1991
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 5/9/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: Release investigation for tank 94 during 1994 showed soils were below level A criteria. Site closed out.

File Number: 2102.26.047
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.261431
Longitude: -149.675868
Hazard ID: 23640
Problem: Mark Prieksat is the POC for the Army at 384-3042. Last staff assigned was Howard.

Actions:
Action Date: 9/3/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC

JBER-FT. RICH BLDG 47641 UST 70, AEROCLUB HANGAR (Continued) **S110144144**

for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date:	9/20/1995
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	CLOS; Site closed out. Met matrix cleanup level.

Action Date:	8/12/1992
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	3/6/1990
Action:	Underground Storage Tank Site Characterization or Assessment
DEC Staff:	* Not Assigned
Action Description:	SA1R; Fuel oil/diesel fuel tank was removed in 1989 and approximately 50 cubic yards of petroleum impacted soil was excavated and stockpiled. Soil samples were collected from the excavation which contained levels ranging from N.D. to 700 mg/kg TPH (EPA 418.1) Per letter dated 3/23/90 additional surface excavation was planned.

Action Date:	3/25/1995
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Not reported

E12 **JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY** **SHWS** **S110144178**
RANDALL ROAD N. OF BRYANT ARMY AIRFIELD FTRS-69, FORMERLY FO **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 2 in cluster E

Relative: Higher
Actual: 354 ft.

SHWS:

File Number:	2102.38.011
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.267434
Longitude:	-149.661240
Hazard ID:	2756
Problem:	Former 1,000 gallon heating oil LUST with soil contamination at 7,400 mg/kg at 30'. Contamination increases in depth to 15' (4,600 mg/kg) then decreases in depth 2,800/20' and 3,800/25'. No groundwater impacts at site. All contamination has been dealt with to the maximum extent practicable, no further action required or planned. Site FTRS-69. Building 47-203, UST 93. Site N095. EPA ID: AK6214522157USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

Actions:

Action Date:	9/28/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Site Assessment report, Bldg 47203, Former UST 93 Facility No. 0-00788 July 13, 1994The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on September 12, 1994 a copy of the above referenced report. Below are ADEC's comments.5.2 Discussion page 11The text states the cleanup criteria is level C, however the factor used for mean annualprecipitation appears to be incorrect. Based on information from other consultants' reports at Fort Richardson the annual precipitation has been calculated to be approximately 13 to 20 inches per year (Univ. of AK, Anchorage, Environmental Atlas ... 1972). This correction would result in a reclassifying of the cleanup score to 20 or a level D cleanup. Even with this correction the results from the laboratory analysis indicate contamination to be well above this level.5.3 Conclusion and Recommendations page 11The text states levels detected in the soil under the tank indicated tank 93 has leaked andthe maximum detected level of DRO is 12,000 ppm. This level is in excess of level D cleanup criteria. Further action is still required by the Army to delineate the vertical and horizontal level and extent of petroleum hydrocarbon contamination in soil and groundwater at each site. ADEC looks forward to receiving the draft release investigation work plan with schedules of action for review and comment by January 1995.

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/14/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Institutional controls report received for several sites which include this building. DRO was detected up to 7,400 mg/kg, a leachability study was used to obtain site closure (NFA actually). This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health or the environment. ADEC requests any monitoring wells installed as a part of the investigation be added to the Post-wide monitoring network established under the CERCLA Federal Facility Agreement. ICs tracked under Fort Richardson Master Plan (GIS).This site as well as all other UST sites will need to be referenced in the final Record of Decision (ROD) for the Post (currently at OU E).

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

Action Date:	9/12/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Building 47-203 is located near Randall Road. Building 47-203 was previously used as an aviation motor pool.A 1,000-gallon fuel oil UST (Tank 93) was installed on the northwest side of Building 47-203. Tank 93 was nine feet one-inch long and three feet 10 inches in diameter. It had a two-inch vent pipe and a four-inch fill pipe. Both pipes extended three feet above the ground. This UST was installed approximately five feet below ground and had no surface dispensers.This UST (Tank 93) was removed in June 1994. In conjunction with the removal, five soil samples and Quality Assurance (QA) Quality Control (QC) soil samples were collected to determine if the soil was contaminated with petroleum hydrocarbons. Up to 12,000 mg/Kg diesel range organics (DRO) were found in the soil surrounding the tank.
Action Date:	7/24/2004
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Institutional controls established in the form of a dig permit reviewed by Public Works Environmental staff on Post for any work in this area. Mapped out site on Post general management plan as a site with institutional controls.
Action Date:	7/22/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	The responses to ADEC's comments on the draft UFP-QAPP for TU069 are acceptable. Please finalize the document.
Action Date:	7/2/1998
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.
Action Date:	6/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan received for review and comment.Performance objectiveSite ClosurePerformance Indicators??? Complete an approved Site Characterization WP/Cleanup Plan in 2013??? Complete characterization/cleanup in 2013??? Complete an approved Site Characterization/Cleanup Report in 2013??? Achieve SC in 2014Potential RiskThe nature and extent of soil contamination in the

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate additional soil as needed (estimate an additional 250 yd3) to achieve SC. Additionalmonitoring wells will be installed, as necessary, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the POP.2nd Quarter FY 2014Prepare an approved Characterization Workplan. Coordinate, mobilize, and execute characterization Workplan by installing and sampling two soil borings and collect groundwater sample from one existing monitoring well. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation.Prepare an approved Cleanup Report including Site Closure Report requesting Cleanup Completewithout ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/10/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73732 name: auto-generated pm edit Ft. Rich Bldg. 47203 UST 93

Action Date: 5/15/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft UFP-QAPP for TU069. Conceptual Site ModelPage 18Potential Receptors and Exposure PathwaysThe text states: ???In addition, the HRC can calculate risk for the pathways that are complete at the present time for residential, industrial/commercial, and site visitor scenarios. The risks calculated for the ???currently complete pathways??? and for industrial and site visitor scenarios are for risk management purposes.???Results of the HRC calculations for petroleum hydrocarbons are applicable only for those alternative cleanup levels allowed by regulation for Method Three - 18 AAC 75.340(e): Under method three, a responsible person may propose a site-specific alternative cleanup level that modifies(1)the migration to groundwater or inhalation levels in Table B1 of 18 AAC 75.341(c) or Table B2 of 18 AAC 75.341(d), based on the use of approved site-specific soil data, and the equations set out in the department???s Cleanup Levels Guidance, dated June 9, 2008, adopted by reference; the alternative cleanup level that then applies at the site for a hazardous substance is the most stringent of the Table B1 direct contact or Table B2 ingestion level and the site-specific calculated levels for inhalation or migration to groundwater; (2)the migration to groundwater levels in Table B1 or Table B2 based on approved site-specific soil data and an approved fate and transport model that demonstrates that alternative soil cleanup levels are protective of the applicable groundwater cleanup levels under 18 AAC 75.345 if the alternative migration to groundwater cleanup level does not exceed(A) the direct contact level in Table B1 or the ingestion level in Table B2;(B) the inhalation level in Table B1 or Table B2; or(C) a site-specific inhalation level calculated under (1) of this subsection; the level that applies at the site is the most stringent level; or(3)the direct contact level or the inhalation level in Table B1 or the ingestion level or the inhalation level in Table B2 based

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

on use of commercial or industrial exposure parameters listed in Appendix B of the Cleanup Levels Guidance, adopted by reference in (1) of this subsection, if the department determines that the site serves a commercial or industrial land use, and if the alternative direct contact level or inhalation level does not exceed the migration to groundwater cleanup level in Table B1, the alternative ingestion level or inhalation level does not exceed the migration to groundwater cleanup level in Table B2 or the alternative level does not exceed a site-specific migration to groundwater level calculated under (2) of this subsection.The Site Cleanup Rules for Method Three do not allow for changes to Table C groundwater cleanup levels or calculation of risk based groundwater cleanup levels. ADEC will not recognize the use of HRC for calculation of risk of groundwater contamination at TU069 or any site on JBER-E or JBER-R, except through the use of Method Four [risk assessment as allowed by 18 AAC 75.325(h)]. Therefore, Table C Groundwater Cleanup levels will apply at all JBER sites with no alternative or ???risk-based??? groundwater cleanup levels allowed via Method Three (e.g. HRC). Where the HRC guidance and user manual conflict with existing promulgated regulations, the regulations will be applicable and supersede or override any guidance, manuals or technical memoranda. The text states: ???There are no drinking water wells located within a half mile of TU069???ADEC assumes that there is not any groundwater well(s) within a &189; mile radius of TU069 used to supply water including, but not limited to: irrigation, fire control, dust control, or any other activity on a temporary, intermittent or permanent basis. The text states: ?????? if impacts cover less than a half acre, ecological impacts are considered negligible and do not require assessment.???The ADEC Ecoscoping Guidance for ???Scoping Factor 4: Contaminant Quantity states:???This off-ramp does not apply to potentially impacted aquatic media. Nor does it apply if endangered-, threatened-, or species of special concern are present.???ADEC assumes that there is no potential for impacted aquatic media or any endangered, threatened species, species of greatest conservation need (FYI: ADF&G no longer maintains a list of ???species of special concern??? instead see the 2006 Wildlife Action Plan, specifically, Appendix 7 at http://www.adfg.alaska.gov/index.cfm?adfg=species.wapview), or any non-petroleum contaminants present at TU069. If the answer is ???yes??? for any of these, then JBER needs to proceed to toxicity determination step (Scoping Factor 5) in the guidance.

Action Date: 4/29/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for the petroleum contamination associated with TU069. However, the TCE contamination needs to be addressed by JBER.Contaminants of ConcernDuring the 2013 investigations at TU069 which had a former fuel/heating oil tank. The highest detected concentrations of DRO was 11,400 mg/kg (boring TU069-SB01 from 10 to 15 feet bgs) GRO at 355 mg/kg 15 to 20??? bgs in the same boring. Groundwater was not found to contain levels of contamination above Table C. Groundwater occurs at approximately 126 feet bgs. Low-level concentrations of trichloroethene (TCE) (0.0634 and 0.0613 mg/kg) were detected in soil from 5 to 15 feet bgs in lateral extent boring TU069-SB05. ADEC concurs that the TCE is likely not associated with the former UST and is a new source that needs to

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

be addressed separately. Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU069 is based on the ingestion pathway for the under 40??? Zone at 10,250 mg/kg and for GRO based on the ingestion, outdoor inhalation pathways and maximum allowable concentration of 1,400 mg/kg. TCE contamination located approximately 55??? to the south of the former UST shall be investigated and addressed as a separate issue than the petroleum release associated with UST 93. In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined the petroleum release associated with TU069 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation for the petroleum release associated with UST 93. This written determination for the petroleum release associated with UST 93 at TU069 does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. The TCE contamination will need to be addressed under a new site number designation besides TU069. Until such time, TU069 shall remain open due to the unresolved TCE contamination. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (TU069)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU069. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 4/24/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SC report (draft) received for review and comment. In 2013, DRO was measured in concentrations up to 11,400 mg/kg at source area boring TU069-SB01 (adjacent AP-3666) at a depth of 10 to 15 feet bgs.ConclusionsThe following conclusions were made regarding TU069:??? There appears to be two sources of contamination at the site: (1) subsurface leaks and spillsassociated with the former UST, and (2) a TCE source south of the former UST.??? Based on previous investigations and the 2013 site characterization field investigation at theformer UST, DRO, GRO, PAHs, petroleum-related VOCs, and TCE were detected in soil at concentrations above project screening

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

levels. DRO was the most frequently detected COPC with the highest concentrations and the largest lateral and vertical extent.??? DRO in soil at concentrations above the screening level (250 mg/kg) at the former UST, covers an area approximately 90 feet long by 60 feet wide, reaching a depth of approximately 30 feet bgs, for an estimated volume of 162,000 cubic feet (6,000 cubic yards). ??? GRO, several PAHs (1-methylnaphthalene, 2-methylnaphthalene, and dibenz(a,h)anthracene), and several petroleum-related VOCs (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-butylbenzene, naphthalene, and total xylenes) were detected in source area boring TU069-SB01 above their respective screening levels.Dibenz(a,h)anthracene was detected above its screening level in TU069-SB01 at the same depth interval as the second highest detected concentration of DRO/GRO at TU069-SB01. GRO and the remaining PAHs and VOCs mentioned above were detected above screening levels at a slightly deeper interval at TU069-SB01 reported to contain the third highest detected DRO concentration. Although these compounds were only detected in two samples and appear to be related to the high DRO concentrations detected at the site, these COPCs are also laterally and vertically contained within the area of the highest concentration of DRO.??? Two low-level detections of TCE in TU069-SB05 (0.0634 mg/kg from 5 to 10 feet bgs and 0.0613 mg/kg from 10 to 15 feet bgs) were reported above its screening level (0.020 mg/kg). TCE was not detected in any other site samples and was not associated with DRO at these sample locations approximately 55 feet away from the former UST location, indicating the likelihood of a small separate source not related to leaks from the UST. ??? The potential future indoor air exposure pathway for the former UST source area is considered incomplete because even though dibenz(a,h)anthracene was detected above its the most stringent 18 AAC 75.341, Method Two, Table B1 cleanup level (direct contact) (WESTON, 2013), dibenz(a,h)anthracene is not considered a COPC for indoor air (ADEC, 2012a). All remaining VOC concentrations detected in soil above the most stringent 18 AAC 75.341, Method Two, Table B1 cleanup levels are located greater than 7 feet below a hypothetical basement foundation where biodegradation would act as a sufficient barrier to eliminate petroleum vapor intrusion risk.??? Using the HRC for petroleum-contaminated soil with the former UST source area, the cumulative carcinogenic risk and noncarcinogenic HI estimates, based on both industrial and hypothetical residential exposure scenarios, are below the regulatory risk standards.??? Using the HRC for petroleum-contaminated soil with the former UST source area, the ADEC risk criteria for bulk hydrocarbons are met.??? The sitewide exposure risk for TCE under current conditions is below the ADEC risk criteriabased on ADEC???s Method Three online calculator. However, under the potential future exposure scenario, the indoor air pathway (vapor intrusion) still needs to be evaluated because the TCE concentration in soil is above its most stringent 18 AAC 75.341, Method Two, Table B1 cleanup level.??? No potential risks to ecological receptors were observed for TU069, and potentially completeecological exposure pathways at TU069 are considered insignificant.RecommendationsThe following are recommended for TU069.Former UST??? No further investigation or cleanup of soil and groundwater associated with the former UST.??? ???Cleanup Complete??? designation because TU069 meets the criteria established for site closure (ADEC, 2012c).Area Outside Former UST??? Designation of a new site to further characterize the nature and extent of TCE in soil.

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

Action Date:	4/22/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft UFP-QAPP Work Plan received for review and comment. The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18, Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390, and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If ADEC Method Two cleanup criteria as established under 18 AAC 75 are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.One boring will be drilled near former boring AP-3666 to resample the soil at the location and depth where previous sampling showed exceedances of the migration to groundwater criteria for diesel-range organics (DRO) and to collect source area soil samples for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) analysis. Four borings will be drilled around the former tank to assess the lateral extent of soilcontamination.Up to approximately 37 new primary soil samples will be collected and analyzed for gasoline-range organics (GRO), DRO, residual-range organics (RRO), volatile organic compounds (VOCs) (petroleum-related), and polycyclic aromatic hydrocarbons (PAHs). Three of those soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. All the samples analyzed for VOCs (petroleum-related), GRO, DRO, RRO, PAHs, EPH, VPH, and other soil properties will be from the interpreted extent of the nonaqueous phase liquid (NAPL) contaminated soil source. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).

Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Bill Petrik
Action Description:	Ranking action added now because it was not added when the site was originally ranked.

Action Date:	4/15/1998
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Institutional controls established in the form of a dig permit reviewed by Public Works Environmental staff on Post for any work in this area. Mapped out site on Post general management plan as a site with institutional controls.

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

Action Date: 4/15/1998
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Maximum diesel range organics (DRO) soil concentration 7,400 mg/kg DRO (BTEX, PAHs, RRO, GRO, VOCs analyzed also ND or below Reg. III RBCs). Sesoil modeling conducted using conservative parameters 100 year runs no impacts to groundwater above MCLs for any constituents or not reach it at all. Army requests closure and ACLs for site. Site was briefed to management for ACL closure on 4/10/1998. Concurrence received and site approved for closure. Site must be wrapped up in final OUD ROD for Post along with all closed LUST sites by reference that they were addressed by USTMP two party agreement. Soil contamination at site must have institutional controls placed on it and if excavated in future will be remediated to appropriate cleanup levels.The following policy applies for soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required: 1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1; 2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 annual precipitation zone; 3. The soil is not placed within 100 feet of water wells, surface waters, and drainage ditches; and 4.The written approval from the landowner of the off-site location is required.The off site disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval to dispose of soil off site that does not meet the criteria shall be made by ADEC.Terms used in this document have the meaning given in 18 AAC 75.990 including: ???environmentally sensitive area??? means a geographic area that, in the department's determination, is especially sensitive to change or alteration, including: (A) an area of unique, scarce, fragile, or vulnerable natural habitat; (B) an area of high natural productivity or essential habitat for living organisms; (C) an area of unique geologic or topographic significance that is susceptible to a discharge; (D) an area needed to protect, maintain, or replenish land or resources, including floodplains, aquifer recharge areas, beaches, and offshore sand deposits; (E) a state or federal critical habitat, refuge, park, wilderness area, or other designated park, refuge, or preserve; and (F) an area that merits special attention as defined at 6 AAC 80.170 (Repealed see AS 46.40.210(1)) ???area which merits special attention??? means a delineated geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public, should be identified for current or future planning, protection, or acquisition; these areas, subject to council definition of criteria for their identification, include:(A) areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance; (B) areas of high natural productivity or essential habitat for living resources; (C) areas of substantial recreational value or opportunity;(D) areas

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

where development of facilities is dependent upon the utilization of, or access to, coastal water;(E) areas of unique geologic or topographic significance which are susceptible to industrial or commercial development; (F) areas of significant hazard due to storms, slides, floods, erosion, or settlement; and (G) areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, aquifer recharge areas, beaches, and offshore sand deposits.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Heating oil contaminated soils.

Action Date: 12/15/1995
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: ADEC (Tim Stevens) sent a letter Sent to Sam Swearingen (Army) Waiver No. A 001 RE: Waiver From Requirement to Use AK 101, AK 102, or AK 103 Analytical Procedures For Hydrocarbon AnalysesThis waiver is issued to allow the above named person or firm to avoid the requirement to analyze soil samples in accordance with analytical methods AK 101, AK 102 and AK 103 for the specific project listed below. The waiver further specifies that analytical methods specified below shall be used for the project, with slight modifications in integration ranges.This letter, when signed with an original signature by the appropriate Department official, will serve as a waiver solely from the portion of the following regulations that refer to use of analytical methods AK 101, AK 102, and AK 103: 18 AAC 78.090(e), 18 AAC 78.235(b), 18 AAC 78.300(c), and 18 AAC 78.312(f)(2) requiring the use of analytical methods AK 101, AK 102, and AK 103 for analysis of hydrocarbons in soils, and from 18 AAC 78.315(d)(3) specifying the integration range for analysis of residual range organics, and only for the specific project listed as follows:Underground storage tank release investigation, in association with buildings 47-203, 955, 979, 45-070 and 28-008 at Fort Richardson Alaska. Note that all other portions of these regulations cited must be adhered to, including the requirements to take samples for petroleum hydrocarbons and for data collection and interpretation by a qualified, impartial third party in accordance with the UST Procedures Manual.The conditions for issuance of this waiver are:1.During the waiver period, laboratory analyses performed in support of activities regulated by 18 AAC 78, ADEC Underground Storage Tank Regulations, must be performed by a laboratory that is approved by the Department. Further, the analytical methods used for soil and water analyses for gasoline range, diesel range, and residual range petroleum hydrocarbons must be:a)for gasoline range hydrocarbons, EPA method 8015 Modified, and integrated from the beginning of C6 to the beginning of C10 and a boiling point range between approximately 60oC and 170oC;b)for diesel range hydrocarbons, EPA method 8100 Modified, and integrated from the beginning of C10 to the beginning of C25 and a boiling point range between approximately 170oC and 400oC;c)for residual range hydrocarbons, the analytical measurement for the total concentration of petroleum hydrocarbons as derived by using EPA method 418.1, minus the concentration quantified in the gasoline range and diesel range (the ranges listed in a) and b) above).2.Subject to Condition 3, this waiver becomes void on the

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

effective date of Underground Storage Tank Regulations containing updated procedures for AK 101, AK 102, and AK 103 hydrocarbon analyses revised after November 3, 1995. Thereafter, or beginning August 1, 1996, whichever occurs first, the recipient of this waiver must conform to the requirements of those updated procedures or to the analytical procedures promulgated in the November 3, 1995 version of the regulations, whichever is applicable.3.This waiver becomes void if the Department, in its discretion, issues a 30 day notice of its intent to revoke this waiver.4.Because use of the new analytical methods may increase yields from analyses, the person or firm receiving this waiver is advised to plan for the transition to the new methods when considering actions involving the specific project listed above.cc: Marliyn Plitnik DOWL Engineers.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/24/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army draft decision document received. ALTERNATIVE CLEANUP LEVEL APPROVAL FOR PETROLEUM CONTAMINATED SOILS BLDG 47-203 November 24, 1997BACKGROUND-Building 47-203 is currently not in use. The Alaska Army National Guard plans to have the building razed in the near future and return the location to a natural state. Cleanup levels using soil matrix would have been level ???C??? 1000 mg/kg DRO, 500 mg/kg GRO, 50 mg/kg BTEX. SITE HISTORY-The soil was a former UST used for heating fuel (diesel) storage which was removed in 1994. Only DRO exceeds level C at a maximum detected value of 7,400 mg/kg at 30'. The extent of contamination which exceeds 1,000 mg/kg DRO is found from 15' to 30' at depth. Surface contamination at the site is well below level ???A??? criteria. There are no current human or ecological receptors in the area. Groundwater monitoring well on site has not detected any contamination from the site. The depth to groundwater is 135 feet below ground surface. ISSUE-Modeling to determine if contamination at the site could potentially impact groundwater. Benzene, napthalene, and flourene were selected for use in SESOIL and AT123D because they represent the most mobile of the aromatic additives associated with arctic diesel. Results from the modeling show that using the highest sample results for DRO at the site, no significant groundwater contamination will occur. CURRENT STATUS-The surface soils meet cleanup criteria and there are no current or future plans to expose the subsurface soils at the site. This leaves pathways associated with groundwater contamination. A modeling effort has shown that contaminants associated with DRO by means of a surrogate review do not pose a threat to groundwater. ALTERNATIVES CONSIDERED-None. Propose closeout via ACLs. ALTERNATIVE SELECTED/BASIS-No further action close out site. Levels of contaminants are below levels that are proposed in the 18 AAC 75 draft regs for maximum allowable concentrations 12,500 mg/kg total C10-C25 and Benzene or total BTEX does not come close to exceeding

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

level ???A??? criteria. RECOMMENDATION-Approve levels as an ???alternative cleanup level???.

Action Date: 11/15/1997
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Release investigation received and reviewed by staff. Soil diesel range organics (DRO) contamination present at site, maximum concentration 7,400 mg/kg DRO (BTEX, PAHs, RRO, GRO, VOCs analyzed also ND or below Reg. III RBCs). SESOIL fate and tranport modeling conducted using conservative parameters 100 year runs no impacts to groundwater above maximum contaminant levels (MCLs) for any constituents or not reach it at all. Army requests closure and approve alternative cleanup levels (ACLs) for site.

Action Date: 10/31/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Final Remedial Investigation Report for Buildings: 47-203, 955, 975, 979, 45-070, 28-008 received (DOWL/Ogden Joint Venture) for the USACE. All work performed under this contract complied with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Federal Facility Agreement (FF A) entered into in 1994 by the Army, the EPA and ADEC. A waiver has been issued by ADEC exempting all work conducted during the Remedial Investigations from the analytical requirements specified in 18 AAC 78.090(e), 18 AAC 78.235(b), 18 AAC 78.300(c), 18 AAC 78.312(f)(2), and 18 AAC 78.315(d)(3).The purpose of the RI was to define the nature and extent of petroleum hydrocarbon releases at 47-203. Five soil borings were drilled from March 13, 1996 to March 15, 1996, using a hollow-stem auger drill rig. Four were to a depth of 35' bgs and one boring was to 40' bgs. A total of 36 soil samples and five QNQC soil samples were collected and sent to the laboratory for analysis. One ground water monitoring well, AP-3696, was drilled to 160' bgs and installed on April 11 and 12, 1996. The boring was backfilled to 140 feet and then completed as a well. AP-3696 was located downgradient of the site. One ground water sample was collected and sent to the laboratory for analysis. No analytes were detected above the detection limit. A fuel oil UST was removed in June 1994. Sampling results from the soil surrounding the tank. during removal determined the soil was contaminated with petroleum hydrocarbons. Based on this information, soil and water samples collected were analyzed for BTEX, GRO, and DRO. Four soil samples were analyzed for semi-volatile organic compounds (SVOCs) and two samples were analyzed for total organic carbon (TOCs).SOIL ResultsAP-3664: 20' bgs DRO 820 mg/kgAP-3666 15' bgs DRO 4,600 mg/kg, 20' bgs 2,800 mg/kg, 25' bgs 3,800 mg/kg, 30' bgs 7,400 mg/kg (DRO concentrations are increasing with depth)AP-3667 1' bgs 480 mg/kg, 20' bgs 3,400 mg/kg, 25' bgs 4,700 mg/kg, 30' bgs 960 mg/kg AP-3668 30' bgs 350 mg/kgGroundwater was encountered at approximately 135 feet bgs. No detections were found in monitoring well AP-3696 drilled just north of AP-3666.The sampling results for Building 47-203 indicate soil contaminated with DRO primarily around AP-3666 and AP-3667. The actual extent of the contamination was not determined since levels near or in excess of 100 mg/Kg of DRO were found in all borings. The contaminant levels decrease in the direction of AP-3665 from AP-3666 and also in the direction of AP-3668 from AP-3666. Levels of metals detected in the

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY (Continued) **S110144178**

samples are within the background range for Fort Richardson. Review of the sampling results indicate the highest concentrations of contaminated soil occur between 15 to 30 feet bgs. Approximately 30 to 35 feet bgs a more silty interval was encountered. This siltier interval may be acting to slow diesel migration in the vertical direction and allowing it to spread horizontally. Surface contamination (0-12 inches) was encountered in borings AP-3667 and AP-3668, but this could be due to the use of the lot for parking and vehicle storage.The matrix score for Building 47-203 is 26, or Category C. This requires the following soil clean-up levels:DRO 1,000 mg/KgGRO 500 mg/KgRRO/TPH (TRPH) 2,000 mg/KgBenzene 0.5 mg/KgBTEX 50 mg/KgRecommendationsContaminated soils were found to a depth of 30 feet; therefore, excavation does not appear to be a cost effective option. Contamination levels in excess of clean-up criteria were not found below 30 feet. ADEC allows for the establishment of alternative clean-up levels based on the results of a leachability assessment, provided no ground water is contaminated, or a risk assessment if ground water is contaminated or has the potential to become contaminated at levels in excess of acceptable vales.The depth to ground water and the soil characteristics which suggest a tighter, siltier soil interval at approximately 30 to 35 feet support the performance of a Leachability Analysis (as outlined in 18 AAC 78.310 and 78.350) for the vadose zone to establish whether or not the ground water will be impacted as a result of the present contamination. Based on the results of the leachability analysis, alternative clean-up levels can be established.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU069 Bldg 47203 UST 93 USTA 2 Party
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	Not reported
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

E13 **JBER-FT. RICH BLDG 47220 UST 1159** **SHWS** **S110144119**
SOUTH SIDE OF DAVIS HWY. FTRS-14 FAC ID 0-00-788 UST 207, FO **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 2 in cluster E

Relative: Higher
Actual: 354 ft.

SHWS:

File Number:	2102.26.
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.267797
Longitude:	-149.661542
Hazard ID:	2405
Problem:	Suspected petroleum contaminated soils associated with leaking USTs at the former boat shop. Tank was removed and soil excavated, cleanup

JBER-FT. RICH BLDG 47220 UST 1159 (Continued) **S110144119**

levels not ex eeded and site was closed out. Associated with Building 775, 47-433 (EPA, ADEC concurred on NFA under CERCLA). Site still open under Two Party Agreement USTMP. UST Facility ID 788. EPA ID: AK6214522157.

Actions:

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/20/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff reviewed the site assessment received on August 24, 1995. ADEC concurs that the level C cleanup criteria was not exceeded. Tank met cleanup criteria for closure. However, an additional UST 1159 located at the site leaked fuel oil and required further investigation/corrective action.

Action Date: 9/10/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Oil Spill Consultants (R. Easley)sent to Brown & Root Corporation (Thomas H. Tyler) sample results for UST Removal. USTs 45A, 80A, 81A qualify for clean closure under the State's UST regulations. Tank 1159 soil samples are heavily contaminated with diesel fuel. DRO levels for these samples ranged from 4,610 mg/kg to 46,500 mg/kg. In view of this, Tank 1159 does not qualify for clean closure under the State's UST regulations. All soil excavated to access this tank must be stockpiled and treated in accordance with the requirements established by 18 AAC 78 and ADEC's UST Procedures Manual.

Action Date: 8/24/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1,500 gallon UST No. 1159 used for storing at Old Boat Shop was removed on August 24, 1998. Tank was reported in good condition, but the plug in the bottom center of the tank and appeared to be leaking. The excavation was 15 ft. long, 8 ft. wide and 7 ft. deep. No groundwater was encountered during tank excavation activities. Site was backfilled with clean sand and gravel upon completion of the removal. High levels of DRO, in the range of 23,000 to 46,000 mg/kg and low levels of total BTEX, in the range of 0.73 mg/kg to 4.19 mg/kg were found in the bottom of the excavation, no benzene was discovered.

Action Date: 8/24/1994
Action: Preliminary Assessment Approved

JBER-FT. RICH BLDG 47220 UST 1159 (Continued) **S110144119**

DEC Staff:	Louis Howard
Action Description:	Tank 145 at Bldg. 47-220, the Directorate of Community Affairs Boat Shop, was removed in June 1995 because it was no longer needed at the facility. Site assessment conducted during removal found soils contaminated with petroleum below level B criteria. Recommend closure for this tank 145. Soils with residual contamination start at 10' bgs and there are no groundwater wells in the vicinity of Bldg. 47-220 and contaminants are not expected to migrate to the water table.
Action Date:	8/23/2002
Action:	Cleanup Plan Approved
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the draft Circle Drive and Building 47220 Excavation, Assessment and Treatment Plan. Staff requested the sampling depth for stockpiles be changed from six inches to eighteen inches beneath the exposed surface of the pile. Staff requested the references for the CS and UST regulations be updated to reflect the most current versions dated July 11, 2002.
Action Date:	4/30/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Staff concurred with release investigation's recommendations for the need to characterize the extent of horizontal contamination. Five soil borings and one groundwater monitoring well was installed at AP-4137. The highest DRO concentrations were found at the 14-16 ft. sampling interval (5,200 mg/kg and 2,300 mg/kg). Groundwater was found to be 135 ft. below ground surface (bgs). Staff also reminded the Army of the 30 day review deadline that ADEC requires for all review documents.
Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Bill Petrik
Action Description:	Ranking action added now because it was not added when the site was originally ranked.
Action Date:	3/21/2003
Action:	Site Closure Approved
DEC Staff:	Louis Howard
Action Description:	Staff reviewed the Final Excavation and Treatment report for the site. Based on a review of the data presented, the sampling conducted within the excavation and source removal/treatment of the excavated soils, the Department concurs with the Army on no further remedial action or investigation being required at the site. The Department is basing its decision for no further action being required at the site on the most current and complete information provided by the Army. The Department reserves its rights, under 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations, 18 AAC 78 Underground Storage Tank regulations, and AS 46.03 to require the Army to perform additional investigation, cleanup, or containment if: 1) subsequent information indicates that the level of contamination that remains does not protect human health, safety, or welfare, or the environment; or 2) the information the Department relied upon for its decision was invalid, incomplete, or fraudulent.For levels of contamination above Table B2 GRO 300 mg/kg or DRO 250 mg/kg or applicable migration to groundwater levels the following policy

JBER-FT. RICH BLDG 47220 UST 1159 (Continued) **S110144119**

applies. The following policy applies for soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required:1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1;2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 annual precipitation zone;3. The soil is not placed within 100 feet of water wells, surface waters, and drainage ditches; and4.The written approval from the landowner of the off-site location is required.The off site disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval to dispose of soil off site that does not meet the criteria shall be made by the ADEC Section Manager.Terms used in this document have the meaning given in 18 AAC 75.990 including: ???environmentally sensitive area??? means a geographic area that, in the department's determination, is especially sensitive to change or alteration.

Action Date: 12/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Petroleum contamination.

Action Date: 11/13/2000
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site reopened from Closure. UST 1159 at the site located at the building leaked in addition to UST 145 that leaked and therefore the site no longer qualifies for a closure action.

Action Date: 11/13/2000
Action: Site Characterization Workplan Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved work plan for a release investigation at 47-220. 1,500 gallon fuel oil UST of unknown age removed in 1998 with residual contamination (DRO) above State cleanup levels. Investigation will be to characterize full extent of contamination at the site from the release. 46,500 mg/kg diesel range organics detected in soil at 7 feet below ground surface (1998 preliminary site assessment).

Action Date: 10/7/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: Tim Stevens sent letter to Mr. Kevin Gardner (Army). The Department of Environmental Conservation, Storage Tank Program (ADEC) has reviewed the five site assessment reports it received on February 8, 1999, documenting the closure of the above mentioned underground storage tanks (UST). The reports summarize the information collected during closure of the USTs at the various locations on Fort Richardson. Since the five UST site assessments were completed prior to the adoption of the January 22, 1999 regulations, the ADEC conducted its review of the reports using the November 3, 1995

JBER-FT. RICH BLDG 47220 UST 1159 (Continued) **S110144119**

regulations, in effect at the time of the closures. Based on the information and laboratory data presented in the site assessment documents, the ADEC has the following comments and recommendations. UST 11 (Alternate ID 80A), UST 12 (Alternate ID 81A), UST 173 (Alternate ID 45A), UST 218 (Alternate ID 218):Based on the analytical data presented in the four site assessment reports the sites could be closed and a no further action determination made. However, the site assessments documents did not clearly state that the piping (vent and supply) was removed and the entire piping trench assessed for petroleum contamination. For each site, please submit the following information to the ADEC for review: ???A narrative stating whether all or only part of the piping was removed. The narrative should also include the total length of piping removed.???A sketch showing the location of the piping in relation to the UST tank and the building. ???The sketches should include the field and confirmation samples locations and results.UST 207 (Alternate ID 1159):Information and analytical data presented in this site assessment report indicate a release of petroleum product has occurred. Based on the level of contamination found, and the estimated amount of contaminated soil at the site, the ADEC is requiring the Department of the Army to conduct a release investigation to find the full extent of contamination present. Because the release is from a non-regulated heating oil tank, proper ADEC oversight of the release investigation and any additional corrective action required should be coordinated through the ADEC Contaminated Sites Program. I have forwarded the site assessment report to Louis Howard. I recommend you contact Mr. Howard at (907) 269-7552 to discuss ADEC oversight of the release investigation and the possibility of incorporating this site into the existing two-party agreement between ADEC and Fort Richardson.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 47220 UST 1159
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	For more information about this site, contact DEC at (907) 465-5390.

F14 **NATIONAL GUARD OMS 6 - FT. RICH** **LUST** **S105096399**
ACCESS RD CAMP CARROL **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 4 in cluster F

Relative: LUST:
Lower

Facility Name:	NATIONAL GUARD OMS 6 - FT. RICH
Facility Status:	Cleanup Complete
Record Key:	1993210024401
File ID:	2102.26.071
Oname:	Alaska Army National Guard Attn AKNG ARE

Actual:
337 ft.

NATIONAL GUARD OMS 6 - FT. RICH (Continued) **S105096399**

Lat/Lon:	61.26392 -149.6697
Lust Event ID:	2772
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Unknown
Horizontal Datum:	NAD83

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15 **JBER-FT. RICH BLDG 47431 HOT #E1 UST 213 FRSERA 2** **SHWS S110144157**
NEAR BLDG 47431 WESTBROOK ROAD **LUST N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Higher
Actual: 341 ft.

SHWS:

File Number:	2102.38.053
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.266968
Longitude:	-149.673892
Hazard ID:	25063
Problem:	500-gallon heating oil tank was removed from the ground on May 14, 1998. 20 cy of excavated soil was transported off site for thermal treatment. FRSERA 2 Party site. See CS DB reckey 199821X113401

Actions:

Action Date:	8/31/1998
Action:	Underground Storage Tank Site Characterization or Assessment
DEC Staff:	* Not Assigned
Action Description:	On August 31, 1998, the ADEC received the site assessment report summarizing activities that took place during the closure of the heating oil tank closure. Maximum contaminant level at tank excavation: diesel range organics 4,820 mg/kg from a duplicate sample, 2,880 mg/kg from tank pit bottom center and 3,710 mg/kg from tank pit bottom end.

Action Date:	8/13/1999
Action:	Site Closure Approved
DEC Staff:	Louis Howard
Action Description:	No further action planned. After investigating the site, no contamination was found exceeding applicable cleanup levels.

Action Date:	7/21/2005
Action:	Update or Other Action
DEC Staff:	Aggie Blandford
Action Description:	See CS Database, file number 2102.38.053

Action Date:	5/14/1998
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	Louis Howard
Action Description:	Source removal; UST was removed from the ground on May 14, 1998.

Action Date:	5/14/1998
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	3/12/1999
Action:	Update or Other Action

JBER-FT. RICH BLDG 47431 HOT #E1 UST 213 FRSERA 2 PARTY DUPL (Continued) **S110144157**

DEC Staff: Louis Howard
Action Description: Oil Spill Consultants sent a letter to Tim Stevens clarifying UST soil management for the site. OSC Inc. prepared site assessment reports for UST numbers E1, E2, E5, and E7 during August 1998. Section 2.4 states soil excavated for UST removal was shipped off-site for thermal treatment. It should instead read: The soil excavated for UST removal was stockpiled near Circle Drive at Fort Richardson, Alaska pending ADEC approval for off-site shipment to a thermal treatment facility in the Anchorage area.This statement accurately reflects the work performed as part of the UST removal process by Brown & Root Services Corporation. After received ADEC approval, Fort Richardson will arrange for another contractor to transport the soil to a thermal treatment facility.

Action Date: 3/11/1999
Action: Update or Other Action
DEC Staff: * Not Assigned
Action Description: ADEC project manager issued a letter informing the US Army that a release investigation is required at this site to find the full extent of the contamination found during the tank closure.

LUST:
Facility Name: JBER-FT. RICH BLDG 47431 HOT #E1 UST 213 FRSERA 2 PARTY DUPLICATE
Facility Status: Cleanup Complete
Record Key: 199821X013401
File ID: 2102.38.053
Oname: U.S. Air Force
Lat/Lon: 61.26696 -149.6738
Lust Event ID: 2276
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

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16 **JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 480** **SHWS** **S120900074**
EASTERN SIDE OF BRYANT army NATIONAL GUARD AIRFIELD, FORMERL **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Higher
Actual: 345 ft.

SHWS:
File Number: 2102.38.076
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.262917
Longitude: -149.660219
Hazard ID: 26758
Problem: AFFF Area 4 is located at Fire Station 5 Building 48010 on the eastern side of the airfield at Bryant Army National Guard Airfield Station (JBER-Richardson). Soil results from a site inspection specifically for aqueous film forming foam (AFFF) areas on JBER-E and JBER-R detected perfluorooctane sulfonate (PFOS) below EPA risk-based screening levels and ADEC human health cleanup level, but above the ADEC migration to groundwater cleanup level.

Actions:
Action Date: 9/21/2017

JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 48010 (Continued) **S120900074**

Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 80117 name: AFFF Area 4 Fire Station 5 Bldg 48010
Action Date:	8/29/2017
Action:	Site Added to Database
DEC Staff:	Mitzi Read
Action Description:	A new site has been added to the database
Action Date:	8/15/2017
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	AFCEC will have the U.S. Army Corps of Engineers conduct a level IV data review for the JBER PFAS data. Guestimates are it will be at least 4-6 weeks. The review may also include Eielson and Clear AFB since they were on the same contract/ same labs. Level IV data validationThese data undergo full review and evaluation of a complete Data Validation Package (DVP) according to DQO/QAPP specific criteria, and National Functional Guidelines. This level of review includes all summaries, and raw data associated with the data package, and ensures the highest level of defensibility.
Action Date:	7/17/2017
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	EPA received the Draft Site Inspection Report for Aqueous Film Forming Foam Areas, Joint Base Elmendorf-Richardson, Alaska, May 2017 for review the week of June 2, however Appendix B2 (App B2) laboratory data was not included. EPA received App B2 for review the week of June 20. EPA preliminary comments were sent to the Air Force on July 17, 2017. EPA Office of Research & Development staff, as well as EPA Region 5 Laboratory chemists, reviewed App B2. EPA has asked the Air Force for clarification regarding what level of report & data review was done by the government prior to submittal of the report to EPA & have not received a clear response. EPA???s initial review has identified a number of data quality issues & that the government data review should be completed & submitted to EPA before we are asked to finalize our comments. The comments submitted reflect only those requiring clarification on the narrative or figures & do not concern data quality or final conclusions on the source areas based on the data. The comments are not inclusive of review of the laboratory data & therefore cannot substantiate any conclusions drawn on the presence or absence of PFAS at the twenty-six areas of concern.The second paragraph of Section 3.7.3.2 states that ???One groundwater sample was collected from 150 to 160 feet bgs [below ground surface] in new monitoring well FS4-1;??? however, this depth is not consistent with other parts of the SI Report (Table 3-1, Table 3-2, etc.), which indicate the sample depth was 62 to 72 feet bgs. Similarly, Section 3.7.4.2 states that ???One groundwater sample was collected from 150 to 160 feet bgs,??? but other parts of the SI Report indicate the sample depth was 122.75 to 132.75 feet bgs. Please revise Sections 3.7.3.2 and 3.7.4.2 to include the correct groundwater sample depths.See site file for additional information.
Action Date:	6/13/2017
Action:	Report or Workplan Review - Other

JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 48010 (Continued) **S120900074**

DEC Staff: Louis Howard
Action Description: Staff commented on the draft SI for JBER-E and JBER-R sites which included this site. It appears there are documented releases of PFOS and/or PFOA at these areas which require additional investigation through a remedial investigation/feasibility study under CERCLA or as required by 18 AAC 75.335 Site Characterization. The 1991 Elmendorf Federal Facility Agreement Part II Definitions. Paragraph 2.1 states: ???(y) Site??? shall mean the areal extent of contamination and shall include sources of contamination subject to this Agreement at the Elmendorf (Elmendorf AFB), which occupies approximately thirteen thousand one hundred and thirty (13,130) acres, bordered by the Municipality of Anchorage,- Alaska, to the south. The Site includes ANY OFF-BASE area(s) contaminated by the MIGRATION of hazardous substances, pollutants, or contaminants FROM Elmendorf AFB;??? See site file for additional information.

Action Date: 6/1/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft site inspection (SI) at aqueous film forming foam (AFFF) areas on JBER-E and JBER-R waa received for review and comment. The purpose of the SI was to determine the presence or absence of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in the environment. These compounds are a class of synthetic fluorinated chemicals used in industrial and consumer products, including defense-related applications. This class of compounds is also referred to as per- and polyfluorinated alkyl substances (PFAS). One soil sample from ground surface to 15 feet bgs was collected. PFBS was not detected. PFOA was detected at concentrations below the EPA RBSL and ADEC cleanup levels. PFOS was detected atconcentrations below the EPA RBSL and ADEC human health cleanup level but above the ADEC MTGWcleanup level.One groundwater sample was collected from 150 to 160 feet bgs. PFOS was not detected ingroundwater. PFOA was detected at concentrations below both the EPA HA and the ADEC cleanup level, while PFBS was detected at a concentration below the EPA RSL.See site file for additional information.

Action Date: 4/28/2015
Action: CERCLA PA
DEC Staff: Louis Howard
Action Description: Preliminary Assessment received for multiple U.S. Air Force (Air Force or USAF) and Air National Guard (ANG) Fire Training Areas (FTAs) to determine probable environmental release of perfluorinated compounds (PFCs). Specifically, HGL is completing PA activities consistent with the U.S. Environmental Protection Agency (USEPA) Guidance for Preparing Preliminary Assessments under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (USEPA, 1991) to determine potential releases of PFCs at 82 Air Force and ANG installations from FTAs and other known and suspected PFCs or aqueous film-forming foam (AFFF) usage or storage areas.At Fire Station 5 (Building 48010), the only storage of AFFF is in emergency response vehicleCrash 10, totaling approximately 210 gallons of concentrate. Vehicle cleaning is conducted inside Fire Station 5 (Building 48010) where floor drains are present to capture any runoff and direct it into the AWWU system for treatment. It is possible that small-scale AFFF testing also may have been performed outside of the station in the past, in which case the surrounding

JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 48010 (Continued) **S120900074**

vegetated areas may have received AFFF in runoff. Refilling of the fire engine???s AFFF tank occurs from stock supply housed at Building 6210 (Bakker, 2014b, personal communication; Appendix C).Recommendation is to initiate a site inspection. A SI is defined as an investigation to collect and analyze waste and environmental samples to support an evaluation (USEPA, 1992).

Action Date: 4/11/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft PFC Site Inspections work plan for JBER-E and JBER-R.Main comments were regarding obtaining prior approval from ADEC and EPA project managers before making changes to the approved QAPP and that the EPA RSSLs are less stringent than the human health soil cleanup levels and migration to ground cleanup levels ADEC will be promulgating this winter (2016). It was noted that WS 10 is especially vague: Based on the above, the best available screening criteria for PFOA and PFOS releases are the EPA PHAs for groundwater and RSSLs for soil. Because ADEC has proposed lower concentration limits that are in the publiccomment process, the ADEC levels should also be considered.It states that ADEC levels should also be considered, however in WS 11, it states the concentrations of PFOA and PFOS in soil and groundwater will be compared to project screening levels based on the most conservative risk based EPA or ADEC values.For determining presence or absence of PFOS and PFOA using solely risk based screening levels is not acceptable to ADEC. If the migration to groundwater cleanup level is adopted by ADEC and it exceeds for PFOS or PFOA, a release is confirmed and it is deemed to be contaminated by ADEC. 18 AAC 75.990 Definitions. (23} contaminated soil means soil containing a concentration of a hazardous substance that exceeds the applicable cleanup level determined under the site cleanup rules. If AFCEC chooses to proceed with risk based values (as it is apparent upon review of Table 10-2 Steps 2, 4, & 5), then ADEC reserves the right to require further investigation/cleanup under 18 AAC 75 for all areas of concern/source areas where AFC EC determined no addition action was necessary at an area of concern/ source area, but the PFC levels detected exceed migration to groundwater cleanup levels for PFCs.See site file for additional information.

Action Date: 11/21/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Per AFCEC email: A memo from the USACE summarizing issues found in their review should be in hand on the 4th of December.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich AFFF Area 04 Fire Station 5 Bldg 480
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: Not reported
Control Details Description1: Not reported
Contaminant CTD: Not reported
Contaminant CDR: Not reported

JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 48010 (Continued) **S120900074**

Comments: Not reported

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17 **JBER-FT. RICH BLDG 47642 AEROCLUB USTA 2 PARTY** **SHWS** **S110144104**
BRYANT AIRFIELD SW CORNER S. OF WESTBROOK AVENUE, FORMERLY F **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative:
Lower

Actual:
335 ft.

SHWS:

File Number:	2102.26.042
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.264380
Longitude:	-149.674730
Hazard ID:	1230
Problem:	Leaking underground waste oil storage tank 94 discovered 8/15/91. Cleanup levels not exceeded site closed out. Point of contact: Cristal Fosbrook 384-2173 Environmental Resources Branch. Last staff assigned were Halverson and Howard. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:

Action Date:	9/24/1991
Action:	Site Number Identifier Changed
DEC Staff:	John Halverson
Action Description:	Old91210024202 new91210025303 per J. Halverson.

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/19/1991
Action:	Notice of Violation
DEC Staff:	John Halverson
Action Description:	Notice of release sent in response to 8/29/91 report of a petroleum release from an underground tank system at Building 47642. In accordance with 18 AAC 78.210 and 18 AAC 78,230 following the discovery of a petroleum release, the owner/operator of the UST must perform a site assessment. If release is confirmed an initial abatement and release investigation must be conducted in accordance with 18 AAC 78.230 Reports on the site assessment and release investigation to be sent within 30 days after confirmation of release. Corrective actions to be documented in an interim corrective action report (18AAC 240(e)(1)) and sent in within 60 days after the confirmation of a release.

Action Date:	8/29/1991

JBER-FT. RICH BLDG 47642 AEROCLUB USTA 2 PARTY (Continued) **S110144104**

Action:	Site Added to Database
DEC Staff:	John Halverson
Action Description:	Used oil contaminant.
Action Date:	5/9/1994
Action:	Site Closure Approved
DEC Staff:	Louis Howard
Action Description:	Letter to Maj. Kevin Gardner-RE: UST Release Investigation A Seven Fuel Tank Locations-Bldg. 47662 and 47641 Draft RI report. Staff received the document on April 25, 1994. Based on the data presented for 47641 showing soils were below level A criteria, the site will be closed out. If in the future, additional contamination is discovered at this site, further investigation and/or remedial actions may be requested of the Army by DEC. DEC reserves its rights, under 18 AAC 75, 18 AAC 78 and AS 46.03 to require the Army to conduct additional assessment and/or corrective actions in the future if information indicates the site conditions pose a risk to public health or the environment.
Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Bill Petrik
Action Description:	Ranking action added now because it was not added when the site was originally ranked.
Action Date:	4/15/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Building 47-642, the former Aero Club, was located on the southwest corner of Bryant Army Air Field, until it was demolished during the Summer of 1991. Tank 94, a 1,000 gallon heating oil underground storage tank (UST), was removed in July 1991. Soil samples taken during the removal contained residual range organics up to 1,643 mg/kg. Release investigation conducted in 1994 showed levels of contamination to be below level A criteria.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 47642 Aeroclub USTA 2 Party
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	For more information about this site, contact DEC at (907) 465-5390.

18 **JBER-FT. RICH AKARNG - AASF** **SHWS** **S110144123**
WESTBROOK AVENUE, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Higher
Actual: 345 ft.

SHWS:

File Number:	2102.38.047
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.264717
Longitude:	-149.662358
Hazard ID:	2729
Problem:	Suspected petroleum contamination in soil from past surface releases. Site Investigation Report prepared by CH2MHill dated June 1996, received by ADEC 5/14/1997. Screening level investigation; maximum DRO detected at 528 mg/kg, GRO and BTEX are non-detectable. Report scores site as Level D matrix.

Actions:

Action Date:	9/16/1997
Action:	Site Added to Database
DEC Staff:	Scott Pexton
Action Description:	Suspected petroleum contamination in soil from past surface releases.
Action Date:	5/14/1997
Action:	Update or Other Action
DEC Staff:	Scott Pexton
Action Description:	Received Site Investigation Report for Alaska Aviation Support Facility (dated June 1996) prepared by CH2MHill.
Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Bill Petrik
Action Description:	Ranking action added now because it was not added when the site was originally ranked.
Action Date:	3/16/2004
Action:	Update or Other Action
DEC Staff:	Sarah Cunningham
Action Description:	File number assigned: 2102.38.047.
Action Date:	10/12/2000
Action:	Site Characterization Report Approved
DEC Staff:	Scott Pexton
Action Description:	Letter sent to Norman Straub of the Alaska Army National Guard with approval of site investigation report, cleanup levels, and site closure.
Action Date:	10/12/2000
Action:	Cleanup Level(s) Approved
DEC Staff:	Scott Pexton
Action Description:	Letter sent to Norman Straub of the Alaska Army National Guard with approval of site investigation report, cleanup levels, and site closure.
Action Date:	10/12/2000
Action:	Record of Decision
DEC Staff:	Scott Pexton
Action Description:	Cleanup Decision Document signed for AKARNG Fort Richardson AASF site. Not reported

JBER-FT. RICH AKARNG - AASF (Continued) **S110144123**

Action Date:	10/12/2000
Action:	Site Closure Approved
DEC Staff:	Scott Pexton
Action Description:	Letter sent to Norman Straub of the Alaska Army National Guard with approval of site investigation report, cleanup levels, and site closure.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich AKARNG - AASF
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	For more information about this site, contact DEC at (907) 465-5390.

C19 **JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACIL** **LUST** **S108941669**
FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 3 of 5 in cluster C

Relative: Lower **Actual: 331 ft.**

LUST:

Facility Name:	JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACILITY TANK #001
Facility Status:	Cleanup Complete
Record Key:	1995210131901
File ID:	2102.26.073
Oname:	Alaska Army National Guard Attn AKNG ARE
Lat/Lon:	61.26382 -149.6770
Lust Event ID:	1759
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	WGS84

F20 **JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACIL** **SHWS** **S109256519**
AASF BRYANT AIRFIELD, FORMERLY FORT RICHARDSON BEFORE 10/01/ **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 4 in cluster F

Relative: Lower **Actual: 337 ft.**

SHWS:

File Number:	2102.38.047
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.263920
Longitude:	-149.669798
Hazard ID:	24618
Problem:	1,000 gallon Avgas UST

JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACILITY (Continued) **S109256519**

Actions:

Action Date:	11/27/1995
Action:	Report or Workplan Review - Other
DEC Staff:	Kent Patrick-Riley
Action Description:	Kent Patrick-Riley Sent AK Army National Guard (Ron Godden) Chief, Environmental Section a comment letter. RE: Draft Report on: Regulated UST release investigation and remediation atAlaska Army National Guard Ft. Richardson AASF. report prepared by Montauk Environmental Engineering. dated November 14. 1995, submitted November 27. 1995; Closure of UST at Facility ID 983. Tank ID 1 (1.000 gallon AvGas tank. eight years old)The Department of Environmental Conservation has received and reviewed the above referenced report on the closure site assessment and release investigation of a regulated UST. Although there were deficiencies noted in the report. based on this document and previous infonnation. no further action (NFA) is requested by the Department for soils remaining at the site. However. in the future, if contamination exceeding regulatory soil and groundwater cleanup standards is identified at the site additional work may be necessary. The report confirms that some contaminated soils were excavated from the site and are being thermally remediated. Note the department cannot complete full closure of this site until information is submitted showing that remediation has satisfactorily occurred. In discussions with you on this sile. you indicated a final draft of the report is being prepared to clarify the report's deficiencies. Please submit a copy for the department's files when it is completed.

Action Date:	10/6/1995
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	10/20/1995
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Five cy of contaminated soils transported to ASR for thermal disorption.

Action Date:	1/29/1999
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	NFA letter issued after review of remediated soil samples from ASR

Action Date:	1/29/1996
Action:	Release Investigation
DEC Staff:	* Not Assigned
Action Description:	Level D site, highest level of contamination left in excavation, sample 95 ANC-04 @ 850 ppm GRO and 43 ppm BTEX

C21 **JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PAR** **LUST** **S108941530**
WESTBROOK AVE. BRYANT AIRFIELD **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 4 of 5 in cluster C

Relative: LUST:
Lower

Facility Name:	JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199121X019306
File ID:	2102.26.040
Oname:	U.S. Air Force
Lat/Lon:	61.26387 -149.6769
Lust Event ID:	239
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	WGS84

Actual:
331 ft.

C22 **JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACIL** **SHWS** **S109256654**
FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 5 of 5 in cluster C

Relative: SHWS:
Lower

File Number:	2102.26.073
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.263820
Longitude:	-149.677019
Hazard ID:	24824
Problem:	October 1995 1,000 gallon aviation gas underground storage tank removal located at AK ANG Army Aviation Operating Facility released petroleum to the soil. Soil contamination was limited and sucessfully removed and treated.

Actual:
331 ft.

Actions:

Action Date:	6/12/1991
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	June 1991 RCRA HW Mgt. Compliance Evaluation Report received. In the past year, various facilities or personnel have used Fort Richardson's EPA ID Number in peculiar or inappropriate manners. The U.S. Army National Guard in Bethel, Alaska (AK7211890051) wrote in their 1990 Annual Report that they sent their spent lithium batteries to Building 45-125, but then used Elmendorf's EPA ID Number. Upon calling Bethel, Sargent Tikiun there clarified that they shipped their waste to DRMO on Elmendorf, and not to Building 45-125 on Fort Richardson. The Army Aviation support Facility in Building 47-427 on Fort Richardson sent in their own 1990 Annual Report as though the EPA ID Number AK1210022157 was issued exclusively to this one building and not to Fort Richardson as one large, whole facility. See Appendix F. The annual report for the entire facility was received on April 25, 1991 from Ms. Scott.
Action Date:	4/23/2008
Action:	Update or Other Action
DEC Staff:	Nicole Hurt

JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACILITY TANK 0 (Continued) **S109256654**

Action Description: File number changed from L71.11 to 2102.26.073.

Action Date: 11/27/1997
Action: Report or Workplan Review - Other
DEC Staff: Kent Patrick-Riley
Action Description: Kent Patrick-Riley (ADEC) sent Ron Godden (AANG) a comment letter on the Draft Report on: Regulated UST release investigation and remediation at Alaska AnllY National Guard Ft. Richardson AASF. report prepared by Montauk Environmental Engineering. dated November 14. 1995. submitted November 27. 1995: Closure of UST at Facility ID 983. Tank ID 1 (1.000 gallon AvGas tank. eight years old)The Department of Environmental Conservation has received and reviewed the above referenced report on the closure site assessment and release investigation of a regulated UST. Although there were deficiencies noted in the report. based on this document and previous information. no further action (NFA) is requested by the Department for soils remaining at the site. However. in the future. if contamination exceeding regulatory soil and groundwater cleanup standards is identified on the site, additional work may be necessary. The report confirms that some contaminated soils were excavated from the site and arebeing thermally remediated. Note the department cannot complete full closure of this siteuntil information is submitted showing that remediation has satisfactorily occurred.In discussions with you on this site you indicated a final draft of the report is beingprepared to clarify the report's deficiencies. Please submit a copy for the department's fileswhen it is completed.

Action Date: 10/6/1995
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 10/6/1995
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 10/31/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1,000 gallon aviation gasoline underground storage tank removed from the site. Field screening detected a release to the site soils which was confirmed by laboratory analysis. Extent of contamination was confined to non-native fill located immediately around the tank. Groundwater is 60 feet below the deepest point of soil contaminantion and has not been affected by this release. Soil samples from the excavation pit bottom and walls indicate a successful cleanup in excess of the most stringent requirements, and contaminated soil is being thermally treated to appropriate standards.

Action Date: 1/29/1997
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: NFA Issued by Tim Stevens. No Further Action - Alaska Army National Guard, Army Aviation Support Facility (AASF), Fort Richardson Alaska. Facility ID 0000983, tank 001. The Department of Environmental Conservation: has c9mpleted the review of the site assessment/release

JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACILITY TANK 0 (Continued) **S109256654**

investigation report documenting the closure ()f the regulated underground storage tank (UST mentioned above. The report summarizes information collected during the closure of the 1,000 gallon, aviation grade, gasoline tank associated with the AASF facility on Fort Richardson. Based on information presented in the report and information contained in our file, no further action is required for the cleanup of releases associated with this UST. Should contaminated soil or water be discovered at the site in the future, appropriate site assessment and cleanup will be required in accordance with applicable State regulations

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D23 **JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2** **SHWS** **S110144161**
WESTBROOK AVE. & W. END OF BRYANT AIRFIELD FTRS-57, FORMERLY **INST CONTROL** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 4 of 5 in cluster D

Relative: Lower
Actual: 325 ft.

SHWS:

File Number:	2102.26.041
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.261475
Longitude:	-149.676484
Hazard ID:	939
Problem:	Aviation gas and JP4 tanks (89-91) have contaminated the soils. All contamination has been dealt with to the maximum extent practicable, no further action required or planned. FTRS-57 Bldg 47662 UST 89, 90, Old Flying Club. Last staff assigned was Howard. UST Facility ID 788. Site R094 Bldg 47641 Aircraft maintenance facility Flying Club SWMU 85 SE1/4 NW1/4 Section 32.EPA ID: AK6214522157USTA 2 Party Attach. I Petroleum Contaminated Soil Stockpiles at Landfill

Actions:

Action Date:	9/26/1990
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	INTERIM GUIDANCE FOR SURFACE AND GROUNDWATER CLEANUP LEVELS SEPTEMBER 26, 1990Interim cleanup guidance for contaminated surface and groundwater remediation is necessary to ensure that consistent cleanup levels are being applied by district and regional program staff. The following guidelines should be implemented under 18 AAC 75.140 which specifies that a discharge must be cleaned up to the satisfaction of the Regional Supervisor or his designee. Final cleanup levels shall be determined by the Regional Supervisor or his designee based on site-specific conditions. Staff should be aware that if a facility is regulated under RCRA, that RCRA corrective action and cleanup standards should enter into development of final site cleanup levels.Groundwater should be cleaned up to levels not exceeding the more stringent of the final State or Federal Maximum Contaminant levels (MCLs) for Organic and Inorganic Chemicals. If final MCLs have not been adopted for a contaminant, then groundwater should be cleaned up to levels not exceeding proposed Federal MCLs. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned, up to non-detectable levels as measured by EPA Method 418.1.Final State MCLs are specified in 18 AAC 80.050 and final Federal MCLs are specified in 40 CFR 141 and 142. Proposed Federal MCLs are specified in the May 22, 1989, Federal

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

Register Vol. 54, No. 97, pages 22155 - 22157 and the July 25, 1990, Federal Register Vol. 55, No. 143, pages 30408 - 30448. Appendix I provides a summary listing of State and Federal Final and Proposed MCLs for selected organic and inorganic contaminants.For organic and in organic contaminants that have not been assigned a final or proposed MCL, cleanup levels should be based on criteria cited in EPA's Water Quality Criteria. 1986 using a health risk factor of 10-6. EPA's water quality criteria identify concentrations of elements and compounds which have toxic effects on aquatic organisms or toxic and carcinogenic effects on humans. If groundwater is being used as a drinking water source and alternative water supplies or point of use water treatment cannot be provided, then final or proposed secondary maximum contaminant levels (SMCLs) may be used as cleanup target levels. SMCLs are based on aesthetic properties such as taste and odor, whereas MCLs are based on human health risks. For compounds such as xylenes, the SMCL maybe several hundred times lower than the MCL.Surface waters used for drinking water should also be cleaned up to levels not exceeding the final or proposed MCLs for organic and inorganic chemicals, as specified above. Under the authority of 18 AAC 70.020, surface waters important to the growth and propagation of aquatic life should be cleaned up to the listed criteria which includes EPA's Water Quality Criteria. 1986. These criteria identify concentrations of specific elements or compounds which have toxic effects on aquatic organisms. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned up to non-detectable levels as measured by EPA Method 418.1.Alternative Cleanup Levels (ACLs) may be adopted for a site if a risk assessment approved by the department is performed and cleanup to levels identified above is technically infeasible. Risk assessments will not by themselves establish ACLs. Determination of cleanup levels is a risk management decision that the department must make based on results of a quantitative risk assessment and other pertinent information.The responsible party (RP) may prepare at its own expense a risk assessment which shall include an assessment of both human health and environmental risks. Specific components of the risk assessment should include an exposure assessment, toxicity assessment, risk characterization, and justification of ACLs. A general description of these risk assessment components is provided in Appendix II.General technical requirements for risk assessments should be based on EPA risk assessment guidance for superfund sites. A site specific risk assessment procedure must be prepared by the RP and submitted to the department for review and approval prior to conducting a risk assessment. The RP, at the department's discretion, must agree to reimburse the department for expenses incurred by the department if it chooses to contract for a risk assessment review.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be

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reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/20/1990
Action: Site Added to Database
DEC Staff: John Halverson
Action Description: JP4 and Avgas contaminants.

Action Date: 9/14/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Institutional controls report received for several sites which include this building. GRO was detected up to 550 mg/kg (just slightly above Matrix D level of 500 mg/kg for GRO). Based on a Spring 1996 leachability study groundwater migration model was run, a no further action was granted. This action does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health or the environment. ADEC requests any monitoring wells installed as a part of the investigation be added to the Post-wide monitoring network established under the CERCLA Federal Facility Agreement. ICs tracked under Fort Richardson Master Plan (GIS).Because this remedy will result in hazardous substances remaining on site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 7/16/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the responses to its comments on the draft UFP-QAPP for TU057 and finds the responses acceptable. Please finalize the document.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review and comment.Date of

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achieving performance objective2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation and include an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date: 5/9/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the UST Release Investigation ???A II Seven Fuel Tank locations Buildings 47662 and 47641 Draft RI report, Fort Richardson AlaskaThe Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received on April 25, 1994 a copy of the document referenced above. ADEC considers the document final and looks forward to the draft corrective action plan for building 47662 for review and comment. Building 47641 is considered by ADEC to not require any further remedial action. However, closing out of this site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that may cause risk to human health or the environment, then future investigation andlor remedial actions may be required by ADEC.

Action Date: 5/8/1996
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Any maintenance or construction activity involving excavation or drilling on Fort Richardson requires a site specific Work Authorization Permit (e.g. dig permit). Each permit application is checked by ER Dept. against known ICs and contamianted sites. Enforcement of the ICs and WA permit requirements will ensure that potential exposure of workers or other personnel at this site to residual soil contaminants is minimized through selection and use of PPE appropriate to the contaminants at the site. The permit is required for any soil activity in area managed by Public Works Environmental staff. Area will be noted on Post Management plans and maps as an area requiring ICs and waste management if soil were to be excavated at any time in the future.Because this remedy will result in hazardous susbstances on site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five (5) years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

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Action Date: 5/8/1996
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: ADEC received on April 25, 1996 a closure request for Building 47-662 USTs 89, 90, and 91. Based on the information submitted by the Army, the request for closure of the site under the USTMP agreement is granted by ADEC. As part of ADEC's conditions to granting closure, institutional controls restricting any access to the contaminated soils at the site will be required. This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination from the USTs or exposures which cause an unacceptable risk to human health, welfare, safety and/or the environment. Remedial actions may be required if contamination exceeding these risks are detected or if the contamination at the site is excavated by the Army for any reason in the future. ADEC reserves all of its rights under Title 46 of Alaska Statutes and 18 AAC 75, 18 AAC 78 to request additional activities in the future, if necessary, to address these risks.

Action Date: 5/8/1990
Action: Report or Workplan Review - Other
DEC Staff: Ron Klein
Action Description: ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection).
Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date: 5/15/2013
Action: Report or Workplan Review - Other

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DEC Staff: Louis Howard
Action Description: Staff provided review comments on the draft UFP-QAPP work plan.It is ADEC???s position that ICs would be applied at JBER sites when:??? The groundwater under a site or downgradient of a site is contaminated with POL constituents at concentrations exceeding or MCLs or Table C; or??? POL contaminants in the soil were above the maximum allowable concentrations (MAC) in Table B2 of 18 AAC 75 are left in place after evaluation or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs.If soil that was above MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil and the statistics for the site could be rerun. The ProUCL checks for outliers and the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO , GRO , RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination (i.e. exceeding MCLs or Table C cleanup levels). In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, and 6 September 2003)??? two rounds of annual groundwater monitoring), MAC may become the cleanup levels as determined by ADEC on a case by case basis.

Action Date: 5/1/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: This decision document describes the rationale for no further remedial action planned at Building 47-662, Fort Richardson, Alaska. This action has been chosen in accordance with the Comprehensive Environmental Response and Clean-up Liability Act (CERCLA) as amended by the Superfund Amendment and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.Building 47-662, the Fort Richardson Flying Club, is located at Bryant Army Airfield. There were three (3) underground storage tanks, two (2) ten-thousand (10,000) gallons av-gas and one (1) 2,000 gallons overfill tank located at the facility. The UST???s were removed in the summer 1990 and were not replaced. Low levels of contamination were found in soil samples taken during the removal. Contaminants at the site include benzene, toluene, ethyl benzene and xylenes (BTEX), and Residual Range Organics (RRO). These compounds were found at less than the Alaska Department of Environmental Conservation (ADEC) level C clean-up standards of 50 and 2000 parts per million (ppm), respectively. However, since a formal UST site assessment was not conducted, further investigation of this site was requested under the Fort Richardson-ADEC UST Compliance Agreement.A release investigation conducted during December 1993, consisted of six (6) soil borings to approximately 31 feet below ground surface. Analysis detected BTEX, RRO, diesel range organics (DRO) and gasoline range orangics (GRO) in

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the soils. All except one sample were below the ADEC level C of 50 ppm, 2000 ppm, 500 ppm and 1000 ppm, respectively. One sample indicated the presence of GRO at 550 ppm, above the allowable limit set by ADEC. ADEC concurred with site closure contingent upon institutional controls being enacted at this site. Attached is the memorandum establishing institutional controls for soils and groundwater at Bldg 47-662.This decision document was developed by the Directorate of Public Works, Environmental Compliance and Restoration Branch. A letter of concurrence from ADEC south-central Regional Office, Contaminated Site Programs Defense Facilities Oversight is attached.2. SUMMARY OF SITE RISKBased upon depth to the contaminated soils and institutional controls, which will require coordination of any on-site activities with Public Works, Environmental Resources Department and assure selection of proper protective equipment if excavation or earthwork is required at the site, worker/employee exposure to contaminants will be minimized. There are no potable water wells within a one mile radius of Bldg 47-662, with no current plans to have one installed. Mechanical soil analysis indicates that soil contaminants will probably not migrate and should not impact groundwater in the area.Any maintenance or construction activity involving excavation or drilling on Fort Richardson requires a site specific ???Work Authorization Permit???. Each permit application is checked by the Environmental Resources Department against known institutional controls and contaminated sites. Enforcement of institutional controls and ???Work Authorization Permit??? requirements will ensure that potential exposure of workers or other personnel at this site to residual soil contaminants is minimized through selection and use of personnel protective equipment (PPE) appropriate to contaminants at the site.Since exposure to the public and on-site workers is not anticipated due to depth of contamination, low levels of contaminants present, and institutional controls, a migration model (leachability assessment) was conducted to obtain ACLs. The model, run by Dowl/Ogden Joint Venture, spring 1996, showed that contamination would not reach groundwater at above the maximum allowable contaminant levels (MCLs) in 99 years. Because this remedy will result in hazardous substances remaining on site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.Signed Richard L. Stouder Colonel, Garrison Commander.

Action Date: 4/7/2010
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 71918 name: auto-generated pm edit Ft. Rich Bldg. 47662 Fly. Club

Action Date: 4/25/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Based on the leaching assessment results provided by DOWL/OGDEN, the Army proposes a No Further Action Required designation. The leaching assessment model showed that contamination would not reach groundwater at above the maximum allowable contaminant levels in 99 years. Institutional controls on land placed by Army.

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Action Date:	4/25/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	UST Release Investigations A Seven Fuel Tank Locations received. USTs 89. 90. and 91 were removed from the same excavation (Building 47662) at the Flying Club. Lab analysis indicates contamination still exists. Two USTs (Nos. 89 and 90) were 10.000-gallon aviation gas (AVGAS) USTs. The third UST (No. 91) was a 2.000-gallon abandoned tank which contained water. The abandoned UST probably contained AVGAS at one time and was pumped fullof water when no longer needed.
Action Date:	4/22/2014
Action:	Institutional Control Record Removed
DEC Staff:	Louis Howard
Action Description:	Institutional Controls have been removed.
Action Date:	4/22/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft UFP-QAPP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without ICs??? determination. To meet this objective, soil andgroundwater samples will be collected to characterize risk to human health and the environmentwithin the framework of the ADEC site cleanup process (Title 18 Chapter 75 of the AlaskaAdministrative Code [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC,2012a; ADEC, 2012b). If ADEC Method Two cleanup criteria as established under 18 AAC 75 are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, remediation, ICs, or both may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated.One boring will be drilled up to 135 feet bgs at historical boring location AP-3332 tore-sample soil in the source area, define the nature and vertical extent of contamination, andcollect source area soil samples for polycyclic aromatic hydrocarbons (PAHs), volatilepetroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH) analyses.One boring will be drilled up to 50 feet bgs at historical boring location AP-3330 tore-sample soil in the source area and further assess the nature of the contamination.If the maximum vertical extent of the soil contamination is reached at the two deeper borings(based on photoionization detector [PID] field screening and visual/olfactory evidence), twosamples will be collected beyond the last evidence of contamination and the boring will beterminated. Both borings will be drilled to at least 25 feet bgs.Up to approximately 32 new primary soil samples will be collected and analyzed for GRO, DRO, residual-range organics (RRO), and VOCs (petroleum-related). Three of those soil samples will also be analyzed for PAHs, EPH, and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content.One of the soil samples will be

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collected from below the contaminated soil source and analyzedfor fraction of organic carbon.If borings are advanced to groundwater, direct-push groundwater samples will be collected at thewater table from each boring to confirm that contamination has not migrated to groundwater.However, if visual observations indicate the presence of potential contamination at or near thewater table, monitoring wells will be installed in the soil borings.

Action Date:	4/15/2014
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Staff approved a cleanup complete determination for TU057. Contaminants of ConcernDuring the 2013 site characterization at this site, the maximum concentration of gasoline range organics (GRO) was detected at a concentration of 1,400 mg/kg (TU057-SB02 located at AP-3330), from 17 to 23 feet bgs. The maximum concentration of benzene detected was 0.0575 mg/kg from boring TU057-SB02 at 22 to 23 feet bgs.ADEC does not recognize the Table 5-6 2013 Site Characterization???s modeled concentrations for aromatics and aliphatics as groundwater cleanup levels under Method Three for TU057. Current regulations do not list aromatic and aliphatic cleanup levels for groundwater in Table C. However, since groundwater was not sampled at this site, it is not an issue at TU057.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for GRO at TU057 is based on the inhalation , ingestion pathways for the under 40??? Zone and the maximum allowable concentration, all of which refer to 1,400 mg/kg. The cleanup level for benzene at TU057 is based on outdoor inhalation at 11 mg/kg. In accordance with 18 AAC 75.380(d)(1), after reviewing the site characterization report submitted under this section, ADEC has determined TU057 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU057. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU057. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

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Action Date:	3/28/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft SC report received. In 2013, GRO was detected at a concentration of 1,400 mg/kg (TU057-SB02 located at AP-3330), confirming that concentrations in soil above the screening level remain from 17 to 23 feet bgs. The maximum concentration detected was 0.0516 mg/kg, which is above the screening level, in a soil sample from boring TU057-SB02. ConclusionsThe following conclusions were made regarding TU057:??? Based on previous investigations and the 2013 site characterization field investigation, GRO and benzene were detected in soil at concentrations above project screening levels.??? GRO in soil at concentrations above the screening level (300 mg/kg) covers an area approximately 35 feet long and 20 feet wide centered on boring TU057-SB02/AP-3330, starting at a depth of 17 feet bgs and reaching a total depth of approximately 23 feet bgs (156 cubic yards).??? Using the HRC for contaminated soil with the source area, the cumulative carcinogenic risk and noncarcinogenic HI estimates based on both industrial and hypothetical residential exposure scenarios are below the regulatory risk standards.??? Using the HRC for contaminated soil with the source area, the ADEC risk criteria for bulkhydrocarbons are met.??? The EPC for benzene in soil, based on a sitewide exposure area, was below the most stringent ADEC Method Two, Table B1 cleanup level and therefore is not expected to pose unacceptable risk to human health.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant.RecommendationsThe following are recommended for TU057:??? No further investigation or cleanup of soil and groundwater.??? ???Cleanup Complete without ICs??? designation because TU057 meets the criteria established for site closure (ADEC, 2012d).

Action Date:	2/23/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Letter to Army RE: December 8, 1993 Work Plan UST Release Investigation A Seven Fuel Tank Locations Contract No. DACA 85-93-D-008, Dames and Moore. Staff received the document on January 28, 1994. It contains the plans for release investigation work at: Bldg. 712, 762, 782, 8102, 27004, 47622, and 47633. ADEC, DPW and the contractor have previously met at our office and discussed the draft work plan proposals for this investigation. The document appears to have addressed ADEC's concerns. Being that the field work has already been conducted, the department will not provide review and approval of the work plan, but will review the draft release investigation report which is to be submitted within 100 days of completion of field work.

Action Date:	2/21/1996
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Rationale in Support of Natural Attenuation at Bldg. 47-662 received from the Army.Proposed Confirmation SamplingEvaluation of the effectiveness of natural attendation will be conducted by sampling in theknown area of contamination. Collection of several representative samples throughout thearea of contamination would occur to confirm

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regulatory cleanup levels have been met.Samples will be analyzed for GRO and BTEX.Matrix Scoring and Exposure AssessmentDames and Moore in the 1994 Releasl: Investigation Report classified Building 47-662 site using the Alaska Department of Environmental Conservation 18 AAC 78, soil Cleanup Levels Matrix Score Sheel. The scoring indicated Building 47-662 is a Level C site. The matrix scoring is well documented in the aforementioned report and is a valid scoring for this site. Approximatc1y 20 to 40 cubic yards of soil are estimated to exceed the Level C cleanup criteria for gasoline range organics (ORO). This estimate is based on the one sample that exceeded the Level C cleanup criteria.Dames and Moore (I 994) also discussed migration pathways as being limited in thepotential to impact either ground water or human health. Vertical migration rates toground water would be slow as evidenced by the existence of the perched saturated zoneand the dilution eff'e<..'t in this perched zone as mixing occurs with infiltrated surfacewaters. Vapor releases through soil off-gassing has limited potential ofimpacting humanhealth due to the remoteness of the site and the fact the highest concentration of soil gasmeasured during pumping tcsts was less than 200 ppm, a level that creates a low exposurerisk.Screening GRO Detection vs Confirmed SamplingThe one GRO sample (550 mglkg) which exceeded Level C cleanup criteria was reported by the screening laboratory used during the release investigation. Duplicate and triplicate samples collected at the same time and analyzed by the pri!l1ary project laboratory failed to verify this result. Even so, the result only exceeds the Level C cleanup criteria by 10 which is within the range ofanalytical error reported in Dames and Moore (1994).Summary and ConclusionsNatural attenuation at Building 47-662 has been proposed to remediate the soils in-situ tolevels below the Level C cleanup levels. This remedial alternative is justifiable based onthe following factors which clearly indicate natural attenuation is not only applicable but avery cost effective approach considering the specific site conditions.??? Only one detection of GRO exceeded the Level C cleanup criteria and the level was only 10 above cleanup criteria. This detection was found during sample screening and was never confinned in the duplicate and triplicate samples analyzed by the primary laboratory.??? The tanks were removed 5 years ago and the grOlllly contaminated soils were removed. The excavation was backfilled with 15 - 18 feet of clean fill.??? Ground water is found at depths exceeding 135 feet, based on nearby well information, and is unlikely to be impacted by any contamination.??? There is limited exposure risk to human health and the environment due to the remoteness of the site, the limited migration pathways, and the levels of contaminants identified.??? Confirmation soil sampling would be conducted to confirm the natural attenuation process has reduced petroleum contamination levels at the site.

Action Date: 2/11/1991
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: 1990 two 10,000 gallon AvGas tanks and a 2,000 gallon tank that had contained an unknown substance were removed. Approximately 400 cubic yards of petroleum impacted soil were excavated and stockpiled. Lab data was not validated, not clear how analyses were run. It appears that residual contamination remains. There is no clear information on sample collection procedures or locations. Further investigation was requested under the Fort Richardson-ADEC UST Compliance Agreement.

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

NOTE TO FILE: Naphthalene is a white solid or a liquid that occurs naturally in fossil fuels such as coal and crude oil and is best known as the primary ingredient of mothballs. It is extracted from these sources for other uses including jet fuel (as 1-3 of the fuel JP-4, JP-8, and commercial aviation gas or AvGas). Avgas has a lower volatility than mogas and doesn't evaporate as quickly, which is important for high-altitude use. The particular mixtures in use today are the same as when they were first developed in the 1950s and 1960s, and therefore the high-octane ratings are achieved by the addition of tetra-ethyl lead (TEL), a fairly toxic substance that was phased out for car use in most countries in the 1980s. Antiknock Additive-The most important avgas additive is TEL. It is added as part of a mixture that also contains ethylene dibromide (EDB) and dye. EDB acts as a scavenger for lead. When avgas is burned in an engine, the lead in TEL is converted to lead oxide. Without a scavenger, lead oxide deposits would quickly collect on the valves and spark plugs. If the deposits become thick enough, they can damage the engine. EDB reacts with the lead oxide as it forms and converts it to a mixture of lead bromide and lead oxybromides. Because these compounds are volatile, they are exhausted from the engine along with the rest of the combustion products. Just enough EDB is added to react with all of the lead. However, because the reaction does not quite go to completion, a small amount of lead oxide deposit is found in the cylinders of aircraft piston engines.Avgas is currently available in several grades with differing maximum lead concentrations. Since TEL is a rather expensive additive, a minimum amount of it is typically added to the fuel to bring it up to the required octane rating so actual concentrations are often lower than the maximum. Avgas 80/87 (dyed red) has the lowest lead content at a maximum of 0.5 gram lead per US gallon, & is only used in very low compression ratio engines. Avgas 100/130 (dyed green) is a higher octane grade aviation gasoline, containing a maximum of 4 gram of lead per US gallon, maximum 1.12 gram/liter. Grade 100 has a maximum 1.12 grams of lead per liter & is dyed green. 100LL low lead was designed to replace avgas 100/130. Avgas 100LL (dyed blue) contains a maximum of 2 gram of lead per US gallon, or maximum 0.56 gram/liter, & is the most commonly available & used aviation gasoline. In 1996, the U.S. Environmental Protection Agency (EPA) banned lead in motor gasoline. Although avgas was not included in the ban, concerns that the use of lead in avgas would eventually be restricted led the industry to begin looking for unleaded replacement fuels in the early 1990s.

Action Date: 12/31/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A release investigation conducted during December 1993, consisted of six borings to 31 feet below ground surface (bgs). Analysis detected BTEX, RRO, DRO and GRO in the soils. All except one sample were below the ADEC level C of 50 ppm, 2000 ppm, 1000 ppm and 500 ppm, respectively. Two samples indicated the presence of GRO at 550 ppm and 698 ppm, just above the allowable limit set by ADEC.

Action Date: 12/30/1988
Action: Update or Other Action
DEC Staff: Ron Klein
Action Description: UST Database shows a 1,000 gallon UST 70 at Bldg. 47662 Hanger

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

installed in 1975 to be leaking and in use.

Action Date: 12/2/1993
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: Staff provided comments on the Draft Work Plan for UST Site Investigations Seven Fuel Tank Locations. Section I-1.2.6 Airfields, Building 47622 and 47633: Under the heading Building 47633 references to Figures I-7 and I-8 are mislabeled. Two three-inch diameter pipes extending 1-2 inches above the ground surface, have been identified at the site. The function of these pipes is reported to be unknown. Further investigation of the pipes should be conducted to determine whether or not they are associated with fuel storage or transfer equipment. Section 1-3.4.1 Subtask 4.2 Soil Borings: The criteria listed for locating soil borings does not include defining the horizontal extent of petroleum contamination. The overall objectives should be to determine whether or not contamination exists above action levels, defining the horizontal and vertical extent of cotnamination, and collecting sufficient site information to evaluate and select a remedial alternative or justify alternative cleanup levels.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 12/1/1995
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Corrective Action Plan for Bldg. 47-662. Executive Summary page 1The text states that the remedial alternative that is appropriate for the soil impacted by gasoline range organics is natural attenuation. ADEC disagrees with the recommendation. The Army has two alternatives to pursue for the petroleum contamination present at 47-662 according the 18 AAC 78.310 Soil Cleanup Options: 1) cleanup to the applicable nuineric soil cleanup level set by or under 18 AAC 78.315; or 2) in the department's discretion conduct a contaminant leaching assessment to assist in determining the alternative soil cleanup levels (ACL). There was no leaching assessment in the report to justify an ACL for the site in accordans:~ wjth 18 AAC 78.31 0(2)(b)(2).DEC requests the Army cleanup to the matrix level or submit a workplan for a leaching assessmentplan outlining:1) The specific leaching assessment model being used to identify ACLs that will not:a) lead to groundwater contamination above the applicable water quality criteria of 18 AAC 70; andb) pose a risk to humans wildlife, or the environment; and2) include:a) an evaluation of soil type, using the Unified Soil Classification system, or another similarsoil classification system;b) samples, collected from the excavations, borings, and other soils at the site, that are to groundwater or other receptors;c) an evaluation of hydraulic conductivity, adsorptive capacity, potential migratory routes, depth to groundwater, and hydrogeologic conditions

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

at the site;d) an estimate of annual precipitation at the site;e) a contaminant leachability analysis appropriate to the contaminants identified on the site,based on the Zero Headspace Extraction procedure or another procedure approved by the department, which evaluates the potential concentration of each contaminant that could migrate from the contaminated zone into groundwater or adjacent surface water; and f) an exposure evaluation that addresses the nature and estimated amount of release inrelation to surrounding human populations, including impacts to water quality, use and approximafe locations of wells and surface water potentially affected by the release, andcurrent and potentiallarid use.

Action Date: 11/14/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Final PMP receivedPerformance objectiveSite ClosurePerformance Indicators??? Complete an approved Site Characterization WP/Cleanup Plan in 2013??? Complete characterization/cleanup in 2013??? Complete an approved Site Characterization/Cleanup Report in 2013??? Achieve SC in 2014Potential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated. Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Work Plan. Coordinate, mobilize, and execute characterization Work Plan by installing and sampling two soil borings and collect one hydropunch groundwater sample. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation and include an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE

Action Date: 10/2/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Memorandum for Chief, Business Management Department, ATTN: APVR-RPW-BM (Olaf Thorsen) from APVR-RPW-EV (Douglas Johnson Chief, Environemental Resource Dept.) received concerning Institutional Controls on Excavation/Earth Work at Bldg. 47-662. 1) Attached find a copy of the May 8, 1996 letter from ADEC to the DPW requesting ICs, limiting access to excavation of contaminated soils at Bldg. 47-662. Also find a map delineating the area that these ICs are being requested for. 2) The ER Department requests that the project manager of any projects that involve excavation or earth work in the area of Bldg. 47-662 be required to coordinate their efforts with the Environmental Resource Dept. in order to avoid possible worker exposure to hazardous soil contaminants, and if necessary, to arrange proper disposal of any contaminanted soils that may be encountered.

Action Date: 1/24/2003
Action: Site Number Identifier Changed
DEC Staff: Louis Howard

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2 PARTY (Continued) **S110144161**

Action Description: Changed Workplan from X0 to X1.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU057 Bldg 47662 Flying Club USTA 2
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 939
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 4/22/2014
File Number: 2102.26.041

Hazard ID: 939
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 5/8/1996
File Number: 2102.26.041

D24 **JBER-FT. RICH BLDG 47662 OLD FLY. CLB UTSS 89-91 U** **SHWS S110144147**
WESTBROOK AVE. SOUTH OF. WEST END OF BRYANT AIRFIELD **LUST N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 5 of 5 in cluster D

Relative: Lower
Actual: 325 ft.

SHWS:
File Number: 2102.26.041
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.261475
Longitude: -149.676484
Hazard ID: 23874
Problem: Point of contact is Mark Prieksat 384-3042 with the Army. Old Flying Club. Last staff assigned was Howard.USTA 2 Party Attach. I Petroleum Contaminated Soil Stockpiles at Landfill

Actions:
Action Date: 9/18/1990
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 9/17/1990
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

JBER-FT. RICH BLDG 47662 OLD FLY. CLB UTSS 89-91 USTA 2 PART (Continued) **S110144147**

Action Date: 9/12/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: CLOS; No further action required.

Action Date: 2/11/1991
Action: Release Investigation
DEC Staff: * Not Assigned
Action Description: RELR; '90 two 10,000 gallon av gas tanks and a 2,000 gallon tank that had contained an unknown substance were removed. Approximately 400 cubic yards of petroleum impacted soil were excavated and stockpiled. Lab data was not validated, not clear how analyses were run. It appears that residual contamination remains. There is no clear info on sample collection procedures or locations.

LUST:
Facility Name: JBER-FT. RICH BLDG 47662 OLD FLY. CLB UTSS 89-91 USTA 2 PARTY
Facility Status: Cleanup Complete
Record Key: 199021X026001
File ID: 2102.26.041
Oname: U.S. Air Force
Lat/Lon: 61.26147 -149.6764
Lust Event ID: 187
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

F25 **JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACIL** **LUST** **S105246761**
AASF BRYANT AIRFIELD **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 3 of 4 in cluster F

Relative: LUST:
Lower
Actual: Facility Name: JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACILITY
337 ft. Facility Status: Cleanup Complete
Record Key: 1995210027898
File ID: 2102.38.047
Oname: Alaska Army National Guard Attn AKNG ARE
Lat/Lon: 61.26392 -149.6697
Lust Event ID: 1342
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

F26 **NATIONAL GUARD OMS 6 - FT. RICH** **SHWS** **S109255552**
ACCESS RD CAMP CARROL **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 4 of 4 in cluster F

Relative: SHWS:
Lower
File Number: 2102.26.071
Actual: Staff: Not reported
337 ft. Facility Status: Cleanup Complete
Latitude: 61.263920
Longitude: -149.669798
Hazard ID: 23032
Problem: SA inidicated levels above MCL.

Actions:

Action Date: 9/1/1993
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 9/1/1993
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 8/9/2001
Action: Update or Other Action
DEC Staff: David Allen
Action Description: site added; file found this datesite may be a CS site as well

Action Date: 8/21/2002
Action: Update or Other Action
DEC Staff: Cynthia Pring-Ham
Action Description: RECKEY has automatically been generated.

Action Date: 5/19/2005
Action: Site Closure Approved
DEC Staff: Debra Caillouet
Action Description: letter found in scanned file from Louis Howard to Captain Lawrence Beck, 4/12/1994 closing the site.

Action Date: 5/19/2005
Action: Update or Other Action
DEC Staff: Aggie Blandford
Action Description: File number issued 2102.26.071

G27 **JBER-FT. RICH CHARLIE ROW FRSERA 2 PARTY** **SHWS** **S110144112**
CHARLIE ROW, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 1 of 2 in cluster G

Relative: SHWS:
Lower
File Number: 2102.38.016
Actual: Staff: Not reported
338 ft. Facility Status: Cleanup Complete
Latitude: 61.264987
Longitude: -149.671850

JBER-FT. RICH CHARLIE ROW FRSERA 2 PARTY (Continued) **S110144112**

Hazard ID: 1493
Problem: JP-4 contamination in soil probably from overfill of airplanes from trucks. Confirmation sampling shows that cleanup levels not exceeded and site closed out. EPA ID: AK6214522157

Actions:

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 5/2/1994
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: JP-4 Contamination.

Action Date: 4/6/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC received a December 15, 1992 Revision to the Bryant Army Airfield Site 1 Charlie Row and Site 2 Connex near Building 47431 (Hangar 4) Remedial Action Report September 28, 1992. Diesel was detected in 15 of 22 sampling events from 60 mg/kg to 4,400 mg/kg. Most samples were below 340 mg/kg and one sample was at 4,400 mg/kg. Residual range organics were detected in 40 out of 40 sampling events. Contamination ranged from 36 mg/kg to 3,800 mg/kg. Most samples were below 550 mg/kg and 3 samples were higher at 1,500, 3,500 and 3,800 mg/kg RRO.Summary: Contamination present is diesel range hydrocarbons resulting from aircraft refueling operations. Recommended action is to excavate the areas of heaviest contamination, sample and test the bottom of the excavation to ensure reaching the matrix cleanup level of 1,000 mg/kg DRO. Test methods will be 8100M for diesel and 8015M for GRO as a precautionary since JP4 does have lighter fractions and 8020 to verify no BTEX.

Action Date: 4/4/1994
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking.

Action Date: 10/29/1992
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments to Jane Smith on the Remedial Action Report for Site 1: Charlie Row and Site 2 Connex near Building 47431 (Hangar 4) dated September 21, 1992. The connex site will be addressed at a later time pending comments from U.S. EPA Region 10 and ADEC SCRO RCRA hazardous waste management section. Staff requested clarification on matrix score sheet item 4 Potential Receptors since

JBER-FT. RICH CHARLIE ROW FRSERA 2 PARTY (Continued) **S110144112**

the nearest well is 4,800 feet away but does not state if it is a drinking water well or a monitoring well. Staff requested corrective action plan for the soil above the 1,000 mg/kg DRO cleanup level found below the asphalt strip adjacent to the excavation. Staff requested a stockpiling plan be submitted for review for soils to be stored at the stockpile area (UST stockpiles Fort Rich Landfill) for future remediation. ADEC cannot accept composite sampling as a means to determine that a site is clean. Collection and analyses of the soil samples to verify that a site meets cleanup requirements established under ADEC regulations must be discrete grab samples. All soil samples must be collected in accordance with a submitted sampling plan and must be appropriate to the proposed analytical methods and QA/QC procedures.

Action Date: 1/14/1998
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed data submitted that showed confirmational sampling at the site met cleanup criteria Level C. No further remedial action required - site closed out. Decision document signed by the 3 CERCLA RPMs documenting no further action under CERCLA required and no further action is required under SFRERA either. However, site is still subject to U.S. EPA RCRA closure due to improper storage of drums at site.The following policy applies for soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required:1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1;2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 annual precipitation zone;3. The soil is not placed within 100 feet of water wells, surface waters, and drainage ditches; and4.The written approval from the landowner of the off-site location is required.The off site disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval to dispose of soil off site that does not meet the criteria shall be made by the ADEC Section Manager.Terms used in this document have the meaning given in 18 AAC 75.990 including: ???environmentally sensitive area??? means a geographic area that, in the department's determination, is especially sensitive to change or alteration, including: (A) an area of unique, scarce, fragile, or vulnerable natural habitat; (B) an area of high natural productivity or essential habitat for living organisms; (C) an area of unique geologic or topographic significance that is susceptible to a discharge; (D) an area needed to protect, maintain, or replenish land or resources, including floodplains, aquifer recharge areas, beaches, and offshore sand deposits; (E) a state or federal critical habitat, refuge, park, wilderness area, or other designated park, refuge, or preserve; and (F) an area that merits special attention as defined at 6 AAC 80.170 (Repealed see AS 46.40.210(1)) ???area which merits special attention??? means a delineated geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of

JBER-FT. RICH CHARLIE ROW FRSERA 2 PARTY (Continued) **S110144112**

the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public, should be identified for current or future planning, protection, or acquisition; these areas, subject to council definition of criteria for their identification, include:(A) areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance; (B) areas of high natural productivity or essential habitat for living resources; (C) areas of substantial recreational value or opportunity;(D) areas where development of facilities is dependent upon the utilization of, or access to, coastal water;(E) areas of unique geologic or topographic significance which are susceptible to industrial or commercial development; (F) areas of significant hazard due to storms, slides, floods, erosion, or settlement; and (G) areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, aquifer recharge areas, beaches, and offshore sand deposits.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Charlie Row FRSERA 2 Party
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

G28 **JBER-FT. RICH BLDG 47431 FRSERA 2 PARTY** **SHWS** **S110144113**
BRYANT AIRFIELD, N. SIDE FTRS-78 FAC ID 0-00788, FORMERLY FO **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Site 2 of 2 in cluster G

Relative: SHWS:
Lower
File Number: 2102.38.012
Actual: Staff: Not reported
338 ft. Facility Status: Cleanup Complete
Latitude: 61.265018
Longitude: -149.671864
Hazard ID: 1494
Problem: Diesel range organics contamination at Hangar 2 (Connex Site). No cleanup levels exceeded site closed out. Site was also known as Building 47-431 - Hangar 4 Site W021, 1990 RFA SWMU 67. U.S. Army POC Cristal Fosbrook 384-2173. Last staff assigned was Howard.EPA ID: AK6214522157

Actions:
Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility

JBER-FT. RICH BLDG 47431 FRSERA 2 PARTY (Continued) **S110144113**

agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/14/1998
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72472 name: auto-generated pm edit Ft. Rich Bldg. 47431 Connex Site

Action Date: 8/13/1998
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: No further action planned. After investigating the site, no contamination was found at site since there never was any documented releases ever occurring here.

Action Date: 8/13/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: August 7, 1998 progress report for POL and UST compliance agreements received. Aircraft maintenance facility a.k.a. FTRS-78 doesn't have any documented releases at this location. No Further Action required.

Action Date: 5/2/1994
Action: Site Added to Database
DEC Staff: John Halverson
Action Description: Diesel range organics.

Action Date: 4/6/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC received a December 15, 1992 Revision to the Bryant Army Airfield Site 1 Charlie Row and Site 2 Connex near Building 47431 (Hangar 4) Remedial Action Report September 28, 1992. Diesel was detected in 9 of 10 sampling events from 24 mg/kg to 1,100 mg/kg. Most samples were below 790 mg/kg and one sample was at 1,100 mg/kg. Residual range organics were detected in 9 out of 11 sampling events. Contamination ranged from 171 mg/kg to 2,980 mg/kg. Most samples were below 556 mg/kg and 4 samples were higher at 1,100, 1,570, 1,570 and 2,980 mg/kg RRO.Summary: A limited removal action will be done to address diesel contamination above 1,000 mg/kg level. Approximately 1 cubic yard of contaminated soil will be stored inside 55 gallon drums at the Fort Richardson stockpile area.

Action Date: 4/11/1994
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking.

Action Date: 11/3/1992
Action: Update or Other Action
DEC Staff: Louis Howard

JBER-FT. RICH BLDG 47431 FRSERA 2 PARTY (Continued) **S110144113**

Action Description: Staff provided comment letter for the Remedial action report received on October 15, 1992. ADEC is not prepared to provide comments on Site 2 Connex near Building 47431(Hangar 4) and it defers action on any proposed action until the CERCLA hazardous ranking system score of Fort Richardson determines the Post will or will not rank on the CERCLA NPL listing or when RCRA Corrective Action under permitting occurs.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 47431 FRSERA 2 Party
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

29
NW
< 1/8
0.008 mi.
43 ft.

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6 **LUST** **S108941526**
ROOSEVELT & STAMBONE STS. **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher
Actual: 344 ft.

LUST:
Facility Name: JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6
Facility Status: Cleanup Complete
Record Key: 199021X031801
File ID: 2102.26.071
Oname: U.S. Air Force
Lat/Lon: 61.27126 -149.6773
Lust Event ID: 208
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

30
NNW
< 1/8
0.051 mi.
267 ft.

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC **SHWS** **S107029067**
NE SIDE OF BLDG. 57-428 STAMBONE ROAD CC-FTRS-09, FORMERLY F **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher
Actual: 351 ft.

SHWS:
File Number: 2102.38.052
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.274637
Longitude: -149.677033
Hazard ID: 2575
Problem: A contractor installing a fiber-optic cable on November 15, 1996

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

discovered a 2,000-gallon nominal capacity single-walled underground heating oil tank. The tank was full of fuel, visually intact, and had no indications of failure. Piping on the top of the tank was directed toward Building 57-428, where the boiler used to be located. The tank was pumped, visually inspected, and pulled from the ground. Approximately 40 cubic yards of overburden and contaminated soil was stockpiled onsite and treated at a later time. Samples were collected and a Novathene&174; plastic liner was placed in the excavation before being backfilled with D-1 gravel.Site has received a cleanup complete designation as of March 2012.

Actions:

Action Date:	9/21/2012
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided review comments on the draft work plan for priority sites which included TU948. Project Approach Executive Summary Page 5Sites with existing GW contamination above Table C levels will require that migration to GW cleanup levels be used for soil & ICs will be required. Once GW contamination at the site is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide???), the maximum allowable concentrations (MAC) may become the cleanup levels as determined by ADEC on a case by case basis. 18 AAC 75.345(e) states: ???The point of compliance where GW cleanup levels must be attained is throughout the site from each point extending vertically from the uppermost level of the saturated zone to the lowest possible depth that could potentially be affected by the discharge or release of a hazardous substance, unless ADEC approves an alternative point of compliance as part of the cleanup action under 18 AAC 75.360.???Page 6If applying soil cleanup levels under methods two, three, or four found in 18 AAC 75.340 or applying GW cleanup levels found in 18 AAC 75.345, a RP must ensure that cumulative carcinogenic risk & hazard index standards are not exceeded [see 18 AAC 75.325(g)]. The regulatory requirements for cumulative carcinogenic risk & hazard index standards are not strictly limited to data evaluation under method four or a site-specific risk assessment. Comment applies throughout the document. Land Use ConsiderationsPlease state that ICs include both soil & GW use restrictionsFor What Purposes Will the Data Be Used?Implementation of a site-specific risk assessment, if considered appropriate for a site, would be conducted after ADEC & EPA (where applicable) review, comment & subsequent approval of the CSMs & risk assessment work plan.The hierarchy for screening contaminants in a site-specific risk assessment shall be as follows:First, each contaminant detected above 1/10th of the Tables B1 inhalation or direct contact or Table C cleanup levels must be included in cumulative risk calculations. If ingestion of surface water is a pathway of concern, the GW screening levels can be used as risk-based screening levels for surface water, as well. However, water quality standards for surface water (18 AAC 70) must be considered when evaluating a site with surface water contamination. These standards are to be considered ARARs &, therefore, should also be used as screening levels (never use one-tenth values). Water quality standards for applicable fresh & marine water classes should be used.Second, if no ADEC clean-up criterion exists, then JBER will use the latest version of the EPA RSLs (???USEPA Regions 3, 6, & 9. (May 2012). Regional Screening Levels for Chemical Contaminants at Superfund Sites.

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm).Note, special attention should be paid to any potential data bias when comparing sample results to screening values. For instance, if a result is qualified & considered biased low, then it may not be eliminated as a COPC even though the result is lower than the risk screening level.If contaminants were not detected, evaluate if detection levels were greater than the screening values. If adequate DLs are not technically feasible, then conservative alternative concentrations should be considered for the screening process to ensure that no compounds are inappropriately screened out of the HHRA.Note that some Table C GW cleanup values were developed using EPA???s MCLs while other GW cleanup values use RBC. RBCs are based on toxicological data & risk to human health, per Equations 1 or 2 in the Cleanup Levels Guidance (2008). MCLs are federally determined levels that incorporate other factors including feasibility & cost. For some chemicals, the cleanup level in Table C exceeds the cumulative risk standard. Refer to ADEC???s Cleanup Levels Guidance (2008) for a list of these contaminants. These contaminants should be dealt with on a site specific basisVapor IntrusionADEC requests JBER elaborate on the term ???significant??? with regards to HRC & VI. ADEC???s October 2010 CSM guidance (see Appendix D) contains a list of VOCs & discusses (see 3.3.2) when a building is close enough to contamination to prompt additional evaluation (30 feet from a petroleum source & 100 feet from a non-petroleum source).Appendix A-4 Site TU948IntroductionIn general, vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO, GRO, RRO) regardless of HRC calculated ???risk??? levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination. Comment applies throughout this section where HRC is mentioned.

Action Date: 8/24/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP for PA/SIs at Sites SA034, SA033, AT035, and AT032 Site Characterization/Cleanup at Sites TA008, TU948, TU110, TU111, TU112, TU949, and SS001 Dated August 23, 2012 received. SA034 ??? TBD 2, Powerline Drum SiteTU949 Building 770 UST Site (CC-FTRS-05)SS001 - Building 796 (Battery Shop) (FTRS-01)SA033 ??? TBD 3, Otter Lake Road Drum SiteTA008 ???Biathlon Range Fuel Release (CC-FTRS-08)TU948 ???Building 57-428 UST Site (CC-FTRS-09)TU110 ???Building 47-431 Tanks E1 & E2 (CC-FTRS-10)TU111 ??? CC-FTRS-11, Tank E5TU112 ??? CC-FTRS-12, Tank E7AT035 ??? TBD 4 MEB Complex, COF (FTR269)AT032 ??? TBD 1, Airborne Training Facility (FTR255)Soil sampling and analysis approach??? Soil samples will be collected every 5 feet from ground surface to 25 feet bgs, and every 10 feet from 25 feet bgs to the water table (approximately 110 feet bgs) from six boreholes. ??? If, based on photoionization detector (PID) field screening and visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, then two samples will be collected beyond the last evidence of contamination, and the boring will be terminated.??? Continuous logging of soil type and stratigraphy, moisture or groundwater, visual observations of staining or liquid-phase petroleum, PID readings, and other observations.??? All soil samples collected (approximately 33 primary samples, excluding

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

quality control [QC]) will be analyzed for gasoline-range organics (GRO); DRO , residual-range organics (RRO); and volatile organic compounds (VOCs), excluding the chlorinated compounds.??? A subset of soil samples (as described in Worksheet 17 of this appendix) will be collected for additional analyses to facilitate HRC calculations. These analyses include polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbon (VPH), extractable petroleum hydrocarbon (EPH), fraction of organic carbon (foc), bulk density, grain size distribution, specific gravity, and moisture content.Groundwater sampling and analysis approach??? Groundwater samples will be collected from up to two boreholes (if soil borings are advanced to the groundwater table [see Worksheet 17]) and analyzed for GRO, DRO, RRO, VOCs (excluding chlorinated compounds), , PAHs, VPH, EPH, and total organic carbon (TOC).Additional data to be collected for HRC analysis include the following:??? Soil source zone temperature (field measurement).??? Average precipitation/infiltration (estimate from available regional information).??? Aquifer hydraulic conductivity (estimate from literature values based on grain size distribution or from available aquifer testing data from a nearby site).If unacceptable risk is indicated by the HRC and excavation is the selected remedial approach, field screening and soil sampling will be performed in accordance with ADEC Field Sampling Guidance (ADEC, 2010).The project objective is to collect soil and groundwater samples to characterize risk to human health and the environment within the framework of ADEC???s site cleanup process (18 AAC 75 Sections 325 to 390 and 18 AAC 78 Section 600). If Method 1 and Method 2 criteria are exceeded, the HRC approach under Method 3 will be used to assess whether site conditions meet ADEC risk criteria (in which case a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case remediation, ICs, or both may be required).If unacceptable risk is indicated by the HRC, then remedial options that address the compounds and exposure rountes which contribute most significantly to the cumulative risk will be evaluated.

Action Date: 7/31/2006
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: During a 2006 site assessment and removal action, 116 tons of petroleum-contaminated soil were excavated to 12 feet bgs around the original excavation and thermally treated offsite. Of seven confirmation samples collected from the excavation floor and walls, three exceeded the ADEC cleanup level for DRO (up to 6,630 mg/kg) in the north end of the floor and the northeast sidewall. Excavation was terminated because of logistical access issues to the west (existing building) and to the north and east (fence/asphalt parking lot).ADEC’s online Method Three Calculator was used to determine an alternative DRO cleanup level using site-specific average organic carbon content from three TOC samples submitted for analysis. The portion of carbon attributable to petroleum contamination (i.e. sum of detected organic analytes) was first subtracted from TOC results before calculating the site-specific average carbon content of 3,763 mg/kg. Using this value with the Method Three calculator, yields a migration to groundwater DRO level of 946 mg/kg.

Action Date: 7/31/1996

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Petroleum contamination was identified in soil beneath the former UST when it was removed in 1996. During tank removal, 40 cubic yards of petroleum-contaminated soil was removed, and confirmation samples were collected. These preliminary soil samples collected from the bottom of the excavation contained DRO at up to 19,200 milligrams per kilogram (mg/kg). Following excavation, contaminated soil remained above 250 mg/kg in the south and east sidewalls, and the south end of the excavation floor. Samples from the north sidewalls and north end of the floor were slightly below 250 mg/kg (Bethel Services, Inc.

Action Date: 6/24/1993
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the October 1992 Closure Assessment for Bldg 57428 at Camp Carroll, Fort Richardson. After reviewing the document ADEC concurs that no further assessment or remedial action is required at this time for the UST at Bldg. 57428, ADEC Tank ID no. 21090909. This concurrence does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures that may cause risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeded ADEC cleanup standards is detected. *NOTE: NFA decision withdrawn when additional contamination is found at the site.

Action Date: 5/13/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC received the Draft work plan for corrective action at Heating Oil Tanks for several sites.This Work Plan, in conjunction with the addenda presented herein, will guide corrective actions to be performed at the Army Reserve Center (ARC) Tank E1, ARC Tank E2, ARC Tank E5, ARC Tank E7, Building 57-428 Tank, Building 987, Biathlon Range, & Fort Richardson Landfill sites in accordance with the requirements of the U.S. Environmental Protection Agency & Alaska Department of Environmental Conservation (ADEC) guidance documents.Four soil borings will be advanced and sampled at the Building 57-428 site. Figure 3 shows the location of the Building 57-428 site. Soil boring locations will be determined in the field by USACE and Bristol personnel. Borings will be drilled to a depth of approximately 100 feet bgs. Soil borings will be drilled using an air rotary technique similar to the TUBEX cased-hole technique. A special pilot bit and eccentric reamer will be used to advance threaded casing. Samples will be collected at every 10-foot interval by removing the bit and reamer from the hole and sampling at the bottom of the casing.Three soil samples per boring (excluding QC samples) will be collected and submitted for laboratory analysis of GRO/BTEX, DRO, and RRO (total of 12 soil samples). If it appears that the fuel hydrocarbons may have migrated to the water table, some of the soil samples will be collected at and below the water table to assess if the source extends into the zone of seasonal water table fluctuation. A total of five soil samples having the highest indication of contamination will be analyzed for EPH, VPH, and PAH. In addition, a total of 5 samples from any location within the 4 site borings, having no indication of contamination but representative of the soil

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

conditions in the contaminated zones, will be collected and analyzed for TOC. Lastly, up to 5 geotechnical samples will be collected at each site, including approximately 2 from the saturated zone, and analyzed to assess the PSD, moisture content, and bulk density. Equipment blank samples will not be collected as part of the sampling program.Three of the 4 borings will have a monitoring well installed to a depth of 10 feet into groundwater (approximately 110 feet bgs). One groundwater sample will be collected from each well (total of 3) using a low-flow sampling technique after well development. Groundwater samples will be submitted to the project laboratory and analyzed for GRO/BTEX, DRO, RRO, PAH, VPH, and EPH. QC and MS/MSD samples may be collected on a per sample delivery group basis and not necessarily on a per site basis. It is expected that all groundwater sampling will be conducted after all groundwater monitoring wells have been installed at all of the sites.

Action Date: 4/29/2005
Action: Update or Other Action
DEC Staff: Debra Caillouet
Action Description: Staff sent the AKARNG a letter concurring with the site management strategy of further characterization, treatment as necessary and five year reviews. Staff is aware that there is debate if the AKARNG is the responsible party or if the responsibility is Ft Richardson. Staff requested notification from the AKARNG if Fort Richardson has agreed to responsibility.

Action Date: 4/26/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Revision no. 2 for Corrective Actions HOT Tanks received. Four soil borings will be advanced and sampled at the Building 57-428 site. In general, one boring will be located in the area of highest suspected contamination. The other three borings will be placed within the zone of contamination to gain information for the HRC, but in areas that will also provide good hydrogeologic information (e.g., the borings will be placed in a square pattern instead of a linear pattern, so that potential monitoring wells can be used to collected hydrologic flow information). Borings will be drilled to a depth of approximately 100 feet bgs. Soil borings will be drilled using an air rotary technique similar to the TUBEX cased-hole technique. A special pilot bit and eccentric reamer will be used to advance threaded casing. Samples will be collected at every 10-foot interval by removing the bit and reamer from the hole and sampling at the bottom of the casing.Approximately three soil samples per boring (excluding QC samples) will be collected andsubmitted for laboratory analysis of GRO/BTEX, DRO, and RRO (yielding a total of 12 soilsamples). Most of the soil samples submitted for hydrocarbon concentration analysis will befrom the NAPL-contaminated soil source zone???to facilitate HRC calculations, the goal is tohave a total of at least 10 soil boring samples from the NAPL-contaminated soil source zone.In addition, a total of five soil samples with the highest indication of contamination will beanalyzed for EPH, VPH, and PAH. If it appears that the fuel hydrocarbons have migrated tothe water table, some of the soil samples will be collected at and below the water table toassess whether the source extends into the zone of seasonal water table fluctuation. Soilsampling below the water table will allow the vertical extent of the source to be identified asrequired by the

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

regulations. Soil samples collected below the water table that are thought tobe from the NAPL source zone will be analyzed for hydrocarbon concentrations (BTEX,GRO, DRO, RRO, and potentially PAH, VPH, and EPH).In addition, within the four site borings, a total of five samples from any location with noindication of contamination, but representative of the soil conditions in the contaminatedzones, will be collected and analyzed for TOC. Some soil samples collected in the saturatedzone below the NAPL source zone may be analyzed for TOC (DRO analysis may be used toconfirm that the TOC result is not due to hydrocarbons) to enable better retardation and half life calculations. Lastly, up to five geotechnical samples will be collected at each site,including approximately two from the saturated zone, and analyzed to assess the PSD,moisture content, and bulk density.One groundwater sample will be collected from each well (total of 3) using a low-flow sampling technique after well development. Groundwater samples will be submitted to the project laboratory and analyzed for GRO/BTEX, DRO, RRO, PAH, VPH, and EPH. QC and MS/MSD samples may be collected on a per sample delivery group basis and not necessarily on a per site basis. It is expected that all groundwater sampling will be conducted after all groundwater monitoring wells have been installed at all of the sites.

Action Date: 4/22/2005
Action: Site Added to Database
DEC Staff: Debra Caillouet
Action Description: Site added based on information in the AKARNG Installation Action Plan.

Action Date: 4/22/2005
Action: Site Ranked Using the AHRM
DEC Staff: Debra Caillouet
Action Description: Site reranked based on removal action.

Action Date: 4/22/2005
Action: Update or Other Action
DEC Staff: Aggie Blandford
Action Description: File number issued 2102.38.052.

Action Date: 4/22/2005
Action: GIS Position Updated
DEC Staff: Debra Caillouet
Action Description: Input with site file, NAD27, TopoZone Pro.

Action Date: 3/6/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation (ADEC) has completed a review of the environmental records associated with the site TU948 ??? Building 57-428 (ADEC CS Database Hazard ID 2575) located on Joint Base Elmendorf-Richardson (the former Fort Richardson Army Post) in Anchorage, Alaska. Contaminants of ConcernDuring the 2012 investigations at this site, the maximum detected contamination was DRO at 895 mg/kg (TU948-SB01, 20 to 23 feet bgs). 6,630 mg/kg (06CCEX-SL5) was detected at 4 feet bgs on the north sidewall of the excavation conducted in 2006. Cleanup LevelsThe cleanup level for DRO at this site is based on the ingestion pathway for the under 40??? Zone which is 10,250 mg/kg [18 AAC 75.341(d),

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

Table B2]. In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined TU948 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU948. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU948. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 11/14/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: TU948 Bldg. 57-428 Site Characterization Report Revision no. 0 received for review and comment.Seventeen primary and three FD soil samples were collected for laboratory analysis of petroleumhydrocarbons (DRO, GRO, and RRO) in 2012. Petroleum hydrocarbon results were detectedabove the project screening levels for DRO (250 mg/kg). GRO and RRO were detected below the project screening levels in all samples. The highest detected concentration of GRO was 48.4 mg/kg (boring TU948-SB01, 25 to 35 feet bgs), and RRO was 110 mg/kg (boring TU948-SB03, 0 to 5 feet bgs).DRO was detected in three soil samples at concentrations above the project screening level(250 mg/kg):TU948-SB01, 15 to 20 feet bgs, 1,360 J mg/kgTU948-SB01, 20 to 23 feet bgs, 1,610 mg/kgTU948-SB01, 25 to 35 feet bgs, 1,280 J mg/kgSeventeen primary and three FD soil samples were collected for laboratory analysis of petroleum-related VOCs. No VOCs were detected above screening levels. Eleven VOCs were detected in soil, but at concentrations below their respective screening levels (2-butanone, acetone, benzene, bromoform, carbon disulfide, ethylbenzene, m,p-xylene, naphthalene, p-isopropyltoluene, toluene, and total xylenes).Results of the EPH and VPH analyses showed a lack

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

of C5 to C10 aromatic and aliphaticcompounds (GRO range) in conjunction with a lack of reported C21 to C34 aromatic andaliphatic compounds (RRO range). This suggests that only petroleum hydrocarbons in the DROrange exist in the contaminated soil.Groundwater was not encountered in any of the 2012 borings prior to termination at 20 to 55 feetbgs. As a result, the groundwater samples proposed in the UFP-QAPP Work Plan were not collected from the borings. Based on information from nearby JBER-R Landfill monitoring well AP-5782, located approximately 750 feet northwest of TU948, the depth to groundwater is 148 feet bgs and regional groundwater flow direction is toward the northwest.The following conclusions were made for TU948: Based on data from this investigation and the 2006 investigation, DRO was detected in soil at concentrations above screening levels.DRO in soil at concentrations above the project screening level covers an area approximately15 by 15 feet, from depths of approximately 4 to 35 feet bgs. Total volume is approximately7,000 cubic feet.The maximum vertical extent of contamination at the site is approximately 35 feet bgs, which is approximately 90 feet above the groundwater table.Cumulative carcinogenic risk and noncarcinogenic HI estimates are below the regulatory riskstandards. The site meets the ADEC risk criteria for bulk hydrocarbons.No potential risks to the environment/ecological receptors were observed, and petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).Recommendations for TU948 are as follows:No further investigations of soil or groundwater. Preparation of a Site Closure Report to document unlimited use and unrestricted exposure or ???cleanup complete without institutional controls (ICs)??? designation from ADEC because the site meets the criteria established for site closure.

Action Date: 11/13/2006
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff received and reviewed the Draft Letter Report for Building 57-428, Fort Richardson, AK dated September 2006. It appears that the heating oil spill site discovered in 1996 still has fuel related hydrocarbons remaining in the soil at levels above the 18 AAC 75 method three alternative migration to groundwater site-specific cleanup level in the under 40 inch zone (Sample 06CCEX-SL5). However, the number of acceptable fractional organic carbon/total organic carbon (Foc/TOC) samples or comparable sample locations are insufficient for statistical determination. Three samples are not statistically valid. Thirty (30) Foc samples taken from similar depths as the contamination currently present at the site would have been preferred and statistically valid. Absent this information, the Army must use the lowest Foc (TOC) value (most conservative). In this particular case, the TOC value of 1,840 mg/kg or 0.001840 will be used to recalculate a new cleanup level for DRO. Using the Method Three calculator, the new migration to groundwater level for DRO is 464 mg/kg. An additional sample, 06CCEX-SL4 at 465 mg/kg taken from 9??? bgs would be above this migration to groundwater cleanup level in addition to sample 06CCEX-SL5. ADEC requests the text and tables be corrected to reflect the new lower Method Three cleanup level. For method two or method three cleanups, the applicable petroleum hydrocarbon cleanup levels (i.e. diesel range organics, gasoline range organics, residual range organics,benzene, ethylbenzene, toluene, and total xylenes) must be met and the chemical-specific

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

cleanup levels for PAHs: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, and pyrene. ADEC requests the Army identify the site-specific depth to groundwater at this site and determine if groundwater has been impacted by petroleum contamination. This determination will be made by installation of a groundwater monitoring well (either this year or next spring) at the site???s most contaminated area (Sample 06CCEX-SL6). During installation of the well, a minimum of three (3) soil samples will be required from the boring and analyzed for DRO, GRO, BTEX, PAHs (using either method 8270C or 8310 (Naphthalene can be analyzed by AK101)). Cleanup level for DRO will be 464 mg/kg. Groundwater samples will be analyzed for DRO, GRO, BTEX and PAHs. If PAHs do not exceed applicable soil cleanup levels in 18 AAC 75, then they will not be required to be considered a contaminant of concern. If groundwater is shown to be contaminated above Table ???C??? levels, then additional monitoring wells (2 more at a minimum) will be required for long term monitoring. Should the groundwater be shown to not be impacted with any petroleum contaminants above those found in Table ???C??? then one more groundwater sampling event will be required (e.g. next fall). At such time the well can be decommissioned. ADEC disagrees with pursuing a cleanup level of 946 mg/kg, but will agree with the correct revised cleanup level of 464 mg/kg for diesel range organics. This may be the only contaminant of concern, but until such time that analyses from the new boring/well for soil and groundwater are known, there may be more COCs. ADEC does agree that no further remedial action planned is warranted at this site until all soil above 464 mg/kg DRO (contingent upon no other COCs being discovered from the additional well). All reports submitted to ADEC containing analytical laboratory sample results shall contain a completed laboratory review data checklist (and a quality assurance (QA) summary). Absent from the letter report is a completed checklist and a detailed QA summary. This information must be included in all reports containing analytical data related to soil and water samples submitted to ADEC???s Contaminated Sites Remediation Program under the 18 AAC 75 and 18 AAC 78 regulations. Please have a completed checklist/QA summary for this site.

Action Date: 11/1/2005
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Fort Richardson takes over cleanup responsibility for site. Soil samples were collected in the floor and sidewalls of the excavation. The three floor locations were situated at the ends and middle of the tank bedding (samples B1, B2, and B3) at a depth of 7 feet below ground surface. The sidewall locations included all four sides of the excavation and a duplicate sample (S1, S2/S5, S3, and S4) at a depth of 5 feet below grade. All samples were analyzed for DRO. The soil was characterized as silty gravel with cobbles.Results of the analyses show moderate levels of DRO contamination on the SE end of the UST. Sidewall samples S2/S5 and S4 had reported DRO the ranged from 1,380 mg/kg to 19,200 mg/Kg. The floor sample from beneath the UST southeast end contained 5,560 mg/Kg DRO. The duplicate sample results exhibited poor precision (90 RPD) that is attributable to the course gravel contained in the soils.

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC (Continued) **S107029067**

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 57428 Camp Carroll TU948 hrc
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

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31 ENE < 1/8 0.109 mi. 578 ft. **JBER-FT. RICH AFFF AREA 01 AT029 OUA RUFF ROAD FOR GRAVEL PITS E. OF BRYANT army AIRFIELD FTRS-29, FORMERLY FOR FORT RICHARDSON (JBER), AK 99505** **SHWS INST CONTROL** **S110144186 N/A**

Relative: Higher
Actual: 382 ft.

SHWS:
File Number: 2102.38.001.03
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Cleanup Complete - Institutional Controls
Latitude: 61.269733
Longitude: -149.645850
Hazard ID: 2777
Problem: The Fire Training Area began operations during the initial establishment of the Post in approximately 1940, and the site was used until 1980 to conduct exercises for training fire department and rescue crews. Materials burned during the fire training exercises included jet fuel, waste oil, diesel, brake fluid, and solvents. The Fire Training Area was estimated to be about 50 feet in diameter. The charred debris associated with the Fire Training Area was removed in 1991. In 1994, the Fire Training Area was filled with approximately 18 inches of soil and regraded. Fort Richardson-Proposed NPL Listing Date 6/23/1993 FEDERAL REGISTER NOTICE of Final NPL Listing Date 5/31/1994 RCRA Handler ID AK1210022157Site FTRS-29. Ruff Road Fire Training Area. EPA ID: AK6214522157. Site W040 Former Landfill9 (Ruff Road), Ruff Road Former Fire Training Area, 1990 RFA SWMU 97. Originally OUA consisted of three sites: the Roosevelt Road Transmitter Site Leachfield; the Petroleum, Oil, and Lubricant Lab Dry Well; and the Ruff Road Fire Training Area. Fire training Pits 1 and 2. FTP 2 (RUFF ROAD FTA) is located on a gravel borrow area near the northern edge of the N-S Bryant Field runway. FTP 1 is located on a covered and closed landfill near Noone Road at the northern edge of the main cantonment area.EPA ID: AK6214522157 2017 Site inspection for AFFF detected PFOS in soil above the migration to groundwater cleanup level (July 1, 2017). PFOA was detected in groundwater above the EPA Health Advisory level. Extent of contamination is unknown.

Actions:
Action Date: 9/30/1986
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1986, AEHA drilled three soil borings and collected 20 subsurface soil samples atthe site. Two soil borings met refusal at 20 feet BGS,

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and one met refusal at 26 feet BGS. Eight samples were analyzed for VOCs, but VOCs were not detected at concentrationsexceeding detection limits. The remaining 12 samples were not analyzed for VOCs becauseholding times were exceeded.

Action Date: 9/26/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the RI/FS Management Plan for OU A. Text states that depth to groundwater is the reason why contamination of the groundwater is assumed to be unlikely. Based on the unknown depth to groundwater, the quantity of waste fuel/oil burned annually at the site, and the length of time the site was used, this assumption may be incorrect. ARARs will be addressed for OUA under a separate cover letter pending Attorney General's review by 9/30/1994.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/17/2018
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: A letter was sent regarding the 2018 ADEC tech memo which establishes drinking water action levels for six PFAS when detected in groundwater or surface water used for drinking at JBER. The tech memo establishes drinking water action levels for six PFAS when detected in groundwater or surface water used for drinking. These compounds, selected in accordance with the U.S. Environmental Protection Agency???s third Unregulated Contaminant Monitoring Rule (UCMR3) under the Safe Drinking Water Act, include: perfluorooctane sulfonate, also known as perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid, also known as perfluorooctanoate (PFOA), perfluorononanoic acid (PFNA), Perfluorohexanesulfonic acid (PFHxS), Perfluoroheptanoic acid (PFHpA), and perfluorobutane sulfonate (PFBS). Based on review of available information, DEC considers these six UCMR3 compounds to be hazardous substances under state law.See site file for additional information.

Action Date: 9/16/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Supplemental work plan received for review to address the groundwater sampling, institutional controls (IC) inspection, and landfill cap inspection activities associated with the 2016 Long Term Monitoring (LTM) at the Joint Base Elmendorf-Richardson (JBER), Sites PL081, CG551, ST408, CG530, SO510, SS522, SO507, SS418, TS003, CG543, CG529,

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TU107, ST048, CG509, SO508, SO549, AT035, AT029, SS019, and DP009. As a requirement of the 2016 Environmental Long Term Monitoring contract, the following work shall be performed at JBER Site AT029:? Perform IC inspection

Action Date: 9/16/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Feasibility Study OU A RuffRd. Fire Training Area August 1996 contract DACA85-93-DO009 at Fort Richardson, Alaska. 1.5 Nature and Extent of Contamination and 1.5.1 Surface Soil Contamination page l-5The text does not specify the maximum contaminant concentrations detected for total recoverable petroleum hydrocarbons (TRPH) in the surface soil even though it is mentioned as a contaminant of concern in section 1.5. Please add to the text the maximum concentrations detected for TRPH in the present fill and former ground-surface soil. Same comment applies to section l-5.2. TRPH and RRO (residual range organics) are mentioned throughout the document, please use RRO instead of TRPH unless there is a reason to do so. 1.5.5 Contaminant Fate and Transport page l-8 The text references transport modeling of petroleum constituents in the subsurface soils without identifying which model it is. Please include a brief description of the model in this section (i.e., particular model used, whether or not maximum concentrations detected at the site were used, and if a sensitivity analysis was conducted on the various input parameters).Figure 2-1 Approximate Areas of Soil ContaminationThe figure is not clear on what soil contamination is present at the site from past investigations. It does not indicate whether this is contamination that exceeds a particular cleanup level (i.e. soil cleanup matrix ???C??? or an EPA RBC) or is indicative for all contaminants detected. Please clarify in the figure with additional language or appropriate text in section 2. 3 Development and Detailed Analysis of Remedial Alternatives pages 3-2 and 3-3Alternatives 2 and 3 state natural attenuation as being considered for the soil contamination present at the site. In addition to collecting soil samples for DRO, GRO, and RR0 under these two alternatives, the groundwater will need to be monitored (using on site wells where possible) for contaminants of concern as long as there are levels present that exceed the soil cleanup matrix.

Action Date: 8/31/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.2704 N latitude -149.6451 W longitude

Action Date: 8/31/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A treatment system demonstration project was implemented to determine the viability of using SVE at this site. Three horizontal wells were installed to a depth of about 5 feet below ground surface (bgs). Four passive air infiltration galleries were installed parallel to and on both sides of the 3 horizontal wells. The entire site was covered with a 30-mil geomembrane and overlain by 1 foot of silty sand.

Action Date: 8/24/2017
Action: Report or Workplan Review - Other

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DEC Staff: Louis Howard
Action Description: Staff commented on the Draft Supplemental Work Plan for JBER-E and JBER-R sites [PL081 N. Jet Pipeline, CG551 Bldg. 4314, ST408 Bldg. 9569, CG530 ST526, SO510 Bldg. 9480, SS522 Hardstand 39, SO507, Bldg. 9669, SS418, ST532, TS003 Skeet Range, CG543 Bldg. 18877, CG529 ST529, ST048 Bldg. 11-490, CG509 Bldg. 4347, SO508 ST508, SO549 Bldg. 4913, AT035 MEB Complex, AT029 Ruff Road FTA, SS019 Bldg. 755, DP009 Bldg. 986 POL Lab, LF002, LF002 OU6 Disposal Site, CG536 ST510, CG539 Bldg. 15380, CG702 Bldg. 31562, SO544 Bldg. 10334, SO547 Bldg. 4913, CG704 Southern Plume, CG527 ST538, SO501 ST427, TU064 Bldg. 740, SS013 MP Barracks, SS014, SS041 Roosevelt Road Transmitter Site, TU107, ST048] which include this one. ADEC concurs with the scope of work for the current work outlined in this section. Note: this site has PFOS detected in soil at concentrations above the ADEC (2017) migration to groundwater level and PFOA above EPA Health Advisory level in groundwater.

Action Date: 8/15/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: AFCEC will have the U.S. Army Corps of Engineers conduct a level IV data review for the JBER PFAS data. Guestimates are it will be at least 4-6 weeks. The review may also include Eielson and Clear AFB since they were on the same contract/ same labs. Level IV data validationThese data undergo full review and evaluation of a complete Data Validation Package (DVP) according to DQO/QAPP specific criteria, and National Functional Guidelines. This level of review includes all summaries, and raw data associated with the data package, and ensures the highest level of defensibility.

Action Date: 7/31/1998
Action: Cleanup Plan Approved
DEC Staff: Louis Howard
Action Description: Cleanup plan approved to biovent soils found at depth for the petroleum constituents.

Action Date: 7/30/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Technical Memorandum Task 2 OUA July 1996. Pending receipt and analysis of the most recent groundwater samples for dioxins at Ruff Road Fire Training Area (RRFIA), it appears the site is a good candidate for transfer to another companion agreement for cleanup. The State Fort Richardson Environmental Restoration Agreement is appropriate for the RRFTA since the main contaminant of concern is petroleum The Army may wish to consider either vapor extraction a viable treatment to meet soil cleanup level ???C???.

Action Date: 7/17/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA received the Draft Site Inspection Report for Aqueous Film Forming Foam Areas, Joint Base Elmendorf-Richardson, Alaska, May 2017 for review the week of June 2, however Appendix B2 (App B2) laboratory data was not included. EPA received App B2 for review the week of June 20. EPA preliminary comments were sent to the Air Force

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on July 17, 2017.EPA Office of Research and Development staff, as well as EPA Region 5 Laboratory chemists, reviewed App B2. EPA has asked the Air Force for clarification regarding what level of report and data review was done by the government prior to submittal of the report to EPA and have not received a clear response. EPA???s initial review has identified a number of data quality issues and that the government data review should be completed and submitted to EPA before we are asked to finalize our comments. The comments submitted reflect only those requiring clarification on the narrative or figures and are not inclusive of review of the laboratory data, and therefore cannot substantiate any conclusions drawn on the presence/absence of PFAS at the 26 AOCs.EPA review of the laboratory data packages has raised a number of concerns with deviations from workplan approved standard operating procedures, laboratory methods, and data validation.EPA requests the Air Force clarify the level of governmental data review conducted on the JBER Site Inspection laboratory packages, and provide a copy of the Air Force data review to EPA. Additional EPA comments on the laboratory data are pending receipt of the Air Force data review. See site file for additional information.

Action Date: 6/19/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA email requests clarification on whether AFCEC has a coordinated review on the data (especially lab packages) before it goes to the regulatory partners [EPA & ADEC] for review. For example, does Cornell Long (AFCEC) or someone else with PFAS expertise review and comment on the data from the AF sites.

Action Date: 6/14/2018
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: Staff granted approval for contaminated soil to be transported to Columbia Ridge Landfill in Arlington OR.

Action Date: 6/13/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed the Draft SI Report for AFFF Areas on JBER-E and JBER-R sites. AT029-1 Sheet 2 of 7 (Page 347): 40??? below ground surface (bgs)- PID 0.0 Logging Notes-Weak to moderate hydrocarbon odor observed from 40-45 ft. bgs. AT029-1 Sheet 3 of 7 (Page 348): 55??? bgs- PID 0.0 Logging Notes: Moderate hydrocarbon odor observed 55 to 57??? bgs. It appears analysis for BTEX, GRO, DRO, RRO, PAHs (8270-SIM), VOCs (8260 w/methanol and low-level) are warranted from this monitoring well associated with Boring AT029-1 either under CERCLA or as part of a further site characterization effort as required by 18 AAC 75.335. See site file for additional information.

Action Date: 6/11/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73753 name: Fire Training Pit

Action Date: 6/1/2017

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Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site inspection (SI) at aqueous film forming foam (AFFF) areas on JBER-E and JBER-R waa received for review and comment. The purpose of the SI was to determine the presence or absence of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in the environment. These compounds are a class of synthetic fluorinated chemicals used in industrial and consumer products, including defense-related applications. This class of compounds is also referred to as per- and polyfluorinated alkyl substances (PFAS).One soil sample from ground surface to 15 feet bgs was collected. PFBS was not detected in soil.PFOA was detected in soil at concentrations below the EPA RBSL and ADEC cleanup levels. PFOS wasdetected in soil at concentrations below the EPA RBSL and the ADEC human health cleanup level but above the ADEC MTGW cleanup level.One groundwater sample was collected from 150 to 160 feet bgs in new monitoring well AT029-1. PFBS and PFOS were not detected in groundwater. PFOA was detected in groundwater at concentrations above the EPA HA but below the ADEC cleanup level.See site file for additional information.

Action Date: 5/8/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC comments on the AT029 document. Comment 7: While the field quality control (QC) samples for AT029 alone do not meet the required frequency for EBs and MS/MSDs according to the data quality evaluation (DQE), the work at this site was performed as part of a larger program, and overall the program meets the QC requirements outlined in the Basewide UFP-QAPP (USAF, 2013a).???The site specific UFP-QAPP field quality controls as agreed to in the final work plan UFP-QAPP for each site shall be applicable. The fact that the work is being performed as part of a larger program has no bearing on complying with QC requirements.Restate text as follows: ???The field quality control (QC) samples for AT029 alone do not meet the required frequency for EBs and MS/MSDs according to the data quality evaluation (DQE).???AF RTC: Disagree. Worksheet 20 of the approved Site Characterization Work Plan states that a lower number of duplicates and MS/MSD samples may be collected if the AT029 samples are collected as part of a (basewide) program and submitted with samples from other
sites.

----------ADEC response to RTC and BIGGER PICTURE for JBER: As discussed earlier this a.m. for 3 other sites on JBER-Richardson QC requirements for soil gas sampling, the need for field duplicates on a site specific basis as required by ADEC in the UST Procedure Manual - which is adopted by reference by 18 AAC 75 requires compliance with site-specific QC requirements. The work at AT029 has been done already, therefore from this point forward, site-specific duplicates and MS/MSD samples will be collected and not rely on the larger program effort by the PBR contractor on JBER to fulfill the QC requirements in the Basewide UFP-QAPP. The lastest Draft Basewide UFP-QAPP out for agency review will need to be changed to reflect these regulatory requirements. In the interim, finalize the document for AT029 and direct all JBER (WESTON/CH2MHILL) contractors that site-specific duplicates, MS/MSD samples, etc.. are required (see UST

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Manual Section 9.1.1 Minimum Field QC Sample Requirements-Table 4 and also May 2010 Draft Field Sampling Guidance: Minimum Quality Control Requirements Table 3). Where the Basewide UFP-QAPP (last final approved version) and site specific UFP-QAPP WPs' QC (field quality controls) conflict with ADEC regulatory requirements, the regulatory QC requirements shall prevail. Revise all future UFP-QAPP work plans/WP Addendums accordingly if in the draft stage and not approved by ADEC to reflect these QC requirments.

Action Date: 5/27/2005
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Report lists section, township and range data for site.

Action Date: 4/9/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA Memorandum April 9, 1992 Reply to the ATTN of ES-098. Subject Toxicity of Fuels. From Carol Sweeney Toxicologist Health and Environmental Assessment Section. To Wayne Pierre Federal Facilities Superfuend Branch (HW-124). A response has been provided to the frequently-asked question of whether a reference dose or other toxicity information can be provided for fuel mixtures so that these mixtures can be addressed quantitatively in Superfund risk assessments. The memo from ECAO Cincinnati is attached (last attachment). They have developed reference doses for gasoline, JP-5/kerosene, and JP-4, and a cancer potency factor for gasoline. The memo emphasizes that these are provisional numbers and that considerable uncertainty is involved in this quantitative assessment, because of data limitations, and because inhalation studies were used to calculate oral reference doses.I typed up a summary table showing the numbers (first attachment) and calculated some risk-based concentrations (second attachment). On the risk-based concentration table, I alsoincluded ordnance compounds, because I hadn't made a table of those before that I can remember. The risk-based concentrations were calculated the same way as table II-1 and II-2 of the Region10 Supplemental guidance; for soil, the same limitations apply, that the numbers presented do not consider pathways other than soil ingestion.Toxicity Reference Vaules for Fuel Mixtures EPA Region 10 4/9/1992 Non-cancer effects-Gasoline (unleaded) RfD (mg/kg-day) Oral: 2.0E-1, Uncertainty Factor-Oral:1000, Level of Confidence-Oral: Low. Toxicity Data Source-Oral RfD: Memo 3/92. Carcinogenicity-Cancer Potency/(mg/kg/day): Oral 1.7E-3, Unit Risk (/ug/m3) 4.8E-7, Cancer Weight Of Evidence-C, Toxicity Data Source-Oral SF and Inhal. SF: Memo 3/1992.Kerosene/JP-5 RfD2.0E-2, UF Oral: 10,000, LOC Oral: low, TDS Oral RfD: Memo 3/92JP-4 RfD 8.0E-2, UF Oral: 10,000, LOC Oral: low, TDS Oral RfD: memo 3/92. Screening Values for Water RBCs based on Ingestion, ResidentialGasoline-Risk = 10-6 (ug/L) 50, 10-4=5000 HI=1 (ug/L) 7000JP-5 Kerosene Risk 10-6 10-4=NA HI = 1 (ug/L) 700JP-4 Risk 10-6 10-4 = NA, HI = 1 (ug/L) = 3,000Screening Values for Soils-RBCs Based on Soil Ingestion ResidentialGasoline-Risk = 10-6 (mg/kg) 400, 10-4 (mg/kg) 40,000, HQ = 1 (mg/kg) 50,000JP-5 Kerosene Risk 10-6 10-4 NA, HQ =1 5,000 JP-4 Risk 10-6 10-4 NA, HQ = 20,000IARC concluded that gasoline is possibly carcinogenic to humans (Group 2B). IARC concluded that marine diesel fuel is possibly carcinogenic to humans (Group 2B), but light diesel fuels and jet fuels are not classifiable as to their carcinogenicity in humans (Group 3).

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Action Date:	4/3/2017
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC letter to AFCEC approving the draft 2016 Environmental LTM ast several sites on JBER.
Action Date:	4/28/2015
Action:	CERCLA PA
DEC Staff:	Louis Howard
Action Description:	Final Preliminary Assessment received. Under authority of CERCLA and the Superfund Amendments and Reauthorization Act of 1986, CH2M HILL conducted a PA visit at Joint Base Elmendorf-Richardson (JBER) during the week of December 15, 2014, with a follow-up visit on January 12 and 13, 2015, to secure additional information. Based on background research and visits to JBER, a total of four FTAs, seven fire stations, sevenhangars, five crash locations, four areas where AFFF spray testing has occurred, and threeadditional ???miscellaneous??? locations have been identified as being active during the timeframewhen AFFF has been used by the USAF for fire suppression.RRFTA was active from the 1940s to 1980s. Records and interviews did not confirm that AFFF was used during fire training at RRFTA; however, not enough information was available to confirm that AFFF was never applied. It is likely that impacted media could occur at RRFTA.Recommendation: initiate a site inspection as an investigation to collect and analyze waste and environmental samples to support an evaluation.
Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Bill Petrik
Action Description:	Ranking action added now because it was not added when the site was originally ranked.
Action Date:	4/2/1997
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Draft ROD for OUA and OUB. Hydrogeology and Groundwater Use pages 2 and 3: This section is too vague and does not give the reader the impression that it applies specifically to OU A source areas. The description needs to mirror or be more like section 1.2.2 for OU B or incorporate information from previous investigations concerning hydrogeology and groundwater usage. Not reported
Action Date:	4/11/2016
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the draft PFC Site Inspections work plan for JBER-E and JBER-R.Main comments were regarding obtaining prior approval from ADEC and EPA project managers before making changes to the approved QAPP and that the EPA RSSLs are less stringent than the human health soil cleanup levels and migration to ground cleanup levels ADEC will be promulgating this winter (2016). It was noted that WS 10 is especially vague: Based on the above, the best available screening criteria for PFOA and PFOS releases are the EPA PHAs for groundwater and RSSLs for soil. Because ADEC has proposed lower concentration limits that are in the publiccomment process, the

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ADEC levels should also be considered.It states that ADEC levels should also be considered, however in WS 11, it states the concentrations of PFOA and PFOS in soil and groundwater will be compared to project screening levels based on the most conservative risk based EPA or ADEC values.For determining presence or absence of PFOS and PFOA using solely risk based screening levels is not acceptable to ADEC. If the migration to groundwater cleanup level is adopted by ADEC and it exceeds for PFOS or PFOA, a release is confirmed and it is deemed to be contaminated by ADEC. 18 AAC 75.990 Definitions. (23} contaminated soil means soil containing a concentration of a hazardous substance that exceeds the applicable cleanup level determined under the site cleanup rules. If AFCEC chooses to proceed with risk based values (as it is apparent upon review of Table 10-2 Steps 2, 4, & 5), then ADEC reserves the right to require further investigation/cleanup under 18 AAC 75 for all areas of concern/source areas where AFC EC determined no addition action was necessary at an area of concern/ source area, but the PFC levels detected exceed migration to groundwater cleanup levels for PFCs.See site file for additional information.

Action Date: 3/3/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft SS041 Roosevelt Road Transmitter Site Site Characterization report. ADEC concurs with the conclusions and recommendations of the report as long as the current land use does not change and occupied buildings are not constructed within 100 feet of the TCE soil contamination on SS041 Roosevelt Road Transmitter Site. Please add the former transmitter annex???s foundation pad as part of the LUC inspections and reporting (the coating on the pad was observed on October 14, 1994 to be disintegrating & no longer is encapsulating the pad). Originally, the top of it was encapsulated using an epoxy resin (Scotchkote??? by the 3M??? Company).The foundation pad and cable routing trenches were encapsulated due to three out of four wipe sample results exceeding 100 micrograms per 100 square centimeters as specified in 40 CFR Part 761 . If the pad???s encapsulating coating has failed and the pad is exposed (if not completely covered by several feet of fill), then it would pose a current risk to human health and the environment.

Action Date: 3/25/2016
Action: Institutional Control Update
DEC Staff: Louis Howard
Action Description: CY2015 Annual Land Use Control (LUC) and Institutional Control (IC) Monitoring at Joint Base Elmendorf-Richardson (JBER) received for review.1. This letter serves as the annual monitoring report on the status of LU Cs/ICs in place onJBER-Elmendorf(JBER-E) and JBER-Richardson (JBER-R). The Air Force ensures compliance with LU Cs by conducting periodic monitoring and site inspections. Formal LUC/IC inspections occur annually on JBER during late spring through early fall and are typically conducted by contract. Random inspections are also conducted throughout the year by JBER Restoration staff.2. The sites on JBER-E that were inspected in 2015 include: CG509, CG526/S0525, CG527, CG529, CG530, CG536, CG539, CG543, CG551/S0550, CG702, DP098, FT023, LF002, LF003, LF004, LF059, PL081, SD015, 80024, SD025, SD029, 80507, S0510, 80513, S0552, SS418, SS522, ST032, ST036, ST037, ST041, ST048, ST068, ST600, TU091, TU107, and TS003. The

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discrepancies identified at these sites are summarized in Attachment 1.The sites on JBER-R that were inspected in 2015 include: AT029, AT032, AT035, CG039, DA089, DP009, SS013, SS041, 8S044, SS090, TU037, TU043, TU053, TU058, TU064, TU068, TU074, TU07S, TU08S, TU1Ol, TU102, TU103, XE023, and XU022. The discrepancies identified at these sites are summarized in Attachment 2.Please note that the completed LUC inspection forms are included in the 2015 Field ActivitiesReport or in the Land Use Control Inspection Report, which included 10 State sites. Unless adiscrepancy was corrected on the spot, it will be included in the 2016 RA-0 & Monitoring Letter.Work Plan and addressed in the 2016 field season.3. In addition to formal inspections, JBER also employs a LUC educational program and relieson information from contractors and base personnel on potential discrepancies. As an example,the breach of the JBER-R SS090 LUC came to light when a base contractor informed us of thesituation while coordinating on a dig permit for a different construction project.4. Separate controls are in place and enforced to prevent inappropriate soil and groundwaterexposure at restoration sites. JBER requires all projects that result in soil disturbance to follow 673rd Wing Instruction 32-1007, Safeguarding Utilities from Damage, dated 03 Jul 2013 and673d Wing Instruction 32-7003, Land Use control Management, dated 19 May 2011. Bothinstructions require the proponent to obtain an approved Base Civil Engineer Work ClearanceRequest (673 WG Form 3) prior to conducting any work on the Base. This form is also referredto as a dig permit. It is required for ANY project in which mechanized equipment penetrates ordisturbs the ground (including vacuum excavation), or hand digging activities that penetrate deeper than 4 inches into the ground.5. A total of393 dig permits were reviewed by this office in CY2015 (213 on JBER-E and 180 on JBER-R). Of those, 48 were for activities that occurred on active restoration sites, or had LUCs/ICs, potential to impact groundwater monitoring wells, or had other environmental requirements (42 on JBER-E and 6 on JBER-R). Eight projects required approved Storm Water Pollution Prevention Plans that were reviewed by the JBER Environmental Quality section. There was one activity that required the potential use of dewatering. Unless it was specifically noted no soil was removed from the sites. The dig permits with the above mentioned environmental requirements are presented as Attachment 3.6. JBER requires certificates of compliance for every dig permit. These certificates are presented to the proponent during review of the dig permit and provide site-specific informationon LU Cs and other applicable environmental requirements. The proponent is required to returnthe signed certificate within 30 days of completing the project signifying that they have compiledwith the requirements. As of the date of this letter we have received 216 signed certificates or a55 return rate which is up from 43 in 2015 and 31 in 2012.

Action Date: 3/22/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 2016 Draft Report for Remedial Action Operation and Land Use/Institutional Control at JBER received for review and comment. The USAF AT029 Site Characterization Report (2014b) states the migration to groundwater criteria are attained in surface and subsurface soils as per 18 AAC 75.340, supporting a Cleanup Complete determination at AT029. However, this site has been added to the Joint Base Elmendorf-Richardson former Fort Richardson area (JBER-R)

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Federal Facilities Agreement (FFA) for further delineation of the TCE.The inspection of Site AT029 revealed a well-vegetated field that appeared to have been tilled inthe recent past. The vegetation in this area appears to be mowed by site personnel. Frozenstanding water was observed in the furrows. No other evidence of ground disturbance wasobserved at this site other than the mowing maintenance activities. Re-vegetation appeared tobe occurring and the monitoring wells located at the site were observed to be in good condition.No warning signs relevant to the area of concern were observed. Photographs 1 through 7 inPhotograph Log A14 present the general condition of Site AT029.See site file for additional information.

Action Date: 3/2/1995
Action: Site Characterization Workplan Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the Management Plan for Operable Unit A. Data Gaps: Lateral extent of surface contamination: Proposed actions-Grid Sampling, Data Types-Type, concentration, and extent of contaminants, Data Uses-Define perimeter of surface contamination.Lateral and vertical extent of deep suburface contamination: Proposed Actions-Drill boreholes around the known sources and collected soil samples until no more contamination is encountered, Data Types-Type, concentration and extent of contaminants, Data Uses-Define extent of subsurface soil contamination, evaluate remedial alternatives.Areal extent and thickness of perched water table: Proposed Actions-Drill boreholes to the perched aquifer and install wells screened across the perched water zone, collect water level data. Data Types-Groundwater elevations. Data Uses-Define potential groundwater migration pathway, evaluate potential risks associated with exposures to groundwater. Depth to main aquifer and groundwater flow direction: Proposed Actions-Drill wells to main aquifer and collect groundwater flow data. Data Types-Groundwater flow direction. Data Uses-Define groundwater migration pathways, evaluate potential risks associated with exposures to groundwater.Presence and extent of contaminants in groundwater: Proposed Actions-Collection of groundwater samples from monitoring wells in the vicinity. Data Types-Type, concentration of contaminants, and extent of contamination. Data Uses-Evaluate remedial alternatives, evaluate potential risks associated with exposures to groundwater.Determine physical and chemical characteristics of site soil: Proposed Actions-Collection of soil for grain size, Atterburg limits, specific gravity, moisture content, total Kjeldahl nitrogen, total organic carbon, potassium, and phosphorus, Data Types-Physical and chemical parameters of soil, Data Uses-Evaluate remedial alternatives.

Action Date: 3/11/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the draft report. Page ES-2Summary of 2013 Site Characterization ActivitiesPlease state here & elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.Please direct the reader to ???Deviations from the Work Plan??? at 3.5 for explanation on why the full suite of VOCs were analyzed for reported instead of PCE & petroleum related VOCs as originally planned. Page ES-3ADEC partially disagrees. The lateral extent soil boring AT029-SB06 encountered

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shallow contamination prior to termination at 25 feet bgs. Because of a misunderstanding of the field crew, only soil samples from 0 to 5 feet bgs & 5 to 10 feet bgs were submitted for laboratory analysis. Field screening measurements (PID) were obtained from the deeper subsurface soil samples (but no laboratory analysis was performed so the total vertical extent of contamination in this boring is unknown.)DRO contamination could conceivably be higher as was indicated in boring AT029-SB01 where DRO went from 918 mg/kg at the 5-10??? interval. To 3,140 mg/kg in the next interval at 10-15??? bgs. Maximum vertical extent of contamination could go as deep as 25??? bgs at AT029-SB06 or more. However, it is unlikely in ADEC???s opinion that the DRO/GRO went to GW at 140??? bgs at this boring or elsewhere.ADEC is requesting any follow up work (i.e. soil gas sampling) include the location of BH-11 (aka AP-3204) from the 1993 Ecology & Environment Inc. Site Investigation Project Report for Fire Training Pits at Fort Richardson & Fort Greely, Alaska: Page 6-6Section 6.4.1 Fort Richardson RTFTP-2???Tables 6-1 & 6-2 summarize the organic chemicals & metals, respectively, detected in soil at RFTP-2. Though VOCs were detected frequently in subsurface soils, the concentrations were generally well below the RBCs. Trichloroethene was found in sample 92RFTP38OSL at 73 mg/kg, which slightly exceeds the RBC; however, this sample was collected from a depth of 22 to 24 feet BGS, where exposure cannot occur.???Evaluation of RiskPage ES-3Without any analyses for perfluorooctane sulfonate (PFOS) & perfluorooctoanoic acid (PFOA) in soil & GW, the RRFTA will not receive a ???Cleanup Complete without ICs??? from ADEC & its current status will remain as ???Cleanup Complete with ICs??? in the CS database until such time the data gaps are resolved, other contaminants have been properly investigated & the site conditions allow for ???unlimited use & unrestricted exposure??? (UU/UE). The PBR contract does not include any analyses for these constituents & the Air Force???s own interim guidance (Dept. of Air Force, HQ USAF, Mark Correll September 17, 2012 & attachment dated August 27, 2012) states that it is not appropriate for the PBR to address these contaminants. ADEC recognizes this as Air Force guidance & required use of AFCEE/TDV approved toxicity values, coordination with other Air Force entities (Bioenvironmental Engineering) which ADEC will not be held to in its regulatory reviews & comments regarding Air Force characterization of PFCs (PFOS/PFOA). The data gaps regarding PFCs (PFOS/PFOA) remains at RRFTA & any investigation & response actions are the responsibility of the Air Force & shall be conducted in accordance with 18 AAC 75.300 - 18 AAC 75.396. Conclusions & RecommendationsThe text shall state: ???TCE contamination in soil above the migration to GW cleanup level (0.02 mg/kg) covers an area of approximately 145 feet wide by 180 feet long from the surface to a depth of 55 feet bgs ???The concentrations of TCE observed during the 2013 investigation within the soil at AT029 are consistently small, indicative of a mixed product (waste oil) release & not a pure solvent spill. However, further investigation will also occur as part of the soil gas investigation for AT029 at the sampling location AP-3204 as part of the 1993 E&E investigation which found TCE at 73 mg/kg at 22-24??? bgs which is consistent with a larger release of solvents mixed with fuels & waste oil associated with fire training activities.??? Page ES-6ADEC will require additional soil gas probes in the vicinity of BH-11 (AP-3204) from the 1993 E&E Site Investigation Project Report. The number of probes stated here conflicts with the number of probes stated in the Conclusions at

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Section 6.2 Recommendations Sections which needs to be consistent with statements made on Page ES-6. The details of the soil gas investigation shall be provided in a site-specific UFP-QAPP work plan addendum since these are general recommendations in this report.

Action Date: 2/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Reports of analytical data for the OUA (Phase II) Ft. Richardson project by E&E, Inc. from Aug. 14, through Oct. 1, 1995. VOC soil sample 95RRSTL-1155SB in ARDL report 9211 was analyzed outside the method specified 12 hour calibration window. Per method criteria, the original VOC results are not valid. The re-analysis of VOC soil sample 95RRSTL-1155SB was past the required holding rime. The VOC data of this particular analysis should be considered as estimates. .t the request of YPDL the laboratory; submitted the re-analyzed VOC results for this sample on 9 Feb 96. The laboratory noted sample foaming during purging as a problem in the low level analysis of selected VOC soil samples. A major-iv of these samples were either analyzed by direct purge-n-trap at a 1:5 dilution (low level method) or they were extracted in methanol then analyzed (medium level method). The following samples were analyzed at a 15 dilution:95POLLDW-3123SB. -3124SB, -31OSB. -3132SB, -3137SB (ARDL report 9178). These samples were analyzed by the medium level method: 95POLLDW3096SB, -3098SB, -31OOSB.ARDL report 9189: BNA soil sample had a cracked lid upon receipt. TLI report numbers 3007A and B were submitted under ARDL report 9189. TLI recorded a cooler temperature of 12.0 degrees Celsius (???C) which is outside the EPA requirements of 4 + or - 2 C. Rinsate sample 9XRFTX-2002GW and soil samples 95RRPTA-2173SB, -2174SB, and -2 182SB were in the shipment.The initial VOC result, for soil sample 95RRSTL-1155SB are not valid as the sample was analyzed outside the 12 hour calibration window. The re-analysis of the soil sample was past the required holding time and the data are estimates Because of sample foaming during purging 15 selected VOC soil samples were either reanalyzed by direct purge-n-trap at a 1:5 dilution or were methanol extracted prior to analysis. The soil and/or water volatiles data of methylene chloride. acetone. and/or 2-butanone throughout most ARDL reports, were qualified by the laboratory with a ???B??? flag: should be considered due to laboratory contamination.

Action Date: 2/5/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Institutional controls required due to the presence of soil contamination that would otherwise allow for unrestricted use at the site.NOTE TO FILE: &167; 300.430 Remedial investigation/feasibility study and selection of remedy.(a) General???(1) Introduction. The purpose of the remedy selection process is to implement remedies that eliminate, reduce, or control risks to human health and the environment. Remedial actions are to be implemented as soon as site data and information make it possible to do so. Accordingly, EPA has established the following program goal, expectations, and program management principles to assist in the identification and implementation of appropriate remedial actions. (iii) Expectations. EPA generally shall consider the following expectations in developing appropriate remedial alternatives: (D) EPA expects to use

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institutional controls such as water use and deed restrictions to supplement engineering controls as appropriate for short- and long-term management to prevent or limit exposure to hazardous substances, pollutants, or contaminants. Institutional controls may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of institutional controls shall not substitute for active response measures (e.g., treatment and/or containment of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy.

Action Date: 2/5/2001
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Based on ADEC???s review of the data presented in the document, the Ruff Road Fire Training Area ADEC concurs no further remedial or investigative action is required at this time. Pending receipt of the land-use planning map detailed below, ADEC will grant a no further remedial action designation for this site. Institutional controls (ICs) are required by ADEC since levels of petroleum contamination are above those, which allow for unrestricted use. To eliminate the ICs, the Army may consider performing a ???hotspot??? removal at AP-4076 at 4.5??? and 9.5??? and AP-4077 at 4.5???.These ICs will consist of a land use-planning map delineating the area of contaminated soil at the site. Any excavation at within this area by: Army personnel, contractors, utility companies, leaseholders, shall be coordinated with the Fort Richardson Environmental Coordinator. The contaminated soils shall be properly disposed of in accordance with 18 AAC 75. If in the future, additional contamination is discovered at this site or the soil is excavated or disturbed for any reason, further investigation and/or remedial actions will be requested of the Army by ADEC. ADEC reserves its rights, under 18 AAC 75 Oil and Hazardous Substances Pollution Control and AS 46.03 to require the Army to conduct additional assessment and/or corrective actions in the future if information indicates the site conditions pose a risk to public health or the environment.

Action Date: 2/28/1990
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The U.S. Air Force contracted Woodward-Clyde Consultants (WCC) to conduct Stage 1 investigations under the Installation Restoration Program for the U.S. Army, Directorate of Engineering & Housing (DEH), at three Army bases in Alaska. The sites include: the Anchorage Fuel Terminal near Fort Richardson; the Roosevelt Road Transmitter site on Fort Richardson; the Fort Wainwright L&fill on Fort Wainwright; & four Fire Training Pits, two at Fort Richardson, one at Fort Wainwright, & one at Fort Greely. This volume addresses the results of the investigations at the fire training pits. Volume 4, IRP Stage 1 Joint Resources Project Fort Richardson, Fort Wainwright, & Fort Greely. Site 4, Fire Training Pits (WCC). FTP-1 & FTP-2 are on Fort Richardson. Fire Training Pit 2 (FTP-2) is located in a gravel borrow area near the northern edge of the north-south runway of Bryant Field on Fort Richardson (Figure 3-I). The pit is an

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area about 50 feet in diameter, with a small berm around the perimeter. The pit was used for fire training exercises up until about 1985. Burned debris consisting of partially burned wood, oil cans, car bodies, car parts, paint cans, varnish cans, cables, & pallets remain within the pit boundary. St&ing water was observed in the pit in 1986 (U.S. Army Environmental Hygiene Agency [AEHA], 1987), but water was not observed during the 1988 WCC investigation.An evaluation of the Fire Training Pits was conducted for Fort Richardson by the AEHA in September of 1986 (AEHA, 1986). This assessment considered the Fire Training Pits at Fort Richardson, Fort Wainwright, & Fort Greely. A summary of the results for FTP-2 is provided in this section. Debris & st&ing water were found in & around FTP-2 at the time of the AEHAinvestigation. The water seen in 1986 was surface water that had accumulated on hydrocarbon-saturated soil. Three boreholes were drilled at the pit & split spoon samples were collected. GW was not encountered at this site, & each borehole was drilled to about 20 ft. A total of 20 samples were retrieved & analyzed from this site during the AEHA investigation.All of the samples retrieved were analyzed for volatile organic EP toxic metals, explosives, acid extractable organics, base/neutral extractable organic& & pesticides. It was reported that EPA-recommended holding times were exceeded on some analyses for volatile organics. One surface sample contained 0.511 ppm of leachable lead. No other contaminants were quantified as being present at FTP-2.Contaminant plumes were not well delineated to the southwest. Probe placement in this area did not extend far enough for adequate definition of contamination in this area, because there was a pit approximately 10 feet deep in that location; the area was being used as a training area for heavy equipment operators. Probes 5, 6, & 11 did not indicate that accumulations of residual fuel or liquid product were significant in the area.The area with petroleum hydrocarbons greater than 30 ppmv is delineated by probes 1, 2, 5, 6, 11, 12, 14, & 15. This area extends roughly east & west of the pit. A pile of burned debris several feet high remains within the pit. The debris included several burned out drums & cans that had contained paint & paint thinner.The highest concentrations of petroleum hydrocarbons were detected from samples at probes 5, 6, & 11. BTX & other petroleum hydrocarbon concentrations from these probes indicate residual fuel products in the soil at these probe locations. Samples from probes 1, 2, 12, 14, & 15 were higher than 30 ppmv for one or several petroleum hydrocarbons; the concentrations from these samples probably do not indicate the presence of residual fuel in the soil. Probe 1 was located within the pit & still indicates relatively low BTX concentrations.Contaminant concentrations decrease outward from the pit area. Concentrations less than 30 ppmv extend around the outside perimeter of the pit (see Figure 3-2). The southwest extent of the concentration plume is not completely delineated. Sufficient probe locations were not included in this area to firmly establish the extent of detectable contaminant concentrations. The contaminant concentrations decrease radially outward from the pit area. The topographical gradient descends towards the north where surface spills would probably be expected to migrate. The soil gas survey has delineated the concentrations of detectable contaminants to the north of the pit.In general, the results of the soil gas survey indicated that in most directions the extent of detectable contamination was delineated. It appears from these results that the contamination at FTP-2 is reasonably localized. The localized nature of contamination

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at the site is probably due to incomplete combustion of fuels during training exercises.

Action Date:	2/26/2018
Action:	CERCLA ROD Periodic Review
DEC Staff:	Louis Howard
Action Description:	There is uncertainty regarding potential exposures to PFAS contamination at SS044 and the Ruff Road Fire Training Area AT029 (formerly a source area for OU A) which needs to be addressed prior to the next Five-Year Review.

Action Date:	2/22/2008
Action:	CERCLA ROD Periodic Review
DEC Staff:	Jennifer Roberts
Action Description:	ADEC signed the second Five Year Review for the Post. The purpose of this review is to ensure that remedial actions selected in the Records of Decisions (RODs) for the Fort Richardson Operable Units (OUs) are being implemented and that they continue to be protective of human health and the environment. To achieve this purpose, this review evaluates the status of implementation of the selected remedies, identifies significant variances from the RODs, and makes recommendations for reconciling variances and/or for improving performance of remedial actions. This statutory review is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) since all of the RODs for this site were signed after the effective date of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and some of the remedial actions result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure.The Fort Richardson NPL site is comprised of five OUs: OUA, OUB, OUC, OUD, and OUE. Records of Decision (RODs) have been written and signed for all five of these OUs, although it should be noted that the OUE ROD was signed in 2005, following the first Five-Year Review. The Five-Year Review found that the remedies for all Fort Richardson OUs are expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risk are being controlled. It should be noted that because the sites in OUA and OUD sites have all been previously recommended for NFA or deferred to other regulatory authorities, no protectiveness determination was necessary for these OUs.The OUA ROD included the following three source areas: Roosevelt Road Transmitter Site Leach field, Ruff Road Fire Training Area and Building 986 Petroleum Oil and Lubricant (POL) Laboratory Dry Well. The Army, EPA, and ADEC determined that the source areas included within OUA did not represent unacceptable risk to human health or the environment, based on EPA criteria for residential use. Thus, no remedial action was necessary to ensure protection of human health and the environment under CERCLA.However, the levels of petroleum contamination in the soil did exceed the ADEC soil cleanupcriteria. Accordingly, the sites were transferred to the Non-UST POL Environmental RestorationAgreement (Two-Party Agreement) between the Army and ADEC. Two of the sites, RooseveltRoad Transmitter Site Leachfield and Ruff Road Fire Training Area, have undergone remedialaction and have been closed under the Two-Party Agreement. The Building 986 POLLaboratory Dry Well site is still an active site but is not currently undergoing active remediation at the time of this review.A description of these sites and NFA decisions can be

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found in the OUA/OUB ROD. During theFive-Year Review process, the remedies conducted under the Two Party Agreement were reviewed and determined to be protective. A summary of remedial actions at the OU source areas can be found in the Administrative Record and are presented on Table 3-1 of this review. In addition, Table 3-1 contains updated information for all sites listed in the FFA. Because the OUA POL source areas are addressed through the Two-Party Agreement, they are not discussed further in this Five-Year Review.

Action Date: 2/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft UFP-QAPP work plan. Executive Summary2nd ParagraphPlease note that a cleanup complete without ICs will not be granted by ADEC to sites with vadose zone soils that exceed maximum allowable levels for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs &/or ingestion for DRO, GRO, & RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination. ICs or LUCs shall be applied when (per July 27, 2012 meeting minutes on the ???Use of Hydrocarbon Risk Calculator??? with ADEC, JBER, PBR contractors): ??? The GW under or downgradient of a site was contaminated with POL constituents at concentrations exceeding risk criteria or MCLs; or??? POL contaminants in the soil were above the MAC given in Table B2 of 18 AAC 75 or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for unlimited use/unrestricted exposure (UU/UE) for ADEC to grant a cleanup complete without ICs determination.??? In addition, sites with existing GW contamination above Table C cleanup levels will require that migration to GW cleanup levels be used for soil & ICs will be required. Once GW contamination is below Table C for a period of time [per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (See Attachment 1 Memo to the Site File for OUs 4, 5, & 6 September 2003)??? e.g. two rounds of annual GW monitoring], the MAC may become the soil cleanup levels as determined by ADEC on a case by case basis.See comment 3 below regarding perfluorocarbons (PFCs) data requirements at historical fire training pits such as Ruff Road Fire Training Area. This data gap will prevent the site from achieving ???cleanup complete without ICs???. WS 10Conceptual Site ModelPotential Receptors & Exposure PathwaysTo receive a ???cleanup complete??? without ICs/LUCs:GW under or downgradient of a site cannot be contaminated with POL contaminants at levels exceeding risk criteria or MCLs; or POL contaminants in the soil (0-15??? bgs) cannot be above MAC given in Table B2 of 18 AAC 75 or at concentrations which exceed risk criteria; orPOL contaminants??? direct contact or inhalation risks cannot exceed residential land use risk-based levels. Sites should be suitable for UU/UE for an ADEC cleanup complete determination without ICs/LUCs.Soils greater than 15 feet below the ground surface have to meet the migration to GW standards. The direct contact pathway only needed to be considered within 15 feet of the ground surface at a site (i.e. direct contact for BTEX, PAHs &/or ingestion for DRO, GRO, & RRO). Page 163rd ParagraphADEC requests JBER provide information (e.g. location & well construction) on the nearest (within &189; mile

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of RRFTA) drinking water [Base] well or standby drinking water well that may be used on a temporary, intermittent or permanent basis. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC. Page 17Data GapsConcerns are being raised nationally over perfluorocarbons (PFCs) as contaminants. Initial concerns arose over perfluorooctane sulfonate (PFOS) & perfluorooctoanoic acid (PFOA) in fire fighting foams used between 1970 & 2000* (RRFTA fire training operations covered a portion of this time period). Investigation into PFOS/PFOA has led to finding other PFCs of concern. PFOS & PFOA are extremely persistent in the environment & resistant to typical environmental degradation processes. As a result, they are widely distributed across the higher trophic levels & are found in soil, air, & GW at sites across the United States. The toxicity & bioaccumulation potential of PFOS & PFOA indicate a cause of concern for the environment & human health. Below are the cleanup values using the numerical factors presented in EPA???s Office of Water which established a provisional health advisory for PFOS & PFOA to protect against the potential risk from exposure of these chemical through drinking water provisional health advisory. A subchronic RfDs was extrapolated & subsequently used in the current EPA Regional Screening Levels (RSLs) equations for calculating an Alaska site-specific risk based cleanup levels in soil & GW in accordance with 18 AAC 75.340(g). Cleanup levels for PFOS & PFOA may be updated as more current & relevant toxicity information are presented & reviewed by ADEC.Risk Based Soil Cleanup LevelsPFOS Under 40-Inch Zone 6.3 mg/kg & migration to GW 1.2 mg/kgPFOA Under 40-Inch Zone 16 mg/kg & migration to GW 1.1 mg/kgRisk Based GW Cleanup LevelsPFOS 0.0013 mg/LPFOA 0.0031 mg/L

Action Date: 2/20/2003
Action: CERCLA ROD Periodic Review
DEC Staff: Louis Howard
Action Description: Jennifer Roberts signed the five year review document for the Post. The purpose of this review is to ensure that remedial actions selected in the Records of Decision (RODs) for the Fort Richardson Operable Units (OUs) are being implemented, that they continue to be protective of human health and the environment, and are functioning as designed. To achieve this purpose, this review evaluates the status of implementation of the selected remedies, identifies any significant variances from the RODs, and makes recommendations for reconciling variances and/or for improving performance of remedial actions. In addition, the review identifies any new information that becomes evident, documents that no new contaminant sources or exposure pathways were discovered, confirms that no new OUs were established, and verifies that no additional work was performed that was not identified in the RODs.The objectives of the Five-Year Review are to answer the following questions: Are the remedies functioning as intended by the decision document? Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid? Has any other information come to light that could call into question the protectiveness of the remedy?The OUA ROD included the following three source areas: Roosevelt Road Transmitter Site Leachfield, Ruff Road Fire Training Area and Building 986 Petroleum Oil and Lubricant (POL) Laboratory Dry Well. The Army, EPA, and ADEC determined that the source areas included within OU-A did not represent unacceptable risk to human health or the environment, based on EPA criteria for residential use.

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Thus, no remedial action was necessary to ensure protection of human health and the environment under CERCLA.However, the levels of petroleum contamination in the soil did exceed the ADEC soil cleanup criteria. Accordingly, the sites were transferred to the Non-UST POL Environmental Restoration Agreement (Two-Party Agreement) between the Army and ADEC. Two of the sites, Roosevelt Road Transmitter Site Leachfield and Ruff Road Fire Training Area, have undergone remedial action and have been closed under the Two-Party Agreement. The Building 986 POL Laboratory Dry Well site was undergoing active remediation at the time of this review.

Action Date: 2/18/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Characterization Report received for review & comment. The vertical & lateral extent of DRO contamination is delineated. DRO in soil was detected at concentrations above 250 mg/kg across an area approximately 45??? long by 105??? wide from the surface to 25??? bgs. GRO contamination is delineated vertically & laterally. GRO in soil was detected at concentrations above project screening level of 300 mg/kg across an area 30??? wide by 45??? long from the surface to approximately 25??? bgs.TCE contamination in soil above 0.02 mg/kg has been delineated both laterally & vertically at AT029. TCE-contaminated soil covers an area of approximately 145??? wide by 180??? long from the surface to a depth of 55??? bgs. The concentrations of TCE observed within the soil at AT029 are consistently small, indicative of a mixed product (waste oil) release & not a pure solvent spill. The TCE concentrations in soil remain well under direct contact or inhalation cleanup levels. While a concentration of DRO was detected in GW (0.448 milligram per liter [mg/L]) above 0.15 mg/L, the DRO concentration was well below ADEC???s cleanup level of 1.5 mg/L. GRO was detected within the GW, but at a concentration below the project screening level. TCE was not detected in the GW sample.Based on previous investigations & the 2013 site characterization field investigation, DRO, GRO, benzene, toluene, xylenes, 1,2,4-trimethylbenzne, 1,3,5-trimethylbenzene, n-butyl-benzene, n-hexane, naphthalene, TCE, benzo(a)pyrene, 1-methylnaphthalene, & 2-methyl-naphthalene were detected in the soil at concentrations exceeding project screening levels.??? DRO in soil was detected at concentrations above the project screening level of 250 mg/kg across an area approximately 45??? long by 105??? wide from the surface to 25??? bgs, which is 127??? above the water table of 152??? bgs. ??? GRO in soil was detected at concentrations above project screening level of 300 mg/kg across an area 30??? wide by 45??? long from the surface to approximately 25??? bgs. ??? TCE contamination in soil above the project screening level of 0.02 mg/kg covers an area of approximately 145??? wide by 180??? long from the surface to a depth of 55??? bgs, which is approximately 97 feet above the water table. The concentrations of TCE observed within the soil at AT029 are consistently small, indicative of a mixed product (waste oil) release & not a pure solvent spill. The TCE concentrations in soil remain well under direct contact or inhalation cleanup levels.??? The remaining soil COPCs (benzene, toluene, xylenes, 1,2,4-trimethylbenzne, 1,3,5-trimethylbenzene, n-butylbenzene, n-hexane, & naphthalene) are all co-located with the GRO & DRO contamination which has been laterally & vertically defined. ??? A GW sample was collected from existing monitoring well AP-3657. DRO was

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detected in the GW sample above the project screening level, but well below the ADEC Table C cleanup level.??? The rounded cumulative carcinogenic risks for the current commercial/industrial (2E-05) & hypothetical residential exposure scenarios (9E-05) are above the regulatory risk standard of 1E-05. The primary contributors to carcinogenic risk are TCE, ethylbenzene, xylenes, naphthalene, & 1,2,4-trimethylbenzene in indoor air & benzo(a)pyrene from direct contact/ingestion of soil.??? The cumulative noncarcinogenic HI estimates for the current industrial & hypothetical residential exposure scenarios (0.3 & 1) are below or meet the regulatory risk standard of 1. ??? The site meets the ADEC risk criteria for bulk hydrocarbons.No potential risks to the environment/ecological receptors were observed, and petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).Recommendations for AT029 are as follows:??? Investigation of the vapor intrusion pathway is warranted as follows before decisions about potential remedial actions can be made:- Soil gas samples should be collected for comparison to ADEC shallow soil gas target concentrations to determine whether remedial efforts are required & where those efforts would be focused.- Three soil gas probes should be installed in the source area to a depth of approximately 7 to 8 feet bgs to collect samples that are representative of the soil gas at the bottom of a potential future building with a basement.- One soil gas probe should be installed at the location of the highest known VOC contamination (AP-4076/AP029-SB01), & two additional probes should be installed laterally approximately 30 feet to the northwest (near AP-4077/AT029-SB02) & to the southwest (near AT029-SB06).- Soil gas sample collection will follow the standard operating procedures (SOPs) provided within the Basewide UFP-QAPP.- Soil gas samples should be collected & analyzed for petroleum-related VOCs & TCE.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: DRO and GRO.

Action Date: 2/15/2000
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff received and reviewed draft copy of progress report for 1999 activities. Staff concurred with recommendations for soil sampling at beginning and end of season to determine if continued operation in 2001 is necessary. Staff also requested polynuclear aromatic hydrocarbons (PAHs) be sampled for since method one may not be the final cleanup method of choice for the Army.

Action Date: 2/14/2018
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commended on the draft UFP-QAPP LFI and had the following comments: ADEC believes some acknowledgement should be given to the 2017 Site Inspection of aqueous film-forming foam (AFFF) Sites on JBER which included source area AT029. AT029 was sampled for Perfluorooctane Sulfonate (PFOS) and perfluorooctanaoic acid (PFOA) contamination in soil and groundwater. PFOS was detected in soil above the promulgated 18 AAC 75.341 Table B1 Method Two ??? Soil Cleanup Levels Table. Migration to Groundwater of 0.0030 mg/kg

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(November 7, 2017). Staff requested the most current EPA Regional Screening Levels from November 2017 be used and referenced. Finally staff requested modification for PFOS/PFOA analysis which could be of significant assistance in evaluating effects on human health or the environment, in evaluating the selection of cleanup options, or in protecting human health or the environment from PFC contamination (e.g. PFOS/PFOA) at AT029. If sampling for PFCs in soil and groundwater are not conducted as part of this limited field investigation, it remains an unresolved data gap.See site file for additional information.

Action Date: 2/14/2000
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received final copy of year-end progress report for 1998 activities of the treatment system. Contaminants in soil include: diesel, trichloroethylene, toluene, benzene and volatile organic components of gasoline. Full operation of system was achieved on 9/15/98 until 11/3/98 when it was shutdown and winterized. Soil sampling was recommended for start and end of 1999 season to determine if system should be continued in 2000.

Action Date: 12/31/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: DERP Program Review, Army IRP, WN-D-007, FTW-D-006 & GR-D-001, Fire Burn Pits. Project Phase SI/RD/RA. Fort Richardson has 2 fire pits. The fire training pits were used for fire training and disposal of combustible waste since the 1940's. Investigations performed in 1988 revealed contamination, but little or no migration.Major contaminants: BTX and other volatile organics and heavy metals. One additional site has been identified at FTR.

Action Date: 12/29/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Uniform Federal Policy???Quality Assurance Project Plan (UFP-QAPP) presents the proposedobjectives, methods, and procedures for limited field investigations of Sites AT029, DP009, SS019, and SS120 received for review and comment. Based on review of previous investigations and historical analytical data, the following data gaps have been identified at AT029: ??? The lateral extent of VOC (1,2,4-TMB and naphthalene), DRO, and GRO contamination in soil remains undefined to the south/southwest. ??? Laboratory limit issues for historical VOC analyses present uncertainty in defining the extent of contamination. ??? Potential site risks need to be reevaluated incorporating recently collected data.AT029 ??? RUFF ROAD FIRE TRAINING AREA, SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLANEight soil borings will be drilled at AT029 as part of this supplemental RI. The total depth of the borings will be 70 feet bgs, and two discrete soil samples will be collected from each boring. Two soil borings, AT029-SB10 and AT029-SB11, will be drilled within the SVE area to collect data for risk assessment.See site file for additional information.

Action Date: 12/2/2014
Action: Report or Workplan Review - Other

JBER-FT. RICH AFFF AREA 01 AT029 OUA RUFF ROAD FORMER FTA (Continued) **S110144186**

DEC Staff: Louis Howard
Action Description: Staff provided comments on the SC report addendum.General CommentsConcerns are being raised nationally over perfluorocarbons (PFCs) as contaminants. Initial concerns arose over PFOS & PFOA in fire fighting foams used between 1970 & 2000 (RRFTA fire training operations covered a portion of this time period). Investigation into PFOS/PFOA has led to finding other PFCs of concern. The PBR contract does not include any analyses for these constituents & the Air Force???s own interim guidance (Dept. of Air Force, HQ USAF, Mark Correll September 17, 2012 & attachment dated August 27, 2012) states that it is not appropriate for the PBR to address these contaminants, required use of the AFCEE/TDV approved toxicity values & coordinate with other Air Force entities (Bioenvironmental Engineering). ADEC does not consider these issues relevant in conducting its own regulatory review & providing comments regarding Air Force characterization of PFCs (PFOS/PFOA) on JBER-E & JBER-R. The data gaps (in soil & GW) regarding PFCs (PFOS/PFOA) remains an outstanding issue at RRFTA (& JBER-E/JBER-R) & any investigation & response actions are the responsibility of the Air Force & shall be conducted in accordance with 18 AAC 75.300 - 18 AAC 75.396.Soil Gas SamplingSoil gas sample AT029-SV01 failed helium leak check in the field which was attributed to high methane concentrations. The sample was subsequently analyzed for helium by the laboratory. ADEC requests the Air Force elaborate on whether there was a calculation performed to confirm helium leak check passed. If so, ADEC requests the Air Force list where this is documented in the report.Conclusions2nd BulletADEC disagrees that the units were in fact reported incorrectly since JBER has not produced any laboratory data to the contrary since the report was generated. Text from the 1993 Site Investigation Project Report for Fire Training Pits at Fort Richardson & Fort Greely, Alaska, states as Section 6.4.1 Fort Richardson RFI???P-2 ???Though VOCs were detected frequently in subsurface soils, the concentrations were generally well below the RBCs.Tables 6-1 & 6-2 summarize the organic chemicals & metals, respectively, detected in soil at RFTP-2. Though VOCs were detected frequently in subsurface soils, the concentrations were generally well below the RBCs. Trichloroethene was found in sample 92RFTP38OSL at 73 mg/kg, which slightly exceeds the RBC; however, this sample was collected from a depth of 22 to 24 feet BGS, where exposure cannot occur.???The Region 10 RBC of 10-6 risk for TCE was 50 mg/kg based on soil ingestion, residential & 73 mg/kg would slightly exceed this risk number. Please provide written documentation that shows that TCE was misreported at 73 ug/kg instead of 73 mg/kg. Otherwise, the 73 mg/kg TCE result from 1993 stands as reported & the text should reflect it in the current report addendum. Data Quality EvaluationPlease explain which samples were qualified due to field duplicate sample result relative percent difference exceedances. Please define in this section which associated samples where qualified. Please discuss in this section the fact that a subset of soil samples were not analyzed for low level SW8260C due to instrument contamination concerns as documented in ASL SDG N2064. Please also discuss how this issue affects the usability of the analytical results for decision making purposes. ConclusionsPlease discuss the mechanism of aerobic pathway of TCE in the vadose zone & why this is may be occurring.RecommendationsADEC concurs with the Air Force that further action under CERCLA is necessary for AT029 Ruff Road Fire Training Area. General Comment Regarding Field NotesPlease document the level of helium detected

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under the shroud & in the sample port in the field notes during subsequent site investigations where soil gas is sampled. Please explain in more detail why the field duplicate for SB1603 was moved due to contamination. Ideally, field duplicates should be collected from the most contaminated areas. The notes for AT029-SV01 suggest helium leak check failed multiple times; however, soil gas samples were collected at this location. Please discuss this discrepancy in the Data Quality Evaluation Section. Please identify the length of time samples were analyzed for VPH & EPH past holding time. Please also justify qualifying & not rejecting the VPH & EPH data associated with these samples. SDG???s for soil gas results associated with samples AT029-SV02, AT029-SV03, AT029-SV04, AT029-SV05 were not provided. Please include these laboratory reports in Appendix B-2.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved

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ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 12/12/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: E & E conducted the second phase of the investigation in 1992. Twenty-five surface soil samples and approximately 100 subsurface soil samples were collected. No groundwater samples were collected because groundwater was estimated to occur at a depth of 140 feet.Soil samples AP-3204 sample ID 92RFTP379SL from 19.5-21.0’ bgs taken on 10/26/1992 had trichloroethene (TCE) at 2.3 mg/kg and Sample ID 92RFTP380SL taken from same boring but at 24.5-26.0’ bgs on 10/26/1992 had TCE at 73 mg/kg. Though VOCs were detected frequently in subsurface soils, the concentrations were generally well below the RBCs. Trichloroethene was found in sample92RFTP380SL at 73 mg/kg, which slightly exceeds the RBC; however, this sample was collected from a depth of 22 to 24 feet BGS, where exposure cannot occur. EPA Region 10 TCE RBC 10-6 = 50 mg/kg, 10-4 = 5,000 mg/kg and HQ of 1 = 2,000 mg/kg. ADEC 2009 cleanup levels for TCE in Under 40 Inch Zone: Direct Contact (10-5 risk) 21 mg/kg, Outdoor Inhalation (10-5) risk 0.57 mg/kg and Migration to Groundwater = 0.020 mg/kg. 2012 EPA Region 10 noncancer risk to women of child bearing age residential: 3.4 ug/L 4.7 mg/kg and 2.0 ug/m3. Chronic Noncancer adjusted HQ 0.1 0.26 ug/L, 0.44 mg/kg, 0.21 ug/m3. Cancer risk 1x10-6 EPA RSLs 0.44 ug/L, 0.91 mg/kg, 0.43 ug/m3. Commercial industrial: soil 1 x 10-6 6.4 mg/kg and Air at 3.0 ug/m3. Chronic Noncancer HQ 0.1 soil 2.0 mg/kg and air at 0.88 ug/m3. Short term noncancer for NTE 21 day exposure women of reproductive age 19.2 mg/kg and 8.4 ug/m3. The concentrations of chemicals detected in soils at the FTPs were compared to existing risk-based concentrations from EPA Region 10 (EPA 1991) to determine which chemicals are present at levels that may potentially pose significant health risks. The Region 10 risk-based concentrations (RBCs) are calculated for target risk levels (a hazard quotient [HQ] of 1 for noncarcinogens and a cancer risk of lo6 for carcinogens) using EPA-derived toxicity indices and standard default exposure factors for ingestion of soil by

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residential receptors.POL contamination was detected in both subsurface and surface soil samples. Significant levels of dioxins/furans were also encountered in surface soil samples at concentrations up to 45.4 pglkg. Analytical results exceed ADEC matrix cleanup levels for non-UST petroleum contaminated sites or EPA Region 10 RBCs. All 1992 surface and subsurface samples contained total lead, with concentrations ranging from 3.6 to 400 mg/kg. Samples were subsequently analyzed for TCLP lead, but none of the samples contained TCLP lead at concentrations exceeding the toxicity characteristic limit that would require treatment under Title 40, Code of Federal Regulations (CFR) Part 261.24 as a characteristic waste.Select & subsurface samples were analyzed for pesticides and PCBs using EPA Method 8080, but PCBs were not detected in the samples. Surface samples were not analyzed for pesticides or PCBs. Analytical results from the 1992 investigation confirmed the presence of petroleum contamination in soils at concentrations exceeding ADEC cleanup levels. Contaminants previously identified at levels requiring remediation at the site included benzene, toluene, ethylbenzene, and total xylenes, DRO, and TRPH. In addition, several samples showed dioxin TEFs that exceed EPA Region 10 RBCs. Based on the results of this investigation, the areal extent of contamination was estimated to be 25,000 square feet, with approximately 35,000 cubic yards of contaminated soil.

Action Date: 11/7/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter report received for CY2016 [January 1, 2016 - December 31, 2016] Annual Land Use Control (LUC) and Institutional Control (IC) Monitoring at Joint Base Elmendorf-Richardson (JBER). This letter serves as the annual monitoring report on the status of LUCs/ICs in place on JBER-Elmendorf (JBER-E) and JBER-Richardson (JBER-R). The Air Force ensures compliance with LU Cs by conducting periodic monitoring and site inspections. Formal LUC/IC inspections occur annually on JBER during late spring through early fall and are typically conducted by contract. A total of 55 sites were formally inspected. Random site inspections are also conducted throughout the year by JBER Restoration staff.Discrepancies: Field appears to have been tilled in the recent past. Some frozen pools of waterobserved Vegetation is short, appears to be re-growing after disturbance.See site file for additional information.

Action Date: 11/30/1996
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Remedial investigation/feasibility study approved. The SESOIL contaminant transport model was used to calculate a preliminary, conservative order-of-magnitude estimate of the leachability of petroleum constituents in subsurface soils at the RRFTA. SESOIL is a seasonal soil compartment model that estimates the rate of vertical chemical transport and transformation in the soil column in terms of mass and concentration distributions among the soil, water, and air phase in the unsaturated soil zone (Bonazountas and Wagner 1984). Calibration of the SESOIL model involves adjusting various input parameters (soil disconnectedness, intrinsic permeability, and porosity) so that output parameters, such as soil moisture and recharge, reflect reasonable site-specific conditions.Analytical data

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for DRO were the most consistently available data for subsurface soils at the RRITA. Because the SESOIL model requires compound-specific information, naphthalene was chosen as a representative and persistent component of the arctic-grade diesel that is believed to be a likely source of the DRO contamination at OU-A. The concentrations of naphthalene used for the model were derived as a fraction of the average DRO concentration detected at the RRlTA. The fraction of naphthalene in DRO was determined from the average percent constituents of diesel fuels reported by Mapco Alaska Petroleum, Inc. (1993).The area, thickness, and average concentration of contamination were determined conservatively based on the depths and locations of soil boring samples containing DRO at concentrations greater than 100 mg/kg.The model predicted that petroleum contaminants will migrate approximately 10 feet vertically from their present location over a 90-year period and that groundwater would not likely be impacted.Since the RI findings did not indicate the presence of either benzene and/or BTEX contamination nor did the HHRA identify any site-related risk with benzene and/or BTEX, cleanup objectives for these constituents are not proposed. The cleanup objectives for petroleum hydrocarbon contamination in the soil will be: GRO-500 mg/kg; DRO-1,000 mg/kg; and RRO-2,000 mg/kg.The RI did determine the presence of dioxin contamination in the surface and subsurface soils. The maximum dioxin TEF concentration in surface soils and subsurface soils was 2.39 x 10-5 mg/kg and 1.91 x 10-5 mg/kg, respectively. The HHRA determined that for each of the four risk scenarios evaluated for the RRFTA, the risk associated with dioxin contaminated soils is below EPA???s risk criterion of 10-6. Additionally, there are no ARARs which mandate specific cleanup levels for dioxin contaminated soil. Since the risk associated with dioxin contamination is below EPA???s acceptable risk range and due to the lack of specific soil cleanup levels, no cleanup objective for dioxin contaminated soil is proposed.Based on the findings of the FS and review of the ARARs/TBCs, it has been determined that the establishment of cleanup objectives for groundwater is not warranted. Therefore, groundwater remedial options will no longer be addressed by this FS.

Action Date: 11/21/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Per AFCEC email: A memo from the USACE summarizing issues found in their review should be in hand on the 4th of December.

Action Date: 11/20/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft AT029 - Ruff Road FTA SC Report received for review and comment. A single concentration of GRO was detected at 654 mg/kg (above its project screening level of 300 mg/kg) in soil collected from 20 to 25 feet bgs. DRO was detected above its project screening level of 250 mg/kg in two soil samples collected: at 341 mg/kg from the soil sample from 20 to 25 feet bgs, and at 1,210 mg/kg in the soil sample from 25 to 30 feet bgs. These results are slightly less than the reported DRO concentrations from AP-3240 in 1992 of 2,200 mg/kg in the soil sample collected from 19.5 to 21 feet bgs and 1,800 mg/kg in the soil sample collected from 24.5 to 26.5 feet bgs.In soil sampled from 20 to 25 feet, the following VOCs were detected above

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their respectivescreening levels:??? 1,2,4-TMB at a concentration of 32.6 mg/kg (screening level: 4.9 mg/kg)??? 1,3,5-trimethylbenzene (1,3,5-TMB) at a concentration of 9.81 mg/kg (screening level: 4.2 mg/kg)??? Naphthalene at a concentration of 4.96 mg/kg (screening level: 2.8 mg/kg)??? Total xylenes at a concentration of 32.4 mg/kg (screening level: 6.3 mg/kg).In soil from 25 to 30 feet bgs, 1,2-dichloroethane (1,2-DCA) was detected above its screening level (0.016 mg/kg) at a concentration of 0.0167 mg/kg. In soil from 25 to 60 feet bgs, benzenewas detected above its project screening level at concentrations ranging from 0.0263(J) mg/kg at25 to 30 feet bgs to 0.0667 mg/kg at 55 to 57.5 feet bgs.The following conclusions were made regarding AT029:??? Concentrations of DRO, GRO, 1,2,4-TMB, 1,3,5-TMB, 1,2-DCA, naphthalene, total xylenes, and benzene were detected in soil from AT035-SB09 (former location AP-3204) above their respective project screening levels at depths of 20 feet or greater bgs??? Concentrations of TCE in soil from AT035-SB09 were either nondetect or slightly abovedetection limits (well below its project screening level). These soil results indicate that thepreviously reported TCE concentration of 73 mg/kg in soil from AP-3204 (E & E, 1993) was likely reported incorrectly and in fact was 73 &181;g/kg. Low oxygen, high carbon dioxide and methane, and the presence of VC detected in soil gas at AT035-SB09/SV01 suggests that biological degradation of TCE may be occurring naturally in the vadose zone at this specific location.??? The risk evaluation completed in 2013 indicated that the vapor intrusion pathway was completefor potential future residents at AT029 and based on modeling of soil concentrations there waspotential risk to future residents from exposure to TCE, ethylbenzene, total xylenes, and1,2,4-TMB concentrations within indoor air. Laboratory results for soil gas samples collectedin 2014 indicate that concentrations of TCE, ethylbenzene, total xylenes, and 1,2,4-TMB are above ADEC???s residential shallow soil gas target levels. In addition, laboratory results for soil gas collected in 2014 also indicate concentrations of 1,3,5-TMB, PCE, VC, and benzenes were above ADEC???s residential shallow soil gas target levels. Concentrations of 1,2,4-TMB, 1,3,5-TMB, and TCE were also above ADEC???s commercial shallow soil gas target levels. The following are recommended for AT029:??? Based on concentrations of VOCs detected in soil and soil gas in 2013 and 2014, further actionunder CERCLA is necessary.??? Further investigation of soil may be necessary if laboratory detection limits for historic soildata are not considered adequate to define the lateral and vertical extent of VOCs in soil and to evaluate potential site risk.??? Further investigation of soil gas may also be necessary to support the evaluation of potentialfuture site risk and risk management decisions.

Action Date: 11/11/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1991, as part of a two-phase investigation, E & E collected surface and subsurface soil samples at the fire training area. A composite surface soil sample was collected in triplicate from stained soil near the center of the area. The sample contained lead (80.8 mg/kg to 543 mg/kg), diesel and other fuels in the diesel range (10,000 mg/kg to 20,000 mg/kg), pyrene (not detected to 750 J ug/kg), tetrachloroethene (PCE; 48 ug/kg to 485 ug/kg), toluene (not detected to 732 ug/kg), xylenes (not detected to 1,116 ug/kg), bis(2-ethy

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hexyl-phthalate (not detected to 4,100 ug/kg), and dioxins (0.0022 ug/kg toxicity equivalent factor [TEfl). Neither pesticide nor PCBs were detected.Subsurface soil samples were also collected during the 1991 Phase I effort. Samples were collected from two soil borings at 5-foot intervals from to a depth of 20 feet BGS; one boring was located at the center of the fire training area and one was located in a background location south of the fire training area. The highest VOC concentrations detected in these samples were acetone (283 ug/kg), trichloroethene (TCE; 46 ug/kg), toluene (56 ug/kg), and xylenes (42 ug/kg).

Action Date: 10/3/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The fire training pit was filled with clean soil and the site regraded.

Action Date: 10/29/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Memo for incorporation of AT029 - Ruff Road Fire Training Area into the JBER-Richardson (JBER-R) Federal Facility Agreement (FFA) signed by AFCEC, EPA & ADEC remedial project managers. Site characterization was conducted in 2013 to evaluate action required to eliminate ICs & obtain closure of the site. During the 2013 investigation TCE, a CERCLA-regulated volatile organic compound (VOC), was detected above soil screening levels. Follow-up shallow soil gas samples collected in 2014 detected CERCLA regulated VOCs (TCE, PCE, vinyl chloride) & petroleum-related VOCs (benzene, ethylbenzene, xylenes, 1,3,5-trimethlybenzene) above ADEC residential shallow soil gas target levels. Based on these results, EPA & ADEC indicated at a meeting on 13 August 2014 that further actions for AT029 should be addressed under CERCLA & that these actions should begin with an evaluation of data gaps to determine whether a supplemental RI is necessary to provide additional data to perform a revised risk assessment.In accordance with Section 24.3 of the FFA, a new site can be addressed under the last scheduled Operable Unit or other mechanism as agreed upon by the Parties to the FFA. The FFA requires unanimous written agreement between the Project Managers concerning disposition of individual source areas. Based on site-specific information indicating CERCLA contaminants are present in the soil, the Project Managers agree that AT029 - Ruff Road Fire Training Area will be incorporated into the JBER-R FFA as a new site subject to the stipulations listed in the FFA, including Attachment 1. Upon approval, this document will be attached to the current FFA (effective 5 Dec 1994).See site file for additional information.

Action Date: 10/10/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1989, as part of the Installation Restoration Program (IRP), 15 soil-gas probes were installed in the area to a depth of 9 feet. Benzene, toluene, and xylenes were identified in the soil-gas sample with maximum concentrations of 250 ppm, 2,500 ppm, and 1,200 ppm, respectively. Other hydrocarbons were detected.

Action Date: 1/31/2013

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Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP Draft work plan received. Two borings will be drilled at or near historical sample location AP-4076 & AP-4077 to investigate the area of residual soil contamination. The proposed new borings are located where the vadose zone is interpreted to be contaminated.Soil boring AT029-SB01 will be advanced to a depth up to 150 feet bgs (the water table) at historical sample location AP-4076 to define the nature of contamination & vertical extent & collect source area data. Soil samples will be collected every 5 feet from ground surface to 25 feet bgs & every 10 feet from 25 to boring termination. If the boring is advanced to GW, HydroPunch GW samples will be collected at the water table to confirm contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, a monitoring well will be installed in the soil boring. AT029-SB02 will be advanced to a depth of up to 50 feet bgs at historical location AP-4077 to further characterize the nature of contamination & collect additional source area data. Soil samples will be collected every 5 feet from ground surface to boring termination. If, based on photoionization detector (PID) field screening & visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, two samples will be collected beyond the last evidence of contamination, & the boring will be terminated. Both borings will be drilled to at least 25 feet bgs.AT029-SB03 through AT029-SB06 Soil borings AT029-SB03 through AT029-SB06 will be advanced to a depth to 25 feet bgs to define the lateral extent contamination at location AP-4076. Samples will be collected every 5 feet from ground surface to boring termination.For all borings, based on field observations & the results of the PID screening, soil samples within each 5-foot interval throughout the boring will be selected for laboratory analyses. All soil samples (up to 48 primary samples) will be analyzed for GRO, DRO, RRO, petroleum-related VOCs (& PCE at AT029-SB01 only). To facilitate HRC calculations, a subset of soil samples will be collected & analyzed as follows: Approximately three samples (including quality control [QC]) from more heavily contaminated soils (as observed at the time of sampling based on PID readings & visual/olfactory evidence of contamination) will be analyzed for PAHs, VPH, & EPH. Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for foc. Approximately one sample representative of the site subsurface conditions will be analyzed for bulk density, grain size distribution, specific gravity, & moisture content.Prior to drilling, utility locates will be performed in accordance with SOP-04 to identify potential underground hazards. In the event underground utilities or structures cannot be definitively identified, an air knife & vacuum truck may be used to clear the upper 6 feet of the proposed drilling location prior to drilling or conducting other invasive activities. Once clearance activities have been completed in the upper 6 feet of the soil column, soil removed during utility clearance will be placed back into the hole from which it was removed. Drilling or other invasive activities will be conducted after utility clearance has been completed & the soil has been replaced.If borings are advanced to GW, HydroPunch GW samples will be collected from a few feet below the water table from each boring to confirm contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or

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near the water table, monitoring wells may be installed in the soil borings. GW samples will be analyzed for GRO, DRO, RRO, VOCs, PAHs, VPH, & EPH. Observations of odor, turbidity, & color will be recorded on the GW sample collection log. AP-3655 & AP-3657 GW samples will be collected from two existing onsite wells, AP-3655 & AP-3657, shown on Figure 3, to confirm that no contamination has migrated to GW. Samples will be analyzed for GRO, DRO, RRO, petroleum-related VOCs, PAHs, VPH, EPH, & will be collected using low-flow sampling techniques, as described in SOP-08. Observations of odor, turbidity, & color will be recorded on the GW sample collection log. Specific laboratory methods, bottle requirements, field preservation requirements, & sample volumes for these analyses are provided in Worksheet 19 of this Work Plan. Quality assurance (QA)/QC samples will be collected as specified in Worksheet 20. Sample handling will follow procedures listed in SOP-02.

Action Date: 1/14/1998
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: As a part of a presumptive remedy for the landfill at the Post which includes this site, a cap of soil was completed in the summer of 1997 as a part of the RCRA subtitle D of solid waste landfill regulations. Groundwater sampling has been conducted since 1989 and no contaminants of concern have been identified. Monitoring to continue for thirty years and ICs to be maintained on the cap.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich AFFF Area 01 AT029 OUA Ruff Road For
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, & compliance with ICs is reported in the Annual Monitoring Reports for each OU. The IC policy applies to all USARAK units & activities, Military & Civilian Support Activities, Tenants Organizations & Agencies & Government & Civilian Contractors.
Contaminant CDR: If in the future, additional contamination is discovered at this site or the soil is excavated or disturbed for any reason, further investigation and/or remedial actions will be requested of the Army by ADEC. ADEC reserves its rights, under 18 AAC 75 Oil and Hazardous Substances Pollution Control and AS 46.03 to require the Army to conduct additional assessment and/or corrective actions in the future if information indicates the site conditions pose a risk to public health or the environment. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and groundwater in effect at the Post.
Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

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Contaminate Name1: JBER-Ft. Rich AFFF Area 01 AT029 OUA Ruff Road For
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: When Contaminated Soil is Accessible, Remediation Should Occur
Contaminant CTD: The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, & compliance with ICs is reported in the Annual Monitoring Reports for each OU. The IC policy applies to all USARAK units & activities, Military & Civilian Support Activities, Tenants Organizations & Agencies & Government & Civilian Contractors.
Contaminant CDR: Any excavation at within this area by: Army personnel, contractors, utility companies, leaseholders, shall be coordinated with the Fort Richardson Environmental Coordinator. The contaminated soils shall be properly disposed of in accordance with 18 AAC 75. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and groundwater in effect at the Post.
Comments: Not reported

Inst Control:
Hazard ID: 2777
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 1/14/1998
File Number: 2102.38.001.03

Hazard ID: 2777
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Update
Action Date: 3/25/2016
File Number: 2102.38.001.03

32
SW
< 1/8
0.119 mi.
628 ft.

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION **SHWS** **S113929832**
AREA BOUNDED BY D ST TO SOUTH, 6TH ST TO WEST, WESTBROOK AVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
317 ft.

SHWS:
File Number: 2102.38.072
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.259426
Longitude: -149.681206
Hazard ID: 26084
Problem: A Geotechnical Assessment was conducted by the Corps of Engineers in 2007 in support of construction of a new addition to the existing physical fitness facility. Laboratory results showed exceedances of diesel range organics (DRO), dibenzo(a,h)anthracene, lindane, and dieldrin in the soil. These results show contaminants have been released to the environment from historical activites at the site.

Actions:
Action Date: 8/30/2013

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION (Continued) **S113929832**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter Work Plan and Sampling and Analysis Plan Addendum, Buckner Fieldhouse Expansion Project, Joint Base Elmendorf Richardson (JBER), Alaska (FTR198, 13-085) received in advance of September 3rd meeting at JBER. This site survey is intended to more fully characterize the northern portion of the project site. Since construction activities are not expected to be significantly intrusive in this area, the majority of samples collected will be surface samples. These samples will be collected at 6 to 12 inches below the ground surface, under the vegetative mat. Additionally, two samples will be collected from two to four feet below the ground surface to help further delineate the site, based on previous observations and analytical results.Proposed sample locations were chosen based on results from the 2008 effort and from locations determined from analysis of historical photographs.Samples surrounding TP-2 will be analyzed for DRO, polynuclear aromatic hydrocarbons (PAH ??? DBAHA is a PAH), and PCBs (locations F01 through F04. In addition, one boring will be manually advanced to four feet at TP-2 to delineate the depth of the previously detected contamination. One sample will be collected at depth.Samples surrounding TP-5 will be analyzed for pesticides and PAH (locations P01 through P04; DBAHA was identified as an exceedance of current cleanup limits at TP-5 but was not noted as such in the 2008 survey). A sample at depth will not be collected at TP-5, as pesticides are not expected to migrate significantly. However, an additional surface sample at TP-5 will be collected for total and hexavalent chromium in an effort to show that hexavalent chromium is not a concern at this site.One boring will be advanced manually in the vicinity of TP-3 where a depression indicatesthe potential presence of a tank. A sample will be collected at depth and analyzed for DRO,PAHs, and PCBs. In an effort to gather more data, a Schonstedt will also be used todelineate any metallic debris in this area.During the previous investigation, one foundation was identified that was not characterized.Four surface samples will be collected from the center of each wall and composited foranalysis. The sample will be analyzed for DRO, PAHs, PCBs, and pesticides. Finally, surface samples S01 through S15 will be collected for the suite of analytes: DRO,PAHs, PCBs, and pesticides.

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79485 name: FTR198 Buckner Field House Expansion

Action Date: 7/11/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 7/10/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided a quick review of the 2008 HTRW USACE chemical data report & sent the comments to Air Force & EPA project managers. 1) Most cleanup levels (circa 2006) have changed for the PCOCs. For the COCs all except DRO changed (it remains at 250 mg/kg for migration to

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION (Continued) **S113929832**

GW). Table B1 Method Two Under 40 inch zone (18 AAC 75 April 2012)Dibenzo(a,h)anthracene Direct Contact level (2012) is 0.49 mg/kg. Arsenic migration to GW (MGW) cleanup level is 3.9 mg/kg.. Page 4-5 Fort Richardson Background Study, Table 4.1 Background levels-Surface (0-0.5'): 6.9 mg/kg, Root Zone (0.5' to 3.0'): 6.7 mg/kg, Deep (> 3.0'): 5.9 mg/kg. Cr VI MGW cleanup level is 25 mg/kg. Ft. Richardson Background Study Table 4.1 Background levels-Surface: 32 mg/kg, Root Zone 28.8 mg/kg. no samples for > 3.0' gamma-Hexachlorocyclohexane (Lindane) MGW cleanup level is 0.0095 mg/kg Dieldrin MGW cleanup level is 0.0076 mg/kg2) Exceedances & DL greater than cleanup levels. Benzo(a)pyreneTP-02 0.0' bgs Sample ID 08FTR198-028SL Collection Date 05-Nov-07 0.82 mg/kg [1.1] J,B. TP-05 0.0 Sample ID 08FTR198-031SL 0.88 mg/kg [0.5]B Direct Contact level 0.49 mg/kg (18 AAC 75 April 2012)Dibenzo(a,h)anthraceneTP-02 0.0' bgs Sample ID 08FTR198-028SL 1.2 mg/kg [1.1] BTP-05 0.0 Sample ID 08FTR198-013SL 0.6 mg/kg [0.5]B Direct contact level 0.49 mg/kg AldrinTP-02 0.0' bgs Sample ID 08FTR198-028SL ND 0.11 mg/kg MGW cleanup level is 0.070 mg/kgAlpha BHCTP-02 0.0' bgs 08FTR198-028SL ND 0.11 mg/kg,TP-03 0.0 08FTR198-029SL ND 0.012 mg/kg,TP-04 0.0 08FTR198-030SL ND 0.012 mg/kg,TP-05 0.0 ND 0.011 mg/kg,TP-01 0.0 08FTR198-027SL ND 0.06 mg/kgMGW cleanup level 0.0064 mg/kgBeta BHCTP-02 0.0' bgs 08FTR198-028SL ND 0.11 mg/kg,TP-01 0.0 08FTR198-027SL ND 0.06 mg/kgMGW cleanup level 0.022 mg/kgDieldrinTP-01 0.0' bgs 08FTR198-027SL ND 0.12 mg/kg,TP-02 0.0 08FTR198-028SL ND 0.21 mg/kg,TP-03 0.0 08FTR198-029SL ND 0.024 mg/kg,TP-04 0.0 08FTR198-030SL ND 0.024 mg/kg,TP-05 0.0 08FTR198-031SL 0.017 mg/kg [0.022]J,TP-06 0.0 08FTR198-032SL ND 0.011 mg/kg.MGW cleanup level 0.0076 mg/kggamma-Hexachlorocyclohexane (Lindane)TP-02 0.0' bgs 08FTR198-028SL ND 0.11 mg/kg,TP-03 0.0 08FTR198-029SL ND 0.012mg/kg,TP-04 0.0 08FTR198-030SL ND 0.012 mg/kg,TP-05 0.0 08FTR198-031SL 0.01 mg/kg [0.011] J,TP-01 0.0 08FTR198-027SL ND 0.06 mg/kg,MGW cleanup level is 0.0095 mg/kgHeptachlor EpoxideTP-02 0.0' bgs 08FTR198-028SL ND 0.11 mg/kg MGW Cleanup level 0.014 mg/kgToxapheneTP-02 0.0' bgs 08FTR198-028SL ND 11 mg/kg,TP-01 0.0 08FTR198-027SL ND 6 mg/kg,MGW Cleanup level 3.9 mg/kg1,1,2-TrichloroethaneTP-02 0.0' bgs 08FTR198-028SL ND 0.063 mg/kg QL, TP-03 0.0 08FTR198-029Sl ND 0.027 mg/kg QL, TP-04 0.0 08FTR198-030SL ND 0.029 mg/kg QL, TP-05 0.0 08FTR198-031SL ND 0.023 mg/kg QL, TP-06 0.0 08FTR198-032SL ND 0.023 mg/kg QL, TRIP Blank 08FTR198-TB1 ND 0.04 mg/kg, TB-11 2.5' bgs 08FTR198-009SL ND 0.02 mg/kg, TB-11 5.0' bgs 08FTR198-010SL ND 0.019 mg/kg, TP-01 0.0' bgs 08FTR198-027SL ND 0.027 mg/kg QL, TB-08 0.0 08FTR198-001SL ND 0.02 mg/kg, TB-09 2.5' bgs 08FTR198003SL ND 0.022 mg/kg, TB-10 0.0 08FTR198-005SL ND 0.022 mg/kg, TB-06 0.0' bgs 08FTR198-012SL ND 0.02 mg/kg, TB-07 0.0' bgs 08FTR198-007SL ND 0.021 mg/kg QL, TB-04 5.0' bgs 08FTR198-017SL ND 0.042 mg/kg, TB-05 5.0' bgs 08FTR198-015SL ND 0.021 mg/kg TB-02 0.0 08FTR198-022SL ND 0.042 mg/kg, TB-03 0.0 08FTR198-020SL ND 0.04 mg/kg. QL= Analvte result is considered an estimated value biased low due to a quality control failure MGW cleanup level 0.018 mg/kgEPA requires non-methanol preserved soil samples & ADEC requires preserved soil samples for VOC soil sampling. It was not obvious from the field notes what the field screening results were & how they correlated with the actual results. Figure of where there samples were taken & field screening results would be great but was not done for thie HTRW survey. FYI 20 ppm on the PID is not a cutoff for Clean vs. Dirty soils. Laboratory results or definitive data are the only acceptable way to determine this. The

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION (Continued) **S113929832**

soil samples collected from the borings (generally, from the surface, 2.5-4.5 ft bgs, 4.5-6.5 ft bgs, & at 5-foot intervals thereafter) were fieldscreened with a photo-ionization detector (PID). 3.4 Investigative Derived WasteNo soil samples exceeded the field-screening criterion (20 ppm with PID) for containerization. All soil cuttings from the borings were backfilled into the borings from which they were extracted, as described in the Sampling & Analysis Plan. This criterion for field screening shall not be used on any JBER or MILCON project without the required laboratory analysis to confirm field screening results. Please refrain from using an arbitrary threshold on the PID as a Clean vs. dirty field determination. You have to prove the negative as well as the positive when it comes to field screening.

Action Date: 7/1/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Spill report filed for Buckner Field House Bldg. 690 on D St. Unknown historic release. Routine sampling as part of construction geotechnical investigation detected DRO, PAHs, lindane, dieldrin, and DRO exceeding cleanup levels. Site was discovered upon receiving results of 2007 sampling data for construction site. There is no indication of recent spill and is assumed to be a historic release. Under the Richardson Federal Facility Agreement, concurrent notification will be made to ADEC-CS and EPA.

Action Date: 4/8/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the work plan. Main comments was regarding using the right lab method for pesticides and current laboratory certification letters for ALS and SGS.

Action Date: 2/1/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: February 2008 Chemical Data Report Soil HTRW Survey- Expand Buckner Field House FTR198 (08-010) was not released to regulators or Air Force until July 2013. This report presents the analytical results of limited soil samples collected during the geotechnical investigation for the Expand Buckner Field House (FTR198) project at Fort Richardson, Alaska. The soil samples were collected from 22 October through 7 November 2007. A total of eleven auger borings (AP-5367 through AP-5377) were drilled to collect geotechnical & chemical samples. In addition, five test pits were dug to collect surface samples. Twenty-seven (27) soil samples & three duplicate samples were collected for chemical analysis.Based on the results of this sampling, the soil samples revealed the presence of the following:Site 1 (adjacent to existing field house):1. Arsenic was detected at levels above ADEC cleanup limits in most samples. These levels are also above the ingestion limits established in Table B-1 of 18 AAC 75.341 & are above the background range determined for Fort Richardson soils.2. Chromium was found at most boring locations at levels exceeding ADEC cleanup levels, concentrations are above previously published background values for the area. Site 2 (lot directly to the north of existing field house):1. DRO was found at the surface of TP-02 at concentrations exceeding ADEC cleanup

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION (Continued) **S113929832**

criteria. In addition, DRO was found in several locations at levels approaching, but not greater than, ADEC cleanup levels.2. Gamma-BHC (Lindane) & Dieldrin were both detected at concentrations exceeding ADEC cleanup levels at the surface of TP-04.3. Chromium was found at most locations at levels exceeding ADEC cleanup levels, concentrations are above previously published background values for the area.4. Dibenzo(a,h)anthracene was detected at concentrations greater than ADEC cleanup levels at the surface of TP-02.5. Arsenic was detected at levels above ADEC cleanup limits in most samples. These levels are also above the ingestion limits established in Table B-1 of 18 AAC 75.341 & are above the background range determined for Fort Richardson soils.6. Site 2 contains debris & utilities from previous military use. Foundations, sewer lines & other materials are present onsite.The construction contractor shall evaluate the hazards & recommend hazard control measures in accordance with EM 385-1-1 & other applicable federal, state, &, local regulations. The Accident Prevention Plan with appropriate appendices shall be submitted before initiating work at the job site. The contractor must be prepared to accomplish control measures to mitigate the site workers potential exposure to arsenic (e.g. from fugitive dust, etc.). In addition, the construction contractor should be prepared to field screen, sample, & stockpile any pesticide contaminated soils excavated from the area surrounding TP-04 & any fuel contaminated soil from the area surrounding TP-02.The soil samples collected from the borings (generally, from the surface, 2.5-4.5 ft bgs, 4.5-6.5 ft bgs, and at 5-foot intervals thereafter) were field screened with a photo-ionization detector (PID). 3.4 Investigative Derived WasteNo soil samples exceeded the field-screening criterion (20 ppm with PID) for containerization. All soil cuttings from the borings were backfilled into the borings from which they were extracted, as described in the Sampling and Analysis Plan.NOTE to file: Table B1 Method Two Under 40 inch zone (18 AAC 75 April 2012) cleanup levels have changed since the referenced 2006 cleanup levels used in the document. Dibenzo(a,h)anthracene Direct Contact level (2012) is 0.49 mg/kg. ???Direct contact??? means exposure through both incidental ingestion of soil & through dermal absorption of the contaminant from soil. Arsenic migration to GW (MGW) cleanup level is 3.9 mg/kg. ???Migration to GW??? means the potential for hazardous substances to leach to GW where they may result in a completed human exposure pathway through direct ingestion of contaminants at or above levels listed in Table C at 18 AAC 75.345(b)(1); soil cleanup levels protective of migration to surface water must be determined on a site-specific basis. Page 4-5 Fort Richardson Background Study, Table 4.1 Background levels-Surface (0-0.5'): 6.9 mg/kg, Root Zone (0.5' to 3.0'): 6.7 mg/kg, Deep (> 3.0'): 5.9 mg/kg. Cr VI MGW cleanup level is 25 mg/kg. Ft. Richardson Background Study Table 4.1 Background levels-Surface: 32 mg/kg, Root Zone 28.8 mg/kg. no samples for > 3.0' gamma-Hexachlorocyclohexane (Lindane) MGW cleanup level is 0.0095 mg/kg Dieldrin MGW cleanup level is 0.0076 mg/kg

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich FTR198 Buckner Field House Expansion
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION (Continued) **S113929832**

Control Type:	Not reported
Control Details Description1:	Not reported
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

33
WSW
1/8-1/4
0.226 mi.
1194 ft.

JBER-FT. RICH SS013 MP BARRACKS FTR196 **SHWS** **S113929814**
WEST OF 6TH STREET NEAR WESTBROOK AVENUE INTERSECTION, BETWE **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
319 ft.

SHWS:

File Number:	2102.38.071
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Active
Latitude:	61.261490
Longitude:	-149.685229
Hazard ID:	26056
Problem:	The spill site was identified during barracks construction in 2009. PCB results from subsequent 2009 remedial investigation indicated that the site contained approximately 3,100 cubic yards of PCB-contaminated soil.

Actions:

Action Date:	9/26/2008
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Email from Army (C. Fosbrook) to EPA:Bill/Louis-I assumed that we would be completing a formal decision document in accordance with the attachments of the FFA. This I was hoping this would allow this site to be part of the FFA and carried through to the five year reviews, etc. I agree, this probably will be happening more and more. So I think a written plan of what we discussed in August outlining the concept of utilizing the attachments to the FFA. In addition, maybe it would be useful to develop a good example of the ROD/DD with the paragraphs from the FFA and attachments that the RPM's are referencing. Also, I have been told that as of October 1, 2008 all training lands will be transferred to Fort Wainwright. Apparently, the training lands will officially remain with the Army, with oversight by Fort Wainwright personnel and the cantonment area will become part of the Joint Base i.e. Elmendorf. I was informed that this will be completed even though the BRAC/REALIGNMENT was originally designated fence to fence. The main sites that will become part of Fort Wainwright include Poleline Road, Nike Site Summit, Roosevelt Road and Eagle River Flats. I don't see this as an immediate issue (over the next 6 months) but the preparation of documents, potential site transfers will require completion over the next year. Until Joint Basing takes effect, Fort Richardson still serves as the proponent for all Fort Richardson sites listed in the FFA. Since the BRAC language and all subsequent discussion have not included splitting sites, I am seeking assistance now on the procedures, funding issues, responsibility dates, etc. I am still trying to gather information on exactly what this means as well as what requirements with the FFA is anticipated on the Military's side. I will be passing this up to our Attorney for his assistance and input. Bill-if you could check into how Fort Lewis/and the Air Force

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

Installation (I can't remember the name) are handling their FFA's and CERCLA requirements.

Action Date: 9/26/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from ARMY (R. Nenahlo) to EPA/ADEC:Bill and Louis:We just received the results of a re-sampling of the area surrounding geotechnical boring AP-5259 at project site FTR-196 called the ???GTF Barracks.??? In November 2007, we received the data report on the geotech studies at this site. The results of one sample, the surface sample at boring AP-5259, were 3.9 mg/kg for Arochlor 1260.This May, we collected 9 additional surface samples in the immediate vicinity (within approximately a 5 foot radius) of AP-5259 plus two more at two nearby geotech boring loctions. These results confirmed that the original sample was not an anomaly. The results are shown below.I???m meeting with the ACoE next week to develop an expanded site investigation plan.All analytical results are for Arochlor 1260. No other PCB???s were detected.AP-5259 (May 2007): 3.9 mg/kgAP-5259-A 3.74 mg/kg (right next to original boring) AP-5259-B 2.31 mg/kg (5' north of original boring) AP-5259-C 2.99 mg/kg (5' NE of original boring) AP-5259-D 8.18 mg/kg (5' east of original boring) AP-5259-E 5.26 mg/kg (5' SE of original boring) AP-5259-F 3.77 mg/kg (5' south of original boring) AP-5259-G (duplicate to -F) 4.24 mg/kg AP-5259-H 4.21 mg/kg (5' SW of original boring) AP-5259-I 1.20 mg/kg (5' west of orginal boring) AP-5259-J 3.24 mg/kg (5' NW of original boring)AP-5265-A 0.0626 mg/kgAP-5258-A 0.0528 mg/kg (???J??? = estimated value)

Action Date: 9/25/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA email to ARMYDick, I finally had an opportunity to discuss this site with Mary Queitsch. She is going to research it some more but has the opinion that the FFA intended that this type of action be documented in a ROD or possible a ROD amendment to an existing OU. Her concern is how the institutional controls are carried forward and enforced, if necessary, without a decision document. I will be discussing this with her again next week in preparation for the upcoming FFA meeting. Given construction plans at Ft. Richardson this type of situation will likely reoccur and we need to have a strategy for documenting decisions in enforceable documents.I certainly don't look forward to a ROD process so I am open to discussing other options that will get us to the same endpoint.

Action Date: 9/13/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Chemical Data Report from December 5, 2007 HTRW Survey finally received. A total of nineteen (19) borings were originally planned for this site. However, due to a high PID reading & suspected contamination at AP-5254, an additional nine borings were added to the project. In total, twenty-eight (28) borings (AP-5247 through AP-5274, Figure 2) were drilled at the FTR196 site, from 22 August through 25 September 2007. The borings ranged in depth from 15 to 30 feet below ground surface (bgs). Soil samples were collected & compared against Alaska Department of Environmental Conservation

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

(ADEC) soil cleanup levels.This project was not intended to be a comprehensive environmental investigation of the site, & additional environmental concerns may exist which are not documented in this report. It is only intended as a verification of the suitability of the site for construction purposes. Changes in the condition of the site may occur with time due to natural processes or human activities. The findings presented in this report are based on site conditions existing at the time of the investigation.1. Fuel contamination. Four borings (AP-5248, -5254, -5267 & -5272) had concentrations of diesel range organics (DRO) that exceeded the ADEC cleanup level. Most of these borings are associated with what appears to be a large stockpile of contaminated soil. Boring AP-5254 has the highest concentration of DRO at 5,200 mg/kg at the 5 foot bgs level, & 560 mg/kg atthe 15 foot bgs level. This boring also has residual range organics (RRO) was detected at concentrations up to 25,000 mg/kg which exceeds the cleanup level. Several of the borings surrounding AP-5254 also had elevated DRO levels with visual & olfactory observations of fuel contamination. Benzene was also detected above cleanup levels in AP-5254 (0.021 mg/kg).2. Volatile Organic Compounds (VOC) levels in several borings were above cleanup levels. Borings AP-5258 & AP-5262 had elevated concentrations above cleanup of trichloroethene (TCE) (0.18 mg/kg), & boring AP-5258 also exceeded cleanup levels for 1,1,2,2-tetrachloroethane (0.027 mg/kg).3. Two pesticides (alpha-BHC 0.0043 mg/kg, & beta-BHC 0.12 mg/kg) were detected above cleanup levels in AP-5254. Alpha-BHC itself was detected above cleanup levels in AP-5249 & AP-5262.4. PCB-1260 (Aroclor 1260) was detected at approximately four times the cleanup level at the surface of AP-5259 (3.9 mg/kg). 5. Arsenic was detected (8.9 mg/kg) above ADEC cleanup levels in all samples. Arsenic was also detected above the ingestion levels established in Table B-1 of 18 AAC 75.341. Arsenic is above the expected background range for Fort Richardson soils.6. Chromium was detected in soil (37 mg/kg) at levels exceeding ADEC cleanup levels; however, the concentrations are comparable to previously published expected background values for the area.

Action Date: 9/13/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER’s responses to ADEC’s comments on the Removal Action Summary Report for SS013 MP Barracks PCB site (CS Database Hazard ID 26056). ADEC finds the comments acceptable and the document may be finalized, pending incorporation of any additional comments or responses EPA may have on the REDLINE version or EPA RTCs.

Action Date: 8/28/2018
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Draft RI/RA report commented on. Main comments were regarding the use of 95 upper tolerance limit for groundwater not being used to determine compliance with groundwater cleanup levels which are based on maximum detected concentrations in groundwater at a specific well. Use of Montana indoor air guidance document was not approved in the final work plan (management plan) for SS013 by EPA or ADEC project managers. See site file for additional information.

Action Date: 8/28/2007

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Email from ARMY (R. Nenahlo):Sampling work plan for DRO, GRO, BTEX, PAHs, RRO is in the works to characterize the horizontal and vertical extent of contamination before you build on the property? Contamination has been found (so far) in only one boring. Samples have been submitted to the lab. Five (of 19 total) borings remain to be drilled. These borings are fairly closely spaced in a square grid so, the drilling results will actually BE the characterization. We???ll need to await the completion of the geotech drilling before we draw any conclusions or make any further plans. Is this anyway possible linked to an older site we know about? This contamination was found at depth (from 5' to 20'). This is a strong indication that it is contamination that migrated downgradient in an absorbent soil layer???from the Bldg 786 site. What is the source or was the source of contamination? Probably Bldg 786
Action Date:	8/27/2007
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Email from Army (R. Nenahlo): Today, I responded to a call from the Corps. Late last Friday, the project manager at FTR-196, Unaccompanied Personnel Housing Barracks, was completing a geotech boring (TB-08) to a total depth of 30 ft. Between 5??? and 20??? bgs, they were getting cold PID readings from 31 to 314. Samples were collected for analysis and the cuttings were containerized. 14 of 19 borings have been completed here. No contamination has been detected in any of the other 14 borings to date.The PM indicated that the contamination was localized in a sandy lens but not in other stony/cobbly material. We???ll keep you posted on further developments at this work site.
Action Date:	8/24/2017
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff commented on the Draft Supplemental Work Plan for JBER-E and JBER-R sites [PL081 N. Jet Pipeline, CG551 Bldg. 4314, ST408 Bldg. 9569, CG530 ST526, SO510 Bldg. 9480, SS522 Hardstand 39, SO507, Bldg. 9669, SS418, ST532, TS003 Skeet Range, CG543 Bldg. 18877, CG529 ST529, ST048 Bldg. 11-490, CG509 Bldg. 4347, SO508 ST508, SO549 Bldg. 4913, AT035 MEB Complex, AT029 Ruff Road FTA, SS019 Bldg. 755, DP009 Bldg. 986 POL Lab, LF002, LF002 OU6 Disposal Site, CG536 ST510, CG539 Bldg. 15380, CG702 Bldg. 31562, SO544 Bldg. 10334, SO547 Bldg. 4913, CG704 Southern Plume, CG527 ST538, SO501 ST427, TU064 Bldg. 740, SS013 MP Barracks, SS014, SS041 Roosevelt Road Transmitter Site, TU107, ST048] which include this one. ADEC concurs with the scope of work for the current work outlined in this section. Note: RI/FS investigation work is occurring at the site to determine nature and extent of soil and groundwater contamination.
Action Date:	8/10/2015
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the Annual CERCLA Report. Main comment was on clarification on the slow (if any) degradation of PCBs in soil and that institutional controls would likely be indefinite unless the PCBs were removed and properly disposed of at a permitted facility in

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

the lower 48.

Action Date: 7/8/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from ARMY to EPA and ADEC:Bill,I edited the Addendum to make the goals clearer and the revised doc is attached. The goal is to remove the remaining soils that are contaminated with PCBs at concentrations greater than 10 ppm. However, if that is not possible due to limitations on excavation, as stated in the addendum, then the Army would cap the area with geo-textile and conduct a risk-basedanalysis pursuant to 40 CFR 761.1. I plan to start the staffing process to get this signed, so please let me know if you have additional comments. Thanks.

Action Date: 7/7/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email to ADEC and EPA from ARMY (R. Nenahlo):The contractor's PID screening criterion is 20 ppm on the instrument. They excavated and stockpiled until their readings at the margins were less than 20. We would have more adequate information about the stockpile (for disposal purposes) if we had subsampled the stockpile rather than depending on only one sample???of the hot spot at that. We're confident that we got everything.BTEX results are included below.GRO 1930 mg/kgDRO 6330 mg/kgRRO 3600 mg/kgBenzene NDToluene NDEthylbenzene NDToluene ND Aroclor 1260 71.5 &181;g/KgThe lab results are attached here. As you can see, all QC parameters are in control

Action Date: 7/6/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Email from EPA on Addendum to the TCRA for PCB soil removal: Mark, I have read the addendum and I think it could benefit from a clearer explanation of what the goals are for the excavation and what actions are taken if they can not be achieved. Words like the Army intends and should be continued to attempt to remove remaining soils leaves too much uncertainty on the goals of this work. I recommend that this language be modified to provide a more clear scope. Let me know if you want to discuss.The Army intends to complete construction of the barracks in August 2010 and allow occupation of the facility in September 2010. PCB contamination is present in subsurface soils at depths greater than 4 feet bgs in the Lawn Sub-Area. To be protective of future site workers, excavation should be continued to attempt to remove remaining soils contaminated with PCBs at levels greater than 10 ppm.

Action Date: 7/26/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Technical Memorandum ??? Annual Inspection and Maintenance of Sites AT052, DP051, SS013, and SS090 received for review and comment. A clean fill cap and interim LUCs implemented as a part of time critical removal actions limit the use and/or exposure to soil at the site. Residual polychlorinated biphenyls (PCBs) are covered with a minimum of 5 feet of clean soil. Interim LUCs at SS013 restrict soil

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excavation and transport of materials offsite until concentrations of PCBs in soil are below 1 milligram per kilogram (mg/kg),

Action Date: 7/23/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Field Activities Report received for review & comment. SITE SUMMARY AND RECOMMENDATIONSNo deficiencies were observed during the LUC inspection in 2014. LUC inspections will continue to be conducted annually in accordance with the Memorandum to Site File for SS013 PCB Time Critical Removal Action, Remaining PCB Contamination, and Required Interim Land Use Controls. Five-Year ReviewSS013 was not included in the 2013 five-year review because it had not met RC at that time. RC was not achieved for the site until 2014.RecommendationsSite SS013 is identified as a Green priority. No Further Action and continuation of LUC inspections are recommended for this sit

Action Date: 7/2/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Air Force responses to ADEC???s comments on the Memo to Site File are satisfactory. Finalize the document, pending resolution of any EPA issues/concerns on same.

Action Date: 7/19/2018
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft remedial investigation/risk assessment received for review and comment. TCE was limited to the initial investigation and has not impacted soil or groundwater. Metals were consistent with background concentrations. DRO contamination is within the TU058 fuel plume and associated with TU058. Based on the human health risk assessment, there are no site-specific contaminants of concern for SS013. Therefore, a focused FS for SS013 will be prepared to pursue a CleanupComplete, or No Further Remedial Action Planned designation. See site file for additional information.

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79459 name: MP Barracks FTR196 SS013

Action Date: 7/1/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC email comments to ARMY: COMMENT Text states: Any CERCLA hazardous substances disposed offsite willbe disposed of at an EPA approved facility, consistent with 42 USC9621(d)(3) and the NCP.Army will ensure the disposal of CERCLA hazardous substances at a regulated landfill outside of Alaska (i.e. off-site) is consistent with the off-site rule aka &167; 300.440 Procedures for planning and implementing off-site response actions. and the EPA approved facility meets the acceptability criteria below..... (b) Acceptability criteria. (1) Facility compliance. (i) A facility will be deemed in compliance for the purpose of this rule if there are no relevant

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violations at or affecting the unit or units receiving CERCLA waste:(A) For treatment to standards specified in 40 CFR part 268, subpart D, including any pre-treatment or storage units used prior to treatment;(B) For treatment to substantially reduce its mobility, toxicity or persistence in the absence of a defined treatment standard, including any pre-treatment or storage units used prior to treatment; or(C) For storage or ultimate disposal of CERCLA waste not treated to the previous criteria at the same facility.(ii) Relevant violations include significant deviations from regulations, compliance order provisions, or permit conditions designed to: ensure that CERCLA waste is destined for and de-livered to authorized facilities; prevent releases of hazardous waste, hazardous constituents, or hazardous substances to the environment; ensure early detection of such releases; or compel corrective action for releases. Criminal violations which result in indictment are also relevant violations. In addition, violations of the following requirements may be considered relevant:(A) Applicable subsections of sections 3004 and 3005 of RCRA or, where applicable, other Federal laws (such as the 40 CFR Ch. I (7-1-00 Edition)Toxic Substances Control Act and sub-title D of RCRA);(B) Applicable sections of State environmental laws;and(C) In addition, land disposal units at RCRAsubtitle C facilities receiving RCRA hazardous waste from response actionsauthorized or funded under CERCLA must be in compliance with RCRA section 3004(o) minimum technology requirements. Exceptions may be made only if the unit has been granted a waiver from these requirements under 40 CFR 264.301.

Action Date: 6/9/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Time Critical Removal Action Memorandum received for Construction site FTR196 (aka GTF Barracks, Enlisted Unaccompanied Personnel Housing). The purpose of this Action Memorandum is to document the decision by the U.S. Army Garrison-Alaska (Army) to conduct a time-critical removal action to remove Polychlorinated Biphenyls (PCB) contaminated soils at the FTR196 site on the west side of Sixth Avenue just north of its intersection with 'D' Street, Fort Richardson, Alaska. This time-critical action is being taken to prevent, limit, & mitigate a potential threat to public health, welfare, or the environment. USAGAK is authorized to conduct this removal action pursuant to the Comprehensive Environmental Response Compensation & Liability Act (CERCLA), 42 USC 9601 et seq., & Executive Order 12580, 53 Federal Register 2923.The Army intends to remove all PCB contaminated soil (at concentrations greater than 1 mg/kg PCBs) at the FTR196 site in the building footprint area to a depth of 4???. The maximum depth of excavation required to construct the building foundation is 12???. While it is unlikely (given the intensity of the sampling in the building footprint area), some isolated or residual contamination at depths greater than 12??? bgs may be found. Since the building itself will function as an impermeable cap, any PCB contamination found at a depth of 12??? or greater will be left in place.The Army intends to conduct a risk assessment on the feasibility of leaving in place contaminated soil at depth below the surface & not removed for building construction. To be specific, as part of the initial site work, the construction contractor needs to remove several feet of topsoil in the area to the south & southeast of the building footprint.If, as is believed, the

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risk assessment confirms the safety & feasibility of leaving the PCBs south of the Barracks building in place, the Army will apply, land use controls (LUCs) on this site. LUCs will include deed restrictions on any future use of the site, excavation permits, the prohibition of water supply well installation on the site, annual inspections of the integrity of the cap, & other appropriate measures.All TSCA regulated wastes will be segregated & stored in specific containers, in preparation for disposal as TSCA regulated waste, levels that exceed 50 PPM. All non -TSCA regulated wastes, at levels greater than one but less than 50 PPM, will be segregated, stored, & subsequently disposed of in accordance with State ADEC regulations. Any CERCLA hazardous substances disposed offsite will be disposed of at an EPA approved facility, consistent with 42 USC 9621 (d)(3) & the NCP.A delayed action or no action if it requires a delay in the start of construction until after April 15, 2009 will result in the assessment of contractual postponement fines of $100,000 per day of postponement. The Army does not believe that these fines are a wise and prudent use of taxpayer dollars.

Action Date: 6/30/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from ARMY (R. Nenahlo) to EPA and ADEC: Bill (Adams-EPA RPM), Clay Bates of our Compliance group and I responded to a call from a construction contractor about finding of an area of fuel-contaminated soil at the construction site of the new Troop Medical Clinic (TMC). The contractor said he had excavated about 3 feet below the ground surface and their PID was getting hits. We found the location about 50 yards northeast of the corner of Sixth and D streets. This is south of the site of the former Bldg 786. I had the impression at the time that this was the site of former Bldg 762. However, after looking closely at the old reports of the site investigations of former 762 and 786, I realized that I was mistaken. Bldg 762 was located on the north side of D Street between Second and Fifth streets...a block to the west of the current TMC construction site. This site may, possibly, be associated with former Bldg 786 but, it's about 100-150 yards south of the former Bldg 786. I'm hesitant to call this a new site until we get better information. It does not appear to be a recent spill since Bristol didn't detect fuel until they were 3 feet bgs. Clay and I used our olfactory detectors and agreed it was diesel. We directed Bristol to take a sample of the most contaminated spot (about 2 square yards) and send it for analysis. Since they were anxious to proceed with the construction of the parking lot for the TMC, we suggested that they excavate the soil in concentric circles around this small hot spot until the PID readings dropped below their PID ???tripwire??? level of, I think, 50. We asked them to stockpile the soil until we got the lab results back. They excavated ~107 C.Y. It???s our understanding that all fuel contamination has been removed. On June 24 or 25, the lab results came back. The results were:GRO: 1930 mg/kgDRO: 6330 ???RRO: 3600 ???andArochlor 1260: 0.072 mg/kg (PQL ~ 0.059 mg/kg)To be on the safe side, we reported this spill to ADEC and Louis Howard.We wanted to advise you of this event and let you know that we???re evaluating how to categorize it. Spatially, it doesn???t appear to be associated with former Building 786. An old map of this area showed a fuel island for a gas station at the exact spot where the contamination was found. Also, we are confident that we???ve removed all fuel

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contaminated soil. We???re talking with our RCRA contractor to get the cost to ship the contaminated soil south for treatment.

Action Date: 6/12/2014
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: Federal Facility Agreement (FFA) Document Schedule for SS013 - MP Barracks PCB Site, JBER-Richardson.Attached for your review and acceptance is the proposed document schedule for SSO 13 - MP Barracks PCB Site on Joint Base Elmendorf-Richardson, Richardson (JBER-R), Alaska. If approved, the schedule will be attached to the current JBER-R FFA (5 December 1994). If you concur with the proposed schedule, please sign in the block provided on the attached signature page and return the original signature page to me. Should you have questions or comments, please feel free to contact me at (907) 384-1824.Document type: Primary, Document: Draft Preliminary Source Evaluation 2 Report, date due for agency review: 15 January 2016. Upon approval, this document will be attached to the current FF A (effective 5 Dec 1994). Thedocument schedule may be updated or modified to include additional primary or secondarydocuments as necessary to meet FF A requirements. Changes will require approval of FF AProject Managers. Signed by G. Fink USAF, S. Halstead EPA, L. Howard ADEC.

Action Date: 5/6/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from ARMY (R. Nenahlo) to EPA and ADEC: Bill:As of today, we’re at 9,400 tons and counting. We’ve been discussing lessons learned but, unfortunately, there are none. Except for the accidental and random location of one lone geotech boring (out of a total of 28 such borings) way back when, we would never have known a thing about the existence of this site. Nothing in the historical aerial photo library, administrative record, or anecdotal information notified us of the presence of PCBs. We have only recently uncovered archaeological evidence of a (relatively large but certainly short-lived) trench and dump site and the operators of that site most likely never knew that they were disposing of PCB-contaminated soil. The relatively very low PCB concentrations would certainly have gone unnoticed during construction. The probabilities approach the astronomical.

Action Date: 5/5/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email update from Army to ADEC and EPA:Bill & Louis: Last week I met with Greg Rutkowski, Jacobs, to create an outline for the final site report. Excavation of PCBs > 1 ppm continues at the Barracks site. In the bldg footprint area, we are required to provide the construction contractor clean soil and soil that is competent for foundations. Unfortunately, we have not yet reached that point. So, we are removing soil that is fill that is also PCB contaminated. So, we will continue excavating until we either reach clean fill or native (i.e., competent) soil. If we reach native soil that has PCBs > 1 ppm, we will discontinue removal. One of the floor samples in this footprint area (on the west side of the footprint area) had a result of 38 mg/kg, the highest concentration seen so far. The 3

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samples collected from the suspect clean soil removed during the benching of the west wall on Thursday confirmed as clean. This clean soil will be removed but will be used on site as necessary.PCB soil excavation began as soon as sample results were received at noon yesterday (Monday, 4 May) and Jacobs transported 32 loads to Stockpile 5. Excavation total to date is 463 full loads and 612 short loads. This equates to approximately 9,200 tons or 6,200 loose cy or 4,900 bank cy. No analytical samples were collected Monday. Excavation continues today in an attempt to reach the gray native soil under the building.

Action Date: 5/28/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army (R. Nenahlo) sent email to ADEC and EPA project managers: Louis and Bill:Attached are the latest data we have on this site. It keeps growing bigger each time we collect samples.One map has the contaminant plume overlaid by the building outline...although you have to look carefully.We're working on a CAP and wanted you to get a heads-up on the circumstances there. Engineering wants to begin construction on April 15...which doesn't seem too realistic. If we excavate, we will need to temporarily store the contaminated soil somewhere on post until we can find and contract transportation to a disposal site...probably in Oregon.I have this site scheduled for discussion at the FFA next week. I'll have a very drafty CAP ready for discussion.

Action Date: 5/27/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army sent email to ADEC: We considered using a field screening kit but decided to not to because, in fact, it doesn't save us time or money. All samples have been and will be analytical samples (since, this time of year, there's excess lab capacity) and, when and where necessary, we'll just remobilize...as we've now done twice. We have a good emergency response contract.

Action Date: 5/26/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has the following comments as a rebuttal to the select RTCs listed below on ADECs original comments for the RI/FS Management Plan (a primary document under the 1994 Fort Richardson Federal Facility Agreement Section XX Consultation with U.S. EPA and ADEC, Paragraph 20.5) which need to be addressed. If there is further discussion on Risk Assessment issues raised by ADEC below, ADEC is requesting the three Agencies (ADEC, EPA and AFEC) FFA RPMs meet ASAP to discuss them during a comment resolution meeting with risk assessment technical staff support. 1)Overarching comment on EDB analysis requirements: Starting with Comment 11 WS 11 DQOs and all other comments subsequent to 11 relating to EDB. ADEC: Partially agree. If EDB is detected in groundwater above Table C cleanup level, then use of method 8011 or 504.1 will be required by ADEC for any confirmation soil sampling conducted at the SS013 which will meet the more stringent ADEC soil cleanup level for EDB at 0.00016 and not the less stringent EPA RSL (TR =10-6, HQ=0.1), which is 0.036 mg/kg. If EDB is not detected above the Table C Groundwater cleanup level, then

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proceed as planned with method 8260 (low-level) for confirmation soil samples. RISK ASSESSEMENT ADEC Response to RTCs on ADEC???s comments2)Comment 36 ADEC: In regards to TCE section 5.5 is fairly vague on the process. ???5.5 TCE EXPOSURESince women of reproductive age represent a sensitive subclass of receptors, a separate qualitative risk discussion will be included in the risk assessment based on the EPA Region 10 memorandum OEA Recommendations Regarding Trichloroethylene Toxicity in Human Health Risk Assessments (EPA 2012). The most stringent of the recommended TCE media concentrations from the 2012 memorandum or EPA RSLs will be used for all receptors. For soil, the RSL is more stringent. For groundwater, the concentration recommended in the 2012 memorandum is more stringent.???The memo states to remove the vacation time as noted, ???To calculate short-term, noncancer TCE concentrations for other exposure media, Superfund default exposure-related variables should be changed, where necessary, to include adult-only values (e.g., exposure frequencies and durations, body weights, soil and other media ingestion rates, and dermal surface areas exposed), with no assumed hiatus times (i.e., no assumed vacations or other absences).??? If a separate assessment is being proposed as stated in the response to section 5.5 it should follow the EPA Region 10 TCE memo and not just a qualitative risk discussion mentioned in the section. 3)Comment 37 3.2.7 ADEC: Disagree with child soil ingestion rate of 100 mg/day for child. As noted in OSWER Directive 9200.1-120 (attached and 2015 ADEC adopted in regulation risk assessment procedural manual table soil ingestion rate for child is 200 mg/day. 0-6yrs = 200The exposure duration has been updated to 26 years see ADEC RAPM and OSWER Directive 9200.1-120 for superfund sites. The values presented in Table F3 and F4 are inconsistent with value presented in Table F2 earlier of the report for child exposure parameters to soil and groundwater. Thus the corrected values below for consistency with Table F2 presented earlier in the work plan are below. Plus the soil PFE is different than what was presented in Table F2 at 8.07&215;10^8.See site file for additional information.

Action Date: 5/26/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from Army to EPA and ADEC:Bill & Louis:I just returned today and was told by Bob Brock that the final sampling (after some limited excavation at the MRNR site mentioned below) showed that we'd reached the end of the vertical and horizontal contamination. Today, Jacobs is de-mob'ing from the site to turn it over tomorrow to the construction contractor.So, all that's left is to finish the remedial action report and discuss our options for soil disposal. It may be a week or 2 before that's finalized and approved.

Action Date: 5/24/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from Army to EPA and ADEC: Bill and Louis,A question has arisen concerning the subject site and the need to continue excavation of PCB-contaminated soil that remains on-site at concentrations greater than 10 mg/kg. How do we want to proceed with the removal: 1) Continue excavation using the authority of the original TCRA Memorandum2) Treat as a Non-Time Critical Removal which means developing an EECA or equivalentPlease provide input as we are

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working a contract to do the additional excavation in the coming months. Thanks.

Action Date: 5/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft Site Removal Action Summary Report for SS013 ??? MP Barracks PCB Site JBER-Richardson, Alaska dated April 2013. 1.0IntroductionThe text states: ???The removal actions were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) contaminated sites (18 Alaska Administrative Code [AAC] 75) & underground storage tank (UST) regulations (18 AAC 78) (ADEC, 2011 & 2006),??????Restate text: ???The removal actions were conducted in accordance with the Alaska Department of Environmental Conservation (ADEC) contaminated sites (18 Alaska Administrative Code [AAC] 75) & underground storage tank (UST) regulations (18 AAC 78) (ADEC, 2012),??????18 AAC 75 has been revised as of April 8, 2012 & 18 AAC 78 has been amended as of July 25, 2012. ADEC greatly appreciates JBER including the Location Information for SS013 in Table 1 which every JBER-R & JBER-E work plan & report should have as standard information. 3.7.2Containment Cell Soil ContentsThe text states: ???Approximately 50 cy of soil contaminated with trichloroethene (TCE) were excavated from the SS013 site by Watterson & transported to Containment Cell 6 on August 27, 2009. The TCE-contaminated soil originated from the western portion of the site, outside of the PCB excavation area.???ADEC requests JBER describe the location of the TCE contamination at SS013 (as well as on Figures 2 & 3) & whether or not the complete horizontal & vertical extent was delineated.The 2009 GTF Barracks Excavation Confirmation Summary shows that only 3 primary samples were taken from the stockpile (SPF-01, SPF-02, SPF-03, SPF-03-dup, & 09GBSPF-TB-SO-trip blank) & not the floor of the excavation or sidewalls. 5.2RecommendationsThere are other alternatives to decision documents after a removal action besides the Proposed Plan & a Record of Decision. A Memorandum to the Site File. The memorandum will state that the action was a removal action, includes land use controls on the site as long as contamination remains in place above unlimited use/unrestricted exposure levels.Section 121 of CERCLA, as amended by the Superfund Amendments & Reauthorization Act of 1986 (SARA), requires that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site be subject to a five-year review. The National Oil & Hazardous Substances Pollution Contingency Plan (NCP) further provides that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use & unrestricted exposure be reviewed every five years to ensure protection of human health & the environment. SS013 is subject to five-year reviews. This site will be permanently designated as a contaminated site, in perpetuity, until such time the contamination is removed & properly disposed of in accordance with current regulations in effect at the time of removal. Remedy review & land use controls reviews will occur as part of the CERCLA Five-Year review process. JBER agrees that FFA for Fort Richardson (1994) property transfer requirements are applicable to SS013 (e. g. Section XXXII Transfer of Property Para. 32.1). Specific recommended language: ???Conveyance of title, easement, or other interest in the Site (SS013) to other agencies of the United States, to private

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parties, & to state & local governments, shall be in accordance with Section 120 of CERCLA, 42 U.S.C. &167; 9620, as amended, & applicable U. S. EPA & Department of Defense guidance & policy. JBER shall notify U.S. EPA & ADEC of any such conveyance at least ninety (90) days prior to such conveyance.???

Action Date: 5/20/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 5/17/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the MP Barracks PCB removal action summary: Sec. 3.7.2 p. 3-4This section briefly mentions TCE contaminated soil removal by the construction contractor Watterson. Please provide additional information about how the TCE contaminated soil was identified, and if the extent of the contamination has been delineated. Please add the location of the excavated TCE contaminated soil to Figure 3, 2009 Excavation and identify it in the legend.Sec. 5.2p. 5-1The recommendation section provides a suggestion to document the removal through a Proposed Plan and Record of Decision with ICs as the remedy of the site. The April 2013 scoping meeting for SS013 provided three options for documenting the removal action. EPA prefers a memo to the site file. The memo must clarify this is a removal action, include ICs to ensure the remaining contaminants are undisturbed and exposure is prevented, and state the site is subject to inclusion in the Five Year Reviews. The public notice is optional.Sec. 5.2 p. 5-1 and Appendix A Sec 5.0 p. A-5-1The recommendations section in the report narrative omits a few key items listed in Appendix A, Risk Evaluation Recommendations. Please add the following to Sec 5.2 Recommendations It is recommended that the site be permanently listed as a contaminated site within the JBER and ADEC databases so that the institutional control of the dig permit process remains effective in protecting futureconstruction workers, employees, and residents until the PCB-contaminated soil can be completely remediated.If at some future date JBER is released to the public, the FTR196 Barracks and existing infrastructure could be removed, potentially exposing residual contaminated soil. Therefore, institutional controls consisting of a deedrestriction will be required.Contaminants remain at the site, resulting in the inclusion of this site in the Five Year Review report. The next Five Year Review for Fort Richardson is due on February 22, 2018.Sec 1.0In the Introduction, consider adding 40 CFR 761.61 (c) as one of the authorities to conduct this removal action. The provisions for low occupancy scenarios in the risk assessment in Appendix A indirectly reference this regulation.Sec 3.9.1 p. 3-9Table 4 provides the locations of remaining contamination and refers to Figure 3 with these locations shown in red. Figure 3 does not show boring locations in red where PCBs were left in place. Please correct Figure 3 to color code sample locations where PCB was not excavated.Table 6PCB concentrations >10 mg/kg for four sample locations (MJMK, LIMI, JKJL, and JLJM) should be in bold type as designated by the footnote.Appendix C & DThe title of Appendix C and D is slightly misleading when characterized as the ???Data Quality Assessment and Supporting Documentation???. It is suggested to title these two

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appendices as ??? ADEC Laboratory Review Data Checklists??? as no summary narrative of the data is provided in these sections.

Action Date: 5/12/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the MTSFMemo to the Site fileThe memo needs to tighten up all of the references and delineate on the Figures the area in which there is no remedial action for PCBs. PCB characterization was done primarily within 50 ft of the footprint of the MP Barracks foundation. From Figure 2 of the Final SS013 MP Barracks PCB Site Removal Action Summary report, the characterization borings extended ~50 ft to the north and ~50 ft south of the MP Barracks foundation. No soil borings for PCBs were conducted to the east or west of the building foundation. No compounds other than PCBs were analyzed within this building footprint.Please revise this tech memo to specify PCB characterization and removal efforts were within a 50 ft boundary to the north and south of the MP Barracks building, and other compounds were not analyzed in this area and may be in future investigations. Additionally, PCB may be analyzed for at locations outside this defined area.Memo to the Site fileDiscussion of the remaining investigation to be conducted at SS013 seems to be limited to VOCs in soil. Any future site characterization at SS013 will include analysis for a full suite of compounds both inside and outside of the area delineated by this tech memo, with the exception of PCBs within the bounds of this tech memo. Also, the investigations should assess the vapor intrusion pathway and indoor air concentrations of VOC and potential groundwater contamination, not just the concentrations of VOCs in soils.The risk assessment will include all compounds and all exposure pathways at the site.4.0The description of Land Use Controls should be more specific and adhere to the IC checklist. Include 2: prohibited land uses (including day care centers, recreational fields, gardens, etc???), 5 comprehensive list of LUCs (is GW prohibited in addition to soil disturbance? Is all excavation prohibited or can it be done under a dig permit?); 7 language that the AF is responsible for implementing, maintaining, reporting on, and enforcing LUCs; 10 &11 AF will address any situation that interferes with LUCs and provide notice to EPA and ADEC of any breach; 12 notification of conveyance of land use changes (currently in the recommendations summary); 14 concurrence language; 15 monitoring and reporting on LUCs; 18 property transfer language (ie???is or will this housing complex managed by a 3rd party and have LUC requirements been formalized in any agreements)3.0 Site History and Enforcement Actionsp.4All the conclusions from the final SS013 Removal Action Summary Report (section 5.1, p. 5-1) could be listed out here as a repeat of site history. As stated now, only a portion of the conclusions and recommendations are included and they are intermixed.Any recommendations from the final SS013 Removal Action Summary Report that will become codified in this tech memo should be clearly stated as such.These include:???Based on (1) the confirmation that limited concentrations of residual PCBs remain in soil at the site, (2) the confirmation that residual PCBs are covered with a minimum of 5 feet of clean soil, and (3) the results of the risk evaluation, the removal actions for PCBs (conducted in accordance with the 2009/2010 TCRA Action Memorandum [United States Army, 2009; United States Army, 2010]) are considered complete.???No further RI activities or remedial actions for PCBs in soil at SS013 are

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recommended at this time???The site will be permanently listed as a contaminated site within the JBER and ADEC databases so that the institutional control of the dig permit process remains effective in protecting future construction workers, employees, and residents until the PCB contaminated soil can be completely remediated.???Additional characterization of soil beneath the MP Barracks building to further define the nature and extent of VOCs in soil contaminants and to assess whether further action is necessary under CERCLA.???Contaminants remain at the site, resulting in the inclusion of this stie in the Five Year Review Report. The next Five Year Review Report is due on February 22, 2018.

Action Date: 4/7/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC provided comments on the Memo To The Site File.1.0IntroductionThe text states: ???However, the final remedy for SS013 will be selected in a Record of Decision (ROD). The previous removal actions addressed PCBs in soil; however, additional characterization of residual concentrations of volatile organic compounds (VOCs) in soil beneath the MP Barracks building is necessary to further define the nature & extent of VOCs in soil & to assess whether further action is necessary under CERCLA.???Although the PCB contamination above 10 mg/kg (30.6 mg/kg at 12??? bgs) is covered by a minimum of five feet of clean fill, ADEC wishes to remind the Air Force that this PCB contamination along with any other contamination at SS013 must be reviewed as part of a baseline risk assessment assuming no land use controls. ADEC ???Risk Assessment Procedures Manual??? (November 2011) states: ???For each site contaminant, a risk-based screening level needs to be determined. The RBC for method two soil inhalation & direct contact pathways can be found in ADEC???s Cumulative Risk Guidance [June 9, 2008] Appendix B for the applicable climate zone & correspond to the non carcinogenic risk (HQ) of 1 & carcinogenic risk level of 1 x 10-5. These RBCs are calculated using the equations presented in ADEC???s Cleanup Levels Guidance (June 9, 2008) & takes into account default exposure & soil/aquifer data as well as toxicological data specific to the compound of interest. For risk screening purposes, these levels should be adjusted to the non carcinogenic risk (HQ) of 0.1 & carcinogenic risk level of 1 x 10-6.If compounds that are not listed in ADEC???s Cumulative Risk Guidance are detected in soil or GW, screening levels can be obtained from the EPA???s Regional Screening Levels for Chemical Contaminants at Superfund Sites adjusted to a carcinogenic risk level of 1 x 10-6 & an HQ of 0.1. Initial screening for all sites should be against residential exposure scenarios. If no screening criteria can be obtained from the above noted sources, the compound should be retained for qualitative evaluation in the HHRA.???EPA states that: ???The cumulative site baseline risk should include all media that the reasonable maximum exposure scenario indicates are appropriate to combine & should not assume that institutional controls or fences will account for risk reduction. For noncarcinogenic effects of toxicants, unacceptable risk occurs when exposures exceed levels which represent concentrations to which the human population, including sensitive subgroups, may be exposed without adverse effect during a lifetime or part of a lifetime, as appropriate to address teratogenic & developmental effects.???EPA???s OSWER Directive 9355.0-30 ???Role of the Baseline Risk Assessment in

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Superfund Remedy Selection Decisions??? April 22, 1991 states that EPA uses the general 10(-4) to 10(-6) risk range as a target range within which the Agency strives to manage risks as part of a Superfund cleanup. Once a decision has been made to make an action, the Agency has expressed a reference for cleanups achieving the more protective end of the range (i.e., 10(-6)), although waste management strategies achieving reductions in site risks anywhere within the risk range may be deemed acceptable by the EPA risk manager. Furthermore, the upper boundary of the risk range is not a discrete line at 1 x 10(-4), although EPA generally uses 1 x 10(-4) in making risk management decisions.As such, after the additional characterization at SS013 & a baseline risk assessment (not a risk evaluation) is conducted in accordance with CERCLA, response action may be necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. Such a release or threat of release may present an imminent & substantial endangerment to public health or welfare or the environment. Finally, 18 AAC 75.325(g) states that a responsible person shall ensure that, after completing site cleanup, the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways & does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways. The final remedy has not been selected for SS013 & therefore the risk from all hazardous substances present at SS013 (assuming no ICs) shall be evaluated as part of a baseline risk assessment.

Action Date: 4/6/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email update from Gary Larsen (ARMY) to ADEC and EPA:We just got information back from the Corps. Long story short - we completed the initial planned soil removal and hoped we were done, but not so. Bottom line: PCBs remain at the site.Longer version: Late Friday we received the results from 40 confirmation samples - 14 of which failed with PCB concentrations ranging from 1.1 to 14 mg/kg. Eight samples were from the walls and 6 from the floors. The contaminated results are from three separate areas:*SE1 Area - Three of the floors and three of the walls are from this area. The majority of this area is inside the building excavation footprint. This area will result in approximately 150 cy of contaminated soil.*S1 Area - The two north walls of the 12 foot S1 excavation were slightly greater than 1.0 mg/kg. These walls are all inside the building footprint. This area will result in approximately 100 cy of soil.*S3 Area - Two floors and three walls were contaminated in this area. This area is outside of the building footprint and the light pole/mailbox areas so we only have to be concerned with the walls since the floors are 4 feet bgs. These area will result in approximately 125 cy of soil.Jacobs excavated more on Saturday, removing 36 truckloads from hot spots; this filled the second stockpile.On Sunday we received the results from 27 confirmation samples, 17 of which had concentrations ranging from 1.0 to 22 mg/kg. The vast majority of the exceedances were from the light pole/mailbox excavation. Eight of the samples were from the walls of this area and will require additional excavation. Another 7 were from the floors of the light pole/mailbox excavation. These floors were excavated to the depths requested by Watterson and do not require additional excavation; however 4 of these floor samples had

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concentrations greater than 10 mg/kg with the highest result being 22 mg/kg. The remaining 2 exceedances came from the S1 excavation, 1 from the walls and 1 from the floor. The floor should not require additional excavation, however we need to verify that the depth is 12 feet. The wall sample will require additional excavation.We are still waiting on results from the 7 samples collected Saturday. We expect those tomorrow.I'm searching for additional funding as we speak.Gary

Action Date: 4/3/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army sent email update on FTR-196 project:I heard that as of this morning Jacobs is not working on site today and they waiting for lab results this afternoon. Two 80x80 PCB stockpiles are full.If they have to take out more contaminated material, they will be constructing a third stockpile. They plan on working Saturday and possibly Sunday. The stockpile at the FTR 196 site is a Suspect Clean pile.

Action Date: 4/29/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from ARMY (R. Nenahlo) to ADEC and EPA: Bill and Louis:My apologies for the delay in keeping you posted. As of today, the excavation of the site has resulted in the removal and stockpiling of ~8,800 tons (~5,800 loose cubic yards) of soil nominally containing > 1 mg/kg PCBs. We have collected 282 excavation samples (not including the site investigation boring samples). 71 of those samples' results are > 1 mg/kg but only 4 of those tested > 10 mg/kg and the maximum concentration is currently 27 mg/kg. The contaminated samples all come from a brown, silty layer that appears to be backfill of what may be a disposal trench in this area. The disposal trench concept is supported by the discovery of metal and wood debris at depth. The surrounding, native soil is gray sandy/cobbly material and has not tested > 1 mg/kg.Currently, we are awaiting test results in the southeast lobe of the plume. In the area within the building footprint we have excavated down to and, in fact, deeper than that required for the building foundations but that soil is not competent to support those foundations and contains low (1 - 2 mg/kg) PCB concentrations. Thus, according to our workplan, we'll continue to remove this material until we reach a clean bottom or competent soil. If all goes well, we expect to receive the last of the sample results...indicating no further contamination > 1 mg/kg...early next week. I've met with our site contractors and we've prepared an outline for the final report. We're also examining several disposal options and preparing cost estimates for these options. I can't predict exactly when our report will be ready for distribution butI hope it will be within 3 weeks. Please let me know if you have any questions.

Action Date: 4/26/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Removal action report received. The purpose of this report is to document the removal actions conducted at the SS013 ??? FTR196 MP Barracks PCB Site (FTRS-13) (hereinafter referred to as SS013); to characterize the nature & extent of contamination remaining; to

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assess associated risks; & to provide a basis for selection of a remedy. Removal actions were performed following identification of PCBs in soil during preconstruction investigations in 2007 & 2008. 1) 3 rounds of soil sampling in the area of known PCB contamination to assess the extent of contaminated soil on January 27, February 13, & March 3, 2009. 2) Two rounds of excavation & stockpiling of PCB-contaminated soil between March 27 & May 21, 2009 & September 23 & October 12, 2010. 3) Transport of PCB-contaminated soil from JBER to disposal facilities between October 6 & October 30, 2010. 4) Containment cell decommissioning, completed on November 2, 2010. 5) Site restoration, with hydroseeding, completed on July 18, 2011Soil borings advanced in 2009 successfully delineated the lateral & vertical extents of PCBs in soil & were used to guide removal action activities performed in 2009 & 2010. Excavation confirmation samples & soil samples from non-excavated areas were used to evaluate the risk based on the current & reasonably anticipated future uses. Although PCBs remain in soil above 1 mg/kg & below 10 mg/kg, PCBs do not present a risk to current or reasonably anticipated future users & are covered with a minimum of 5??? of clean soil. The PCB-contaminated soil was removed from JBER in October 2010 & was safely transported to approved disposal facilities in Oregon & Washington. Site restoration activities returned SS013 & containment cell sites to usable condition.Recommendations: Based on the confirmation of limited PCBs remaining in soil are covered with a minimum of 5??? of clean soil, & the results of the risk evaluation, the removal actions are considered complete, & no further remedial investigation activities or remedial actions are recommended at this time. Sufficient data were collected to characterize site conditions, the nature & extent of contamination has been delineated, & potential risks to human health & the environment from residual PCBs in soil have been assessed as a part of the removal actions. Therefore, it is recommended that a Proposed Plan & Record of Decision be prepared to support selection of response complete with ICs/land use controls (LUCs) as the remedy. LUCs may include requiring the following: that children are not residents of the Barracks; a dig permit for protection of construction workers since PCBs remain in the subsurface soils above 1 mg/kg; inspection & maintenance of the soil cover; & a notice of LUCs be placed in the Air Force JBER-R installation general plan & LUC management plan, with notice provided to the ADEC CS Database.Development & evaluation of a range of remedial alternatives for PCBs remaining in soil at SS013 is considered impracticable because contamination was addressed entirely under removal authority, the removal actions were intended to serve as the final remedy for the site, & remedies involving further excavation & treatment would be difficult to implement as the Barracks & other structures are built on top of the remaining PCB contamination.

Action Date: 4/16/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army (M. Prieksat) sent email to ADEC and EPA:Bill and Louis,The results presented in the September 2009 Technical Report (2009 GTF Barracks PCB Investigation and Removal Action, Jacobs Engineering) show that PCB-contaminated soil remains at the site at levels greater than 100 ppm. The Army intends to remove the remaining PCB-contaminated soil (soil containing greater than 10 ppm PCBs) from

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the subject site during spring2010. This additional work will be conducted under the existing Work Plan and excavated soils will be temporarily stockpiled at the existing stockpile site. The Army is coordinating the disposal of the stockpiles, with the intent to dispose of all the PCB-contaminated soil at a TSCA regulated landfill in summer 2010. We are in the process of securing contracts and funding to complete these actions and will notify you of the schedule once the contracts are in place. If you have comments or concerns, or feel that additional planning is necessary, please let me know and we can discuss the matter further. Thanks.

Action Date: 4/16/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email update from CORPS (Bob Brock) to ADEC: To make a long story short..... We have now excavated approximately 6,900 tons to date (3,700 bank cy). Three out of 20 confirmation samples collected earlier this week had PCB concentrations greater >1 mg/kg but < 2 mg/kg which triggered additional excavation in select areas. Additional samples were collected in these areas and results are expected late tomorrow morning. I'll provide an updated figure that indicates vertical and horizontal extent of contamination in the next day or so.

Action Date: 3/8/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ARMY (R. Nenahlo) sent email to EPA and ADEC: Bill and Louis:Early this week, Marilyn will be sending you a draft remedial plan for the FTR-196 site. In the interests of moving quickly on the building construction deadline of 15 April, we will concentrate for the moment on the building footprint...that is the PCB contaminated soil that is under the Barracks building location. When this plan is approved, we will move quickly to submit another (or revised) plan to address the contamination in the parking lot area.Basically, it's our requirement to give the construction contractor a clean site for his workers. We will excavate the contaminated area in lifts of a foot or 2, stockpile the soil (in small increments) for PCB analysis, and securely store soil > 1 ppm for remediation. Since the building will provide an impermeable cap, we will request that we be allowed to leave remaining contamination in place. I think the highest PCB value here is 11 ppm. Bill: please provide any additional information or comment from your PCBguy.

Action Date: 3/6/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA sent email to ARMY and ADEC: Dick and Louis, I have not yet connected with Dan but found the letter approving the workplan for the PCB removal work conducted at Bldg. 35-752. Note since 35-752 was done as part of an existing OU no further paperwork was required. In the case of FTR 196 we will need to document this work as a removal under CERCLA which will require an action memo.I don't think this will be particularly hard to do with the sampling data you are generating and this step should not delay the work. We can discuss this more next week if you would like. Also note the EPA web site has lots of information about sampling approaches to confirm cleanup etc.

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(See attached file: FtRichardsonJune2004.wpd)

Action Date: 3/26/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Memo to the site file for SS013 MP Barracks site received. The USAF has determined that No Remedial Action for PCBs in soil is necessary for SS013based on the following information:??? The TCRAs removed the majority of PCB-contaminated soil from the site. The lateral andvertical extent of the contamination remaining in place has been defined, and areas wherePCBs remain in place above 10 mg/kg have been capped with a geotextile and a minimum of5 feet of clean, compacted fill.??? Impacts to groundwater from the residual PCB soil contamination are unlikely because of thelow mobility of PCBs and depth of the deepest soil contamination (22 feet bgs). Groundwaterbeneath SS013 is approximately 70 to 90 feet bgs.??? Based on the risk evaluation, PCBs remaining in soil at the site do not pose an unacceptablerisk to human health under current and reasonably anticipated future conditions (adult-onlyresidential). The cancer risk estimate is 5 &215; 10-6, and the noncancer hazard index (HI) is 0.3.The cancer risk estimate is within the EPA risk management range of 1 &215; 10-6 to 1 &215; 10-4, andthe HI is below 1. These risk estimates conservatively assume that adults would reside at thesite continuously for a 30-year duration (this is the standard default exposure duration forunrestricted use). The average residence time in the barracks is 2 years. If a soldier residencetime of only 2 years is assumed, then the cancer risk estimate is lowered to 4 &215; 10-7.??? For potential future unrestricted use of the site (with the default exposure assumptionsincluding both child and adult residents), the resulting cancer risk estimate is 1 &215; 10-5 and theHI is 3 (which is within the risk management range but above the HI threshold of 1).??? To address the future unrestricted use risk scenario (where the HI is greater than thethreshold of 1), LUCs will remain in place onsite.??? No ecological risks are associated with SS013, and no ecological receptors or pathways havebeen identified.??? Land use restrictions???preliminary interim LUCs???and a cap implemented as a part ofprevious response actions will continue to limit the use and/or exposure to soil at the site.??? The final remedy for SS013 will be selected in a ROD. The previous removal actionsaddressed PCBs in soil; however, additional characterization of residual concentrations ofVOCs in soil beneath the MP Barracks building is necessary to further define the nature andextent of VOCs in soil and to assess whether further action is necessary under CERCLA.

Action Date: 3/20/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email form USACE re: update on the FTR-196 project: We are pursuing a contract modification to relocate the water line in the contaminated area 50’ south. Contaminated soil stockpile site has been selected in coordination with FTR DPW. Snow clearing is complete. The sites have been mostly cleared of brush; The stockpile site will need some additional clearing to prevent liner damage. Survey of the extents of contamination is complete.Responses to comments will be provided this afternoon; Jacobs will issue final WP Monday.Jacobs has received Notice to Proceed, and their civil subcontractor also has NTP as of

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today. Jacobs is planning to mobilize to the site on Wednesday. Excavation should take 7-10 days. Final test results will be available 3 days after excavation is complete.

Action Date: 3/17/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the PCB cleanup WP for GTF Barracks PCB Removal Action (Dan Duncan) to the Army (Col David Shutt): We have reviewed your March 2009, 30-Day Notification for a Self-Implementing On-Site Cleanup & Disposal of PCB Remediation Waste contamination which resulted from releases of Toxic Substances Control Act (TSCA) regulated PCBs at the United States Army Garrison Fort Richardson, Alaska. We understand that the GTF Barracks construction site & water line excavation that PCB contaminated soil will be removed in accordance with 40 CFR &167; 761.61(a). The EPA understands that the GTF Barracks & water line locations are being remediated CERCLA Removal Action (RA) at Fort Richardson. It should be noted that the requirements of 40 CFR &167; 761.61(a)(1)(ii) are not binding on such actions under taken in either Section 104 or 106 of CERCLA. The EPA understands that the Army will remediate the PCBs at this building under self-implementing PCB remediation provisions of 40 CFR &167; 761.61(a).Your proposed PCB cleanup plans as described in your March 2009, Plan is acceptable to EPA. Please see our enclosed approval. This determination does not obviate the Army nor Jacobs Engineering, Inc., from the responsibility to comply with requirements of other federal laws & applicable Alaska State requirements under the ADEC Oil & Other Hazardous Substances Pollution Control Regulations 18 AAC 75 Cleanup Standards. This determination by EPA does not address the cleanup & removal of non-TSCA PCB-contaminated soils conducted under the AAC nor any additional orders issued by either EPA Region 10 or the ADEC. Our acceptance of your PCB cleanup proposal is based on the agreement to complete the following: 1. The Army & Jacobs Engineering, Inc., will complete the following by August 30, 2009.a.The removal of PCB contaminated soil & concrete from the GTF Barracks construction site & the water line construction area with concentrations of PCBs equal to or greater than 1 part per million (ppm) or 10 ppm with a cap.b.The removal of all PCB remediation waste from the GTF Barracks site.c.The disposal/incineration of all PCB remediation waste, from Fort Richardson, GTF Barracks site, in a state regulated municipal waste landfill, or in a chemical waste landfill or at an incinerator approved by the EPA to accept PCB waste subject to the Toxic Substances Control Act (TSCA).d.Provide copies of Certificates of Disposal for the disposal of the PCB wastes.e.Provide copies of Certificates of Destruction for the incineration of the PCB wastes.f.The identification on all appropriate facility drawings at Fort Richardson of the existence of TSCA regulated PCB waste & contamination, if any, that is left in place at the GTF Barracks site. This identification should indicate the need for additional precautions during future modification, renovation, or demolition of the facility.g.Perform the required PCB verification sampling in accordance with 40 CFR &167;&167; 761.61(a)(6)(i)-(ii). The ADEC has developed soil cleanup standards under 18 AAC 75. The ADEC guidance for the remediation of soil contaminated with PCBs is specified in the Oil & Other Hazardous Substances Pollution Control Regulation 18 AAC 75 Cleanup Standards, dated May 1998. The replacement of the soil with off-site material

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

containing less than 1 ppm PCBs will be conducted in accordance with 40 CFR &167; &167; 761.125(c)(4)(i) through (v).2.The Army & Jacobs Engineering, will complete the following soil & concrete sampling & removal:a.If it is determined that soil in the GTF Barracks site may have been contaminated with PCB waste, the soil & concrete shall be sampled. This sampling will occur no later than March 30, 2009. The United States Army Garrison Fort Richardson may dispose of PCB contaminated soil in accordance with 40 CFR &167; 761.60 & 40 CFR &167; 761.61(a).b.Within three weeks of receiving the sampling results, a preliminary report will be submitted to EPA providing the results & a schedule for removing the soil that exceeds 1 ppm PCBs or 10 ppm with a cap that complies with 40 CFR &167;&167; 761.61(a)(7) -(8) from the GTF Barracks site. The PCB soil will be removed by August 30, 2009. c. The removal of soil from the GTF Barracks site to less than 1 ppm PCBs or 10 ppm PCBs with a cap in accordance with 40 CFR &167; 761.61(a). The Army will dispose of PCB bulk remediation waste > 50 ppm PCB contaminated soil off-site in accordance with 40 CFR &167; 761.61(a)(5)(i)(B)(2)(iii).d.Disposal requirements, record keeping, & PCB verification sampling for all soil that is PCB waste will be conducted in accordance with 1.d, 1.e, 1.f & 1.g of this letter.e. The on-site storage of PCB Remediation waste in accordance with 40 CFR &167; 761.65(c)(9) for a period not to exceed one hundred & eighty (180) days.

Action Date: 3/16/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the PCB cleanup WP for GTF Barracks:Please find attached the approval letter from Dan Duncan for the work at FTR 196. As noted in this letter the TSCA requirements are not binding on CERCLA actions. However, this work must meet the substantive requirements of these regulations as an ARAR. To that end, the overall work at this site must be documented in an approved action memo per my comments in the attached letter.We have reviewed your March 2009, 30-Day Notification for a Self-Implementing On-Site Cleanup & Disposal of PCB Remediation Waste contamination which resulted from releases of TSCA regulated PCBs at the U. S. Army Garrison Fort Richardson, Alaska. We understand that the GTF Barracks construction site & water line excavation that PCB contaminated soil will be removed in accordance with 40 CFR &167; 761.61(a). The EPA understands that the GTF Barracks & water line locations are being remediated CERCLA Removal Action (RA) at Fort Richardson. It should be noted that the requirements of 40 CFR &167; 761.61(a)(1)(ii) are not binding on such actions under taken in either Section 104 or 106 of CERCLA. The EPA understands that the Army will remediate the PCBs at this building under self-implementing PCB remediation provisions of 40 CFR &167; 761.61(a).Your proposed PCB cleanup plans as described in your March 2009, Plan is acceptable to EPA. Please see our enclosed approval. This determination does not obviate the Army nor Jacobs Engineering, Inc., from the responsibility to comply with requirements of other federal laws & applicable Alaska State requirements under the ADEC 18 AAC 75 Cleanup Standards. This determination by EPA does not address the cleanup & removal of non-TSCA PCB-contaminated soils conducted under the AAC nor any additional orders issued by either EPA Region 10 or the ADEC. Our acceptance of your PCB cleanup proposal is based on the agreement to complete the following: 1. The Army & Jacobs Engineering, Inc., will

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complete the following by August 30, 2009.a.The removal of PCB contaminated soil & concrete from the GTF Barracks construction site & the water line construction area with concentrations of PCBs equal to or greater than 1 part per million (ppm) or 10 ppm with a cap.b.The removal of all PCB remediation waste from the GTF Barracks site.c.The disposal/incineration of all PCB remediation waste, from Fort Richardson, GTF Barracks site, in a state regulated municipal waste landfill, or in a chemical waste landfill or at an incinerator approved by the EPA to accept PCB waste subject to TSCA.d.Provide copies of Certificates of Disposal for the disposal of the PCB wastes.e.Provide copies of Certificates of Destruction for the incineration of the PCB wastes.f.The identification on all appropriate facility drawings at Fort Richardson of the existence of TSCA regulated PCB waste & contamination, if any, that is left in place at the GTF Barracks site. This identification should indicate the need for additional precautions during future modification, renovation, or demolition of the facility.g.Perform the required PCB verification sampling in accordance with 40 CFR &167;&167; 761.61(a)(6)(i)-(ii). The ADEC has developed soil cleanup standards under 18 AAC 75. The ADEC guidance for the remediation of soil contaminated with PCBs is specified in the 18 AAC 75 Cleanup Standards, dated May 1998. The replacement of the soil with off-site material containing less than 1 ppm PCBs will be conducted in accordance with 40 CFR &167; &167; 761.125(c)(4)(i) through (v).2.The Army & Jacobs Engineering, will complete the following soil & concrete sampling & removal:a.If it is determined that soil in the GTF Barracks site may have been contaminated with PCB waste, the soil & concrete shall be sampled. This sampling will occur no later than March 30, 2009. The United States Army Garrison Fort Richardson may dispose of PCB contaminated soil in accordance with 40 CFR &167; 761.60 & 40 CFR &167; 761.61(a).b.Within three weeks of receiving the sampling results, a preliminary report will be submitted to EPA providing the results & a schedule for removing the soil that exceeds 1 ppm PCBs or 10 ppm with a cap that complies with 40 CFR &167;&167; 761.61(a)(7) -(8) from the GTF Barracks site. The PCB soil will be removed by August 30, 2009. c. The removal of soil from the GTF Barracks site to less than 1 ppm PCBs or 10 ppm PCBs with a cap in accordance with 40 CFR &167; 761.61(a). The Army will dispose of PCB bulk remediation waste > 50 ppm PCB contaminated soil off-site in accordance with 40 CFR &167; 761.61(a)(5)(i)(B)(2)(iii).d.Disposal requirements, record keeping, & PCB verification sampling for all soil that is PCB waste will be conducted in accordance with 1.d, 1.e, 1.f & 1.g of this letter.e. The on-site storage of PCB Remediation waste in accordance with 40 CFR &167; 761.65(c)(9) for a period not to exceed one hundred & eighty (180) days.

Action Date: 3/13/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA sent email to ARMY and ADEC: All, just to let everyone know EPA will have comments on the workplan by Monday. At this point I don't think there are any major issues that would prevent this work from moving forward. We appreciate the adjustment that was made to tighten up the confirmation sampling grid.

Action Date: 3/12/2009
Action: Update or Other Action

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

DEC Staff: Louis Howard
Action Description: US ARMY COE M TeVrucht sent email to ARMY, ADEC, EPA:Good news - preliminary discussions with the construction contractor indicate that we will probably be able to move the water line 50' south - thus getting it completely outside the contaminated area. Please go ahead & review the work plan including contaminated soil removal in the water line area - if things continue to go well & we can safely leave that work until later, we'll modify our work accordingly.If you'd like more info, please call me.Mollie753-2695

Action Date: 3/11/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft RI/FS Mgt. Plan for SS013 MP Barracks source area. Please state the background for chromium was likely based on chromium (total) and chromium had only 6 detections out of 163 wells sampled from the filtered samples and therefore, the median value of 31 mg/kg will be used. Delete reference to the 95 UTL value for chromium.The use of the sample median value of 31 mg/kg for chromium is more appropriate than the 95 percent UTL value based on EPA???s 2013 ProUCL 5.0 User Guide (Section 1.12) due to the low percentage (~ 3.7) of detections of chromium in filtered groundwater samples. Please elaborate on the acceptable levels of cumulative carcinogenic risk standard and cumulative non-carcinogenic risk standard being used for SS013. Be aware that for some chemicals, the cleanup level in 18 AAC 75.345 Table C exceeds the cumulative risk standard. In these cases, the cumulative risk at the site should be calculated by both including these chemicals and not including these chemicals. Decisions to set cleanup levels at either theTable C values or values that correspond to less than or equal to the cumulative risk standards will be made based on DEC delegated authority.ADEC interprets this land use at SS013 to be residential vs. commercial/industrial. The Barracks houses unaccompanied soldiers (adults only) with a normal residence time of 2 years (Human Health Conceptual Site Model Scoping Form). The lack of children at the building does not make it any less of a residential setting. See site file for additional information.

Action Date: 3/11/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA Bill Adams sent email to ARMY and ADEC: All, Dan Duncan the EPA Region 10 PCB coordinator has indicated that TSCA requires confirmation sampling on a 1.5 meter (~ 3 feet) grid under the self-implementing PCB remediation requirements. Exceptions require a risk-based sampling approval under 40 CFR 761.61(c). Compositing of samples is also allowed for up to 9 samples. There is specific TSCA guidance on Confirmatory Sampling. This may not change the number of samples for analysis but would require tighter spacing on sample collection.

Action Date: 3/10/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army email to ADEC & EPA: Louis:Thanks for your assistance in the TCRA arena. We certainly will proceed with that memo in the very near term.I don't see anything >7.0 ppm in the bldg footprint. The 11's

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

and the 13 are at least 75 feet southeast. If we can address the contamination in the parking lot area after we conclude the plan and RA for the bldg footprint, we'll be able to do a much better job of addressing all the issues.Thanks again for your assistance.

Action Date: 2/27/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA RPM (Bill Adams) sent email to ARMY: Dick, thanks for the information and in response to your voice mail EPA does need to be involved with this work. We should do this work under CERCLA like we did for bldg 35-752 but we will need to check in with Dan Duncan here at EPA who is the PCB Program lead.

Action Date: 2/22/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Remedial Investigation Management Plan received for review and comment. Soil boring advancement ??? Advance 16 soil borings to groundwater (approximately 135 feet bgs) and record visual and olfactory observations. Soil sampling ??? Collect field screening soil samples at intervals of 5 feet to a depth of 40 feet bgs, followed by every 20 feet to the top of groundwater, and collect three analytical soil samples per boring/monitoring well location. Soil samples will be analyzed for GRO, DRO, RRO, volatile organic compounds (VOC), semivolatile organiccompounds (SVOC)/PAHs, PCBs, pesticides, RCRA metals, nickel, vanadium, and ethylene dibromide (EDB).Groundwater well advancement and installation ??? Complete six of the 16 borings as groundwater monitoring wells according to the procedures listed in JBER-SOP-1200 Monitoring Well Installation and Development (Appendix B) to a depth of approximately 160 feet bgs based on an approximate depth to groundwater of 135 feet bgs.Groundwater sampling ??? Collect one analytical groundwater sample at least 24 hours after development from the six newly installed wells. Groundwater samples will be analyzed for GRO, DRO, RRO, VOCs, SVOCs, PAHs, PCBs, pesticides, RCRA metals, nickel, vanadium, and EDB/1,2,3-trichloropropane (TCP). Air and soil gas sampling ??? Evaluate the vapor intrusion pathway at Building 791 on a quarterly basis by collecting 12 indoor air, 12 outdoor air, and 12 near-slab soil gas samples according to the procedures listed in JBER-SOP-05 Soil Gas Sampling (Appendix B). Submit indoor air, outdoor air, and near-slab soil gas samples for offsite laboratory analysis for VOCs.See site file for additional information.

Action Date: 2/19/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on RE: Draft 2009 GTF Barracks PCB Investigation & Removal Action Fort Richardson, AK.1.0 Introduction Page 1-1ADEC requests the Army reference the regulatory authority for work implementing the 2009 GTF Barracks Polychlorinated Biphenyls (PCB) Remedial Investigation Work Plan & Removal Action Work Plan Addendum. For example:1. Removal action authority for conducting a Time-Critical Removal Action under CERCLA; 42 U.S.C. 9601 et seq. documented in a signed action memorandum, or;2. An interim action taken in accordance with the 1994 Fort Richardson Federal Facility Agreement Part VIII. Scope of Agreement C. Interim Remedial Actions

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

Paragraph 8.7 Page 18 & Part III. Purpose, Paragraph 3.2(b) Pages 10 & 11, or;3. Any other applicable authority, regulation, statute (i.e. 18 AAC 75.330 Interim removal Actions).2.3 Investigation-Derived Waste Page 2-2The text states: The highest result reported from the soil boring sample analyses was 13 milligrams per kilogram (mg/kg), well below the Toxic Substances Control Act (TSCA) limit of 50 mg/kg. The waste was therefore characterized as nonhazardous. ADEC disagrees. At PCB concentrations between 1 mg/kg & 50 mg/kg, these soils are still considered a waste (e.g. Bulk Remediation Waste) subject to regulation for disposal by the State & Federal???agencies.State of Alaska Regulatory Requirements for Soil > 1 mg/kgSince there is an established soil cleanup level for total PCBs (listed as a hazardous substance in 18 AAC 75.341 Table Bl, ADEC considers all PCB contaminated soils with concentrations of total PCBs greater than one (1) mg/kg to be a hazardous substance as defined by 18 AAC 75.990 (48).ADEC will require the investigation derived soils contained in the Super Sack&174; Container 2 be disposed of at an EPA permitted disposal facility since the concentrations are above 10 mg/kg total PCBs (13 mg/kg) or other facility which complies with the Off-Site rule(&167; 300.440 Procedures for planning & implementing off-site response actions.) EPA does not require compliance with the Off-Site Rule in the following instances:1. spills of a reportable quantity under CERCLA Section 103, when the response (i.e., cleanup) is not conducted pursuant to CERCLA or meets the exemption for a CERCLA emergency removal action;2. cleanup of a site using state authority & state funds only (regardless of the site's listing on the NPL; &3. voluntary cleanup involving government oversight, including State governments, unless conducted pursuant to CERCLA, including CERCLA orders or decrees.Only EPA, not an authorized State, can make determinations of the acceptability of off-site facilities that manage CERCLA wastes, & (2) the Off-Site Rule eliminates the distinction between CERCLA wastes governed under pre-SARA & post-SARA agreements (&167; 300.440(4)).The text also states the waste decontamination water (groundwater from drilling activities) did not contain detectable concentrations of PCBs. The reporting limit for the analysis was 2 &181;g/L & a detection limit of 0.62 &181;g/L. Both reporting & detection limits were below the limit of 3.0 &181;g/L for discharge to a treatment works facility listed in the Code of Federal Regulations (CFR), Title 40, Part 761.79. However, the Army did not discharge the waste decontamination water to a treatment works, but rather added it to Stockpile 5 (Table 2-1).Also, ADEC has a promulgated cleanup level for PCBs in groundwater of 0.0005 mg/Lor 0.5 &181;g/L (18 AAC 75.345 Table C) which is lower than the analysis detection limit of 0.62 &181;g/L used for this project. Therefore, it is possible that the water (groundwater, waste water, IDW generated water) sample results could be reported as non-detect (ND) at or below the detection limit for the analysis & still be above the Table C cleanup level for PCBs (i.e. Location ID GBWWOl, Sample ID 09GBWW01-WW, & Laboratory SDG 1090331).

Action Date:	2/11/2009
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided review comments on the proposed work at FTR196: The text states: Because three of the January borings (S1, W2, and SE2) were contaminated in the deepest interval (6 to 8 feet below ground

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

surface [bgs]), the five nearby proposed borings (W3, SW2, SE3, SSE1, and ESE1) will be drilled to 10 feet bgs. The three January locations with significant deep contamination will also be re-bored to 10 feet bgs for further sampling. The remaining eleven proposed borings will be drilled to 8 feet bgs.I would strongly recommend a contingency be in place to drill down deeper than 10 ft. bgs if field screening shows that it is also contaminated at that depth, rather than remobilizing again after the fact because the plan says only drill to 10 ft. bgs.

Action Date: 2/10/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army (R. Nenahlo) email to ADEC and EPA:Attached are two maps of the currently known extent of the PCB contamination at the Barracks Complex site called FTR-196. Also, there's a memo describing our planned third phase of sampling. We have been incrementally extending the radius of sampling from 5 feet from the original boring out to (now) 125 feet from that boring.Cristal departed last Friday for points east. Until further notice, I'll be the POC on this project. This contaminated area is directly below the center of the barracks building so some excavation will take place anyway. We'll likely remove the volume of contamination...once we've delineated it and then backfill as necessary with clean soil to meet the construction requirements.

Action Date: 2/1/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 2009 GTF Barracks PCB Investigation & Removal Action report (draft dated September 2009) received for review & comment on February 1, 2010. The work described in this Technical Memorandum was conducted under the 2009 GTF Barracks Polychlorinated Biphenyls (PCB) Remedial Investigation Work Plan & Removal Action Work Plan Addendum (U.S. Army Engineer District, Alaska [USAED] 2009a). The work consisted of three rounds of soil borings surrounding the area of known PCB contamination to assess the extent of contaminated soil & the excavation & stockpiling of PCB-contaminated soil. The first round of soil borings was conducted on 27 January 2009, the second round on 13 February 2009, & the third on 3 March 2009. Excavation & stockpiling activities began 27 March 2009 & were completed on 21 May 2009. All fieldwork associated with the removal action was completed on 9 July 2009.All soil analytical results were compared to the Alaska Department of Environmental Conservation (ADEC) soil cleanup level for PCBs of 1.0 mg/kg (Alaska Administrative Code [AAC], Title 18, Chapter 75, Table B-1 [ADEC 2006]). The ADEC cleanup level represents total PCB concentration, but soil at the GTF Barracks site contained PCB Aroclor 1260 in 17 of the 35 soil borings, at concentrations equal to or greater than 1.0 mg/kg. The highest PCB concentration (13 mg/kg) came from sample 09GBSE2E-SO from boring location SE2 at a depth of 8 to 10 feet bgs.The overall volume of contaminated soil, estimated from soil boring results, was approximately 3,100 bank cubic yards (cy). The majority of contaminated soil was outside the footprint of the barracks itself. Therefore, based on the soil that would be encountered during construction activities, the volume of contaminated soil to be removed was approximately 1,800 bank cy.Soil containing PCB contamination greater than 1.0 mg/kg was excavated,

JBER-FT. RICH SS013 MP BARRACKS FTR196 (Continued) **S113929814**

removed, and stockpiled from areas that would be impacted by activities related to the construction of the GTF Barracks, including the footprints of the proposed building and waterline utilidor. Soil contaminated with PCBs in concentration greater than 1.0 mg/kg remains in the lawn subarea; however, this soil is overlain by geofabric and 4 feet of clean, compacted backfill, installed and placed, respectively, by Watterson. On 23 May 2009, following completion of contaminated soil excavation activities and receipt and review of excavation confirmation sample results, control of the site was transferred to Watterson.NOTE: Stockpile F was created by Watterson following the removal of suspect trichloroethene (TCE)-contaminated soil. Three primary samples and one duplicate sample were collected from this stockpile and analyzed by method SW8260B. All four samples contained concentrations for TCE in exceedance of the ADEC Method Two migration-to-groundwater limit of 0.020 mg/kg, with a high concentration of 0.102 mg/kg. On 27 August 2009, this soil was transported to Stockpile Site 2 and placed in Stockpile 6.SGS 1093326001Client Sample ID 09GBSPF-01-SO Location SPF-01: 1,1,2,2-Tetrachloroethane 0.387 mg/kg J (0.017 mg/kg MGW) TCE 0.646 mg/kg (0.020 mg/kg MGW)Client Sample ID 09GBSPF-02-SO Location SPF-02: 1,1,2,2-Tetrachloroethane 0.0957 mg/kg, TCE 0.0724 mg/kgClient Sample ID: 09GBSPF-03-SO Location SPF-03: 1,1,2,2-Tetrachloroethane 0.0414 mg/kg J, TCE 0.0994 mg/kgClient Sample ID: 09GBSPF-A-03-SO Location SPF-03: 1,1,2,2-Tetrachloroethane 0.0405 mg/kg J, TCE: 0.102 mg/kgNOTE: Detection limits were elevated above MGW cleanup levels for VOCs due to methanol preservation and next time it is required that both methanol and ???low-level??? method 8260 analyses be conducted for the full suite of analytes.For example: Client Sample ID: 09GBSPF-A-03-SO Location SPF-03Vinyl Chloride reported as ND, result: 0.0405 mg/kg J, PQL/CL 0.0457 mg/kg, MDL 0.0110 mg/kg, (0.0085 mg/kg MGW)

Action Date: 11/1/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Tech memo received for review and comment. No significant issues were noted for any of the sites. Continuation of annual inspections is recommended for Sites AT052, SS013, and SS090.See site file for additional information.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich SS013 MP Barracks FTR196
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: Not reported
Control Details Description1: Not reported
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

H34 **JBER-FT. RICH BLDG 980 TANK 42A USTA 2 PARTY** **LUST** **S108941719**
West **FIRST STREET** **N/A**
1/8-1/4 **FORT RICHARDSON (JBER), AK 99505**
0.227 mi.
1199 ft. **Site 1 of 3 in cluster H**

Relative: LUST:
Lower

Facility Name:	JBER-FT. RICH BLDG 980 TANK 42A USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	2000210013201
File ID:	2102.26.024
Oname:	U.S. Air Force
Lat/Lon:	61.26610 -149.6854
Lust Event ID:	2635
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD83

Actual:
331 ft.

H35 **JBER-FT. RICH BLDG 980 TANK 42A USTA 2 PARTY** **SHWS** **S110144133**
West **FIRST STREET, FORMERLY FORT RICHARDSON BEFORE 10/01/2010** **N/A**
1/8-1/4 **FORT RICHARDSON (JBER), AK 99505**
0.228 mi.
1204 ft. **Site 2 of 3 in cluster H**

Relative: SHWS:
Lower

File Number:	2102.26.024
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.266104
Longitude:	-149.685433
Hazard ID:	23314
Problem:	UST 42A associated with an oil water separator associated with former building 980's vehicle wash station on west side of bldg. 980. Army POC Cristal Fosbrook 384-2713 file number 2102.26.024USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actual:
331 ft.

Actions:

Action Date:	8/21/2002
Action:	Update or Other Action
DEC Staff:	Cynthia Pring-Ham
Action Description:	RECKEY has automatically been generated.
Action Date:	5/11/2000
Action:	Site Closure Approved
DEC Staff:	David Allen
Action Description:	Metals, BTEX and PAH less than Table B1 (Method Two) Cleanup levels NFA issuedHydrocarbon range contaminanats less than Method 1 Category A cleaunp levels.
Action Date:	5/11/2000
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	5/11/2000
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

H36 West 1/8-1/4 0.228 mi. 1204 ft. **JBER-FT. RICH BLDG 980 UST 42 USTA 2 PARTY 1ST STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1 FORT RICHARDSON (JBER), AK 99505** **SHWS** **S106425043 N/A**

Site 3 of 3 in cluster H

Relative: Lower

Actual: 331 ft.

SHWS:

File Number:	2102.26.024
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.266104
Longitude:	-149.685433
Hazard ID:	2035
Problem:	Building 980, located on First Street, is the motor pool for D Company, 46th Support Battalion. Surface spill discovered during excavation at the Child Development Center. Contaminated soils present. Cleanup levels not exceeded site closed out. Cristal Fosbrook 384-2173 is Army POC. Formerly Building 9330.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	8/8/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Site Assessment Report Building 980 Tank 42, Fort Richardson, AK.The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on July 25, 1994, a copy of the above document. Below are our comments regarding the site assessment of UST 42.5.3 Discussion page 11The text states the site is recommended for closure. Pending site screening results obtainedfrom Oil Spill Consultants' work at this site, ADEC concurs with the recommendation. Thesite closure will be considered fmal contingent on the additional sampling that will confirmthe presence or absence of soil contamination above level C criteria.

Action Date:	8/30/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2638 N Latitude -149.7077 W longitude

Action Date:	7/29/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Site Assessment report reviews for UST work at Fort Richardson.The Alaska Department of

JBER-FT. RICH BLDG 980 UST 42 USTA 2 PARTY (Continued) **S106425043**

Environmental Conservation-Defense Facilities Oversight group (ADEC)has received various documents concerning UST removals at Fort Richardson by Oil SpillConsultants. Any closures approved by ADEC which were based on the reports' information will becontingent on additional data gathered by Oil Spill Consultants. The following buildings are listed as having additional site screening samples taken to confirm the presence or absence of contamination that exceeds the soil matrix scoring for each site: 980, 812, 750E,750W, 45726, 784, 778, 55295.

Action Date: 7/18/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment for UST 42 received. Under Work Release R30197/512 issued by Brown & Root Service Corporation, Oil SpillConsultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (UST) at Building 980 on Ft. Richardson, Alaska. The UST wasremoved by South Fork Construction on May 2, 1994. It was taken to a storage area behindBuilding 955 for cutting and cleaning. It will then be given to the Defense Reutilization andMarketing organization for disposal. Six (6) project samples and one quality control sample were collected to determine if the soil over and around the UST was contaminated with petroleum hydrocarbons. Samples were taken toCommercial Testing & Engineering Co. and Analytical Technologies in Anchorage, Alaska foranalysis.Laboratory results show that the maximum detected level of diesel range organics (DRO) in theproject soil was 250 ppm. Gasoline range organics (GRO) and benzene were detected at 2.1ppm and 0.025 ppm, respectively. The BTEX level was detected at a high of 0.512 ppm. Theseresults strongly suggest that no significant quantities of petroleum hydrocarbons were releasedto the environment from Tank 42 at Building 980.The visual screening of the project soil supported by laboratory data indicates that no significant releases of petroleum hydrocarbons have occurred from Tank 42. Since the maximum detected level of DRO in the soil under the UST (39.2 ppm) is Significantly below the Level C cleanup threshold value, it is reasonable to conclude that Tank 42 has not leaked. No further action is required for site closure. The overburden removed during site excavation can be used for backfill at the project site.Based on guidelines provided in 18 MC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 980 qualifies for Level C cleanup which sets the maximum OROconcentration at 1,000 ppm and the maximum GRO concentration at 500 ppm. Since thedetected levels for DRO and GRO at Building 980 are significantly lower than these levels, nofurther action is required for site closure. All soil excavated during tank removal can be used for backfill pending confirmation from the Alaska Department of Environmental Conservation USTProgram.

Action Date: 5/23/1994
Action: Cleanup Level(s) Approved
DEC Staff: Louis Howard
Action Description: Oil Spill Consultants sent on May 23, 1994 a letter requesting confirmation of cleanup level for Building 980 UST Number 42 be established as Level C for diesel range organics and closure be granted since it was not exceeded.

JBER-FT. RICH BLDG 980 UST 42 USTA 2 PARTY (Continued) **S106425043**

Action Date:	4/21/1998
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Very low levels of petroleum contamination in soils.

Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Initial ranking. Ranking action added now because it was not added when the site was originally ranked.

Action Date:	4/13/1998
Action:	Site Closure Approved
DEC Staff:	Louis Howard
Action Description:	ADEC sent letter to Army re: Results from Additional Soil PID Screening and Analyses. Staff received a fax of the document on August 19, 1994. The analytical results for Bldgs. 750E, 750W, 778, 784, 812, 980, 45726, and 55295 showed levels well below the most stringent cleanup criteria (A). Based on the data presented by the Army, ADEC considers the UST sites closed out. However, closing out these sites does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that causes an increased risk to human health or the environment, then future investigation and/or remedial actions will be required. Level C criteria is applicable to Bldg. 980 UST 42.

Action Date:	4/13/1998
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Review of site information shows that level D criteria applies at the site due to mean annual precipitation being over estimated by OSC ranking. Score is actually a 1 instead of a 3 due to precipitation at Post being less than 15 inches annually.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 980 UST 42 USTA 2 Party
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	For more information about this site, contact DEC at (907) 465-5390.

I37
WSW
1/4-1/2
0.258 mi.
1362 ft.

JBER-ELMENDORF ST430/9 AFID 410A 410B — **LUST** — **S108941788**
F-15E FUEL TANK STORAGE BLDG. 16675 TAXIWAY 'F' — **N/A**
ELMENDORF AFB (JBER), AK 99506

Site 1 of 4 in cluster I

Relative:
Lower

Actual:
318 ft.

LUST:

Facility Name:	JBER-ELMENDORF ST430/9 AFID 410A 410B
Facility Status:	Cleanup Complete
Record Key:	1995210017203
File ID:	2101.26.007
Oname:	U.S. Air Force
Lat/Lon:	61.26071 -149.6861
Lust Event ID:	2832
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD83

I38
WSW
1/4-1/2
0.258 mi.
1364 ft.

JBER-ELMENDORF ST430/9 AFID 410A 410B — **SHWS** — **S109255761**
F-15E FUEL TANK STORAGE BLDG. 16675 TAXIWAY 'F' — **N/A**
ELMENDORF AFB (JBER), AK 99506

Site 2 of 4 in cluster I

Relative:
Lower

Actual:
318 ft.

SHWS:

File Number:	2101.26.007
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.260712
Longitude:	-149.686115
Hazard ID:	23421
Problem:	Two underground storage tanks at former fueling facility near Building 16675 (Formerly known as Bldg. 43-415). Tank 410A was a 4,000 gallon motor vehicle gasoline (mogas) tank and tank 410B was a 2,500 gallon jet propulsion fuel number 4 (JP-4) tank. Primary cause of petroleum releases appears to be overfilling of tanks.

Actions:

Action Date:	7/7/2011
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 76227 name: autogenerated pm edit - Elmendorf - ST430/9 AFID 410A 410B

Action Date:	7/29/1996
Action:	Underground Storage Tank Site Characterization or Assessment
DEC Staff:	Tim Stevens
Action Description:	Underground Storage Tank (UST) Closure Assessment received. Work was conducted under delivery order 0006 for Bldg. 43-410 USTs 410A, 410B, & 60. Report was dated February 1996. Release investigation conducted to estimate the extent of soil contamination at the site ST430. Groundwater flow is expected to be southwest of the site based on Basewide groundwater monitoring program. A 2,500 gallon JP-4 (tank 410-B) and a 4,000 gallon gasoline tank (tank 410-A), and the associated piping, dispensers and dispenser island were removed. NOTE:JP-4 is the military equivalent of Jet B with the addition of corrosion inhibitor and de-icing additives. Analytical results and on-site observations indicated the release of petroleum hydrocarbons

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

into soil at Tank 410-B. Two samples from the Tank 410-B soil stockpile exceeded level B cleanup criteria, with maximum levels of 1,200 mg/kg DRO, 1,820 mg/kg GRO and 29.89 mg/kg total BTEX. Under direction of the USACE field representative, who decided that a clean closure was unlikely with available resources, the tank 410-B stockpile was returned to the excavation. The excavations for 410 A&B co-mingled into one large excavation 24' by 26' by 9' deep. Returning UST contaminated soil to the excavation of origin is permitted under the Memorandum for ADEC summarizing the results of an April 18, 1995, UST meeting between ADEC and EAFB. This agreement states that EAFB will make every effort to accomplish a clean closure of a UST removal site if possible. However, on August 11, 1985, this agreement was revoked by John Halverson. Tank 60 excavation was 8' by 12' by 7.5' deep. Only one sample location out of five from the Tank 60 closure did not exceed the ADEC level B cleanup criteria for DRO. Based upon this report, and the guidelines contained in 18 AAC 78, a release investigation and/or corrective action at the former locations of tanks 410-A and 410-B is required. Because of the presence of numerous buried utilities and the unknown extent of contamination under the asphalt pavement to the west of Tank 60, a release investigation for Tank 60 is recommended.For the former Tanks 410-A and 41O-B location, Shannon & Wilson recommends corrective action consisting of excavating impacted soil and sampling the boundaries of the excavation to confirm cleanup. Because none of the analytical samples collected from the excavation boundaries after tank removal exceeded ADEC Level B criteria, we believe that prompt excavation of the soil used for backfill would minimize the volume of contaminated soil. Bioventing, the presumptive remedy for contaminated UST sites in the MOA, should work well for the volatile fuels encountered in the gravelly soil at both locations

Action Date: 6/27/2003
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Decision document received. Elmendorf Air Force Base (AFB) site ST430/9 is located west of Building 16710 (former Building 43-410), the Alert Vehicle Facility. The site is on the north side of the East/West Runway and is within the OU5 Modeling Area. Nature of ReleaseTwo regulated underground storage tanks (UST) and dispensers were located at the site. One 4,000 gallon UST, identified as Air Force Identification (AFID) number 410A and Alaska Department of Environmental Conservation (ADEC) number 111, was used to store motor vehicle gasoline (MOGAS). One 2,500 gallon UST, identified as AFID 410B and ADEC 112, was used to store jet propulsion fuel. The site was formerly used for flight line fueling and maintenance. The USTs were removed in 1995. Any release from these USTs would have been regulated by 18 AAC 75 Contaminated Site regulations, Articles 3 and 9, and Alaska Statute 46.03 - 46.09.Response Action HistoryThe USTs, associated piping, and dispensing equipment at ST430/9 were removed and the UST assessment was completed in 1995. Samples were collected from within the tank excavation and beneath the dispensers. No contaminant concentrations exceeded ADEC 18 AAC 75, Method One, Category A cleanup criteria. It is noted, however, that the method reporting limit for benzene, 0.045 milligrams per kilogram (mg/kg), exceeds the current cleanup criteria of 0.02 mg/kg. Two stockpile samples contained maximum diesel-range organics (DRO) and gasoline-range organics (GRO) concentrations of 1,200 mg/kg and 1,820

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

mg/kg, respectively. The stockpiled soil, approximately 50 cubic yards, was returned to the excavation. During the State-Elmendorf Environmental Restoration Agreement (SERA) IV investigation in July 1996, the soil from the original excavation was re-excavated. The excavated soil was field screened with a photoionization detector (PID) and segregated into clean and potentially contaminated stockpiles. Samples were collected from within the excavation and from the clean stockpile; all results were less than Method One, Category A cleanup criteria. The excavation was backfilled with the clean stockpile, which was then inadvertently overlain with approximately 5 cubic yards of potentially contaminated soil. In November 1996, the site was partially re-excavated in the area where the contaminated soil was reportedly placed. Four samples were collected from the excavation; all results were less than Method One, Category A cleanup criteria. The method reporting limit for benzene was 0.05 mg/kg and the method detection limit was 0.01 mg/kg. In a letter dated 23 December 1998, ADEC requested that the Air Force provide further information regarding potential contamination at the site. During the SERA IX investigation in 2001, one boring was installed in the southwest corner of the former UST excavation. The boring was terminated at 11 feet below ground surface (bgs) in the underlying native layer. Three samples were collected; all results meet Method One, Category A cleanup criteria. However, benzene was detected in one sample at 0.02 mg/kg. Although this concentration is the 18 AAC 75 Table B1 cleanup criterion for benzene, the result is estimated because it was less than the method reporting limit of 0.021 mg/kg. Polynuclear aromatic hydrocarbons (PAHs) were not detected above Method Two cleanup criteria. Although soil with DRO and GRO concentrations exceeding Method One, Category C cleanup criteria was placed back in the excavation, analytical results from subsequent investigations indicate that contamination does not remain at the site above 18 AAC 75 cleanup criteria. In accordance with State of Alaska regulation 18 AAC 75, the United States Air Force (USAF) has completed all activities required for the selected remedy at ST430/9, Elmendorf AFB, Alaska. This declaration of decision supports the conclusion that all known sources of contamination have been removed to levels agreed to by the ADEC as being protective of human health and the environment. Therefore, no further action at this site is required. The site has been adequately characterized under 18 AAC 75.335 and has achieved the applicable cleanup criteria under 18 AAC 75 for site closure. However, if additional contamination is discovered at the site which is not protective of human health, safety, or welfare, or of the environment, ADEC will require the Air Force to conduct additional actions that meet the requirements of 18 AAC 75 Contaminated Site regulations and Alaska Statute 46.03 ??? 46.09.

Action Date: 6/21/1995
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 6/21/1995
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

Action Date:	4/18/1995
Action:	Meeting or Teleconference Held
DEC Staff:	John Halverson
Action Description:	Air Force Memorandum to John Halverson (ADEC) re: 18 April 1995 UST meeting. 1. Elmendorf AFB will accomplish the following actions regarding UST projects. These actions are based upon conversation between, John Mahaffey, Larry Opperman and yourself.a. EAFB will make every effort to accomplish clean closure of a UST removal if possible. b. UST removal locations requiring cleanup action will be transferred into the State Elmendorf Environmental Restoration Agreement (SERA). A list of sites requiring cleanup will be coordinated with your office. c. The presumptive remedy for contaminated UST sites in the outwash plain only will be bioventing technology. d. Contaminated soils exceeding cleanup levels may be placed back into the excavation only if the site assessment (SA) indicates a need for further action. e. Contaminated UST sites not in the outwash plain will require further investigation to determine appropriate cleanup options. f. We will make every attempt possible to assure new USTs or new aboveground tanks are not installed in any way that would hamper future access for cleanup. g. The project will first accomplish removal of all the USTs. SA information will be used to prioritize sites for cleanup using existing project funds. Additional funding will be requested to complete cleanup if available. Sites not addressed for cleanup due to exhausted funding will be placed in SERA Phase IV. John Halverson signed memorandum on April 21, 1995. Memorandum submitted by Douglas G. Tarbett, Maj. USAF, Chief, Environmental Compliance (CCs 3 WG/JA and 3 SPTG/CE).

Action Date:	3/31/1997
Action:	Release Investigation
DEC Staff:	Louis Howard
Action Description:	AFIDs 410A & 410B SERA Phase IV ST430 Release Investigation Report Final Dated March 1997 received. July 29, 1996 former USTs location was re-excavated and 5 cubic yards of potentially contaminated soil was stockpiled. Three soil samples collected from bottom of excavation at 8 to 9’ bgs. Two soil samples were collected from the clean stockpile (per the PID field screening). None of the excavation or clean soil stockpiles exceeded Level A cleanup standards. The potentially contaminated stockpile was not sampled and scheduled to be thermally treated. The excavation was backfilled with the clean stockpile and overlain with the potentially contaminated stockpile. November 23, 1996, the site was partially re-excavated again and sampled. Frozen ground was encountered at the site which precluded complete site re-excavation. Three soil samples were collected from 0.5’ to 1.0’ bgs and one from 4.5’ bgs. No samples contained petroleum hydrocarbons in excess of Level A cleanup standards. Site backfilled with excavated soil following sampling. Conclusions: It is reasonable to assume that soil contamination detected above level C cleanup leve in 1995 was remediated via volatization and biodegradation during the 2 excavation programs. Based on the 1996 results of the release investigaiton, the USAF recommends ST430 USTs 410A and 410B for no further action.

Action Date:	3/26/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	DOD & ADEC joint Technical Memorandum of understanding signed

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

concerning the Basewide Groundwater (gw) signed by: ADEC Jennifer Roberts RPM & USAF Joseph Williamson Chief Environmental Programs & Restoration. Due to the basewide gw study & the FY92 field work that occurred at Operable Units (OUs) 1, 2, & 5 it appears a large portion of the gw flows into OU5 (attach. 1-contour map). Based on this fact, Elmendorf (EAFB) will move all upgradient gw into the OU5 Feasibility Study, Proposed Plan & Record of Decision (ROD). This means addressing all gw from upgradient sources (CERCLA (ST20, Ous 3&4) & OUs 1 & portions of OU2) & SERA) at OU5 instead of at each individual source area (see attach. 2-Area Map). Sites with free phased product would be looked at to see if there is an available technology to clean them up in a cost effective way. Soil contamination would be addressed at the source areas. NOTE: addressed at the source areas is interpreted by ADEC as removal through excavation or active treatment systems (e.g. high vacuum extraction, bioventing, etc...). Also included in the file is the AF memo: Restricted Use of the Shallow Aquifer on EAFB signed by William R. Hanson P.E. GM-14 Chief Environmental Flight dated October 17, 1996 Memorandum for 3 SPTG/CEC/CEO from 3 SPTG/CEV1) Due to the contamination & commitments to EPA/DEC the use of the shallow aquifer for any purpose on is not allowed. Attached Facilities Board minutes-03/29/1994 0930 Item 9 has Mr. William Hanson, briefing the Board on the policy to not use the shallow aquifer due to contamination. The Board approved this policy. Minutes approved by Thomas R. Case Brigadier General USAF Commander. The IRP has RODs for OUs 3 & 6 which require, the aquifer remain unused. 2) Personnel in the review process within CES must be aware of these policies & review them on a recurring basis. It is imperative this restriction be recognized & observed during engineer reviews & operations.

Action Date: 12/5/2007
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff commented on the Site Closure Confirmation Request, Environmental Compliance Program, Elmendorf AFB, Alaska dated November 6, 2007 for twenty-three (23) sites submitted by the Air Force???s Environmental Compliance Program. This request was to confirm the sites have met all applicable State of Alaska cleanup regulations.Underground storage tanks (USTs), associated piping, and dispensing equipment at ST430/9 were removed and the UST assessment was completed in 1995. Samples were collected from within the tank excavation and beneath the dispensers. Two stockpile samples contained maximum diesel-range organics (DRO) and gasoline-range organics (GRO) concentrations of 1,200 mg/kg and 1,820 mg/kg, respectively. The stockpiled soil, approximately 50 cubic yards, was returned to the excavation. Subsequent investigations in 1996 and 2001 all detected no contamination above category ???A??? cleanup level. In December 2003, ADEC agreed no further remediation was required at the site. ADEC still concurs that ST430/9 is eligible for site closure and a ???Site Closure Approved??? action will be entered. ADEC is basing its decision on the most current and complete data provided by the Air Force. ADEC reserves its rights, under: 18 AAC 75 Oil and Other Hazardous Substances Pollution Control regulations (as amended through December 26, 2006), 18 AAC 78 Underground Storage Tank regulations (as amended through October 27, 2006) and Alaska Statute 46.03 to require additional investigation, cleanup, or containment if subsequent information indicates that: 1)

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

additional contamination remains at the site which was previously undiscovered and presents an unacceptable risk to human health, safety, or welfare, or the environment. Please note, per 18 AAC 75.325(i), department approval is required prior to disposing of soil or water from a site that is, or has been, subject to the site cleanup rules.

Action Date: 12/5/2003
Action: Site Closure Approved
DEC Staff: John Halverson
Action Description: Letter from John Halverson to John Mahaffey (USAF) re: compliance funded contaminated sites review and response. The Air Force submitted thirty-eight (38) decision document packets to the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program, Departmentof Defense oversight section. Each individual packet included a summary of the site history,site characterization and cleanup work conducted to date along with a request for No FurtherAction. All of the sites are petroleum contaminated sites associated with current or former fuelstorage tanks.Residual soil andlor groundwater contamination is present at all ofthe sites. Based on ourreview, thirty-six (36) of the sites (see the list below) do not appear to pose an unacceptablerisk to human health or the environment and are suitable for a No Further Remedial ActionPlanned (NFRAP) determination. The ADEC's NFRAP determination indicates that noadditional cleanup is necessary but that institutional controls and/or long term monitoring arenecessary. We have determined that the groundwater impacts at these sites are being adequately addressed within the base-wide groundwater monitoring program and the Operable Unit 5 groundwater treatment system. Because petroleum contaminated soil (contaminant levels higher than the Method 2 cleanup levels in Tables BIIB2 found in 18 AAe 75.341) remains at these sites, the Base Master Plan needs to be updated to document the locations of residual contamination and the need to manage contaminated soil properly during any future construction or excavation work. Upon notification that the Base Master Plan has been updated, the ADEC will change the status of these sites in our contaminated sites database to NFRAP with institutional controls in place. The following 36 sites eligible for NFRAP (ignoring the ST portion of the title):404 502 517 535405 503 518 536411 504 519 537413 505/9 520 700414 511 521 701415 512 525 90243019 513 528 903431 514 530 904501 515 533 906Sites ST 420 and 524 are not located within the capture zone for the OU5 treatment system andcontain higher contaminant levels. Therefore, the ADEC is requesting additional site characterization/cleanup at these two sites.

Action Date: 12/23/1998
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: Comment letter (Tim Stevens) sent on site assessement reports and release investigation report. Additional information is requested:Field sampling data for the clean stockpile Release investigation report indicateds two analytical samples were collected from the clean stockpile. However, the report does not provide information pertaining to the number of field samples collected, and the results of field screenings, required to determine the sample locations for confirmation samples. An explanation why the entire former UST excavation was not re-excavated to fully characterize

JBER-ELMENDORF ST430/9 AFID 410A 410B (Continued) **S109255761**

known contamination. The site assessment reports indicate the former UST excavation was 24'x26'x9' deep. The site assessment report indicates 50 c.y. of contaminated soil was used to backfill the UST excavation. According to the release investigation report, only 3/4 of the original UST excavation was re-excavated. Please provide information showing that the portion of the former UST excavation that was not re-excavated, does not contain contaminated soils above cleanup levels.An explanation why duplicated samples were not collected and analyzed per the UST Procedure manual (e.g. 1 duplicate sample be taken for every ten samples collected). A more detailed explanation why the Air Force believes that high levels of contamination found during the site assessment were not encountered during the release investigation. The Department is seeking a better explanation as to why within as little as 13 months, soil contamination went from 1,820 mg/kg GRO, 1,200 mg/kg DRO and 29.89 mg/kg BTEX to level A cleanup standards, with no active treatment.

Action Date: 10/13/2000
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: SERA Phase IX Release Investigation Report ST430/9, FS Former Fueling Facility conducted to: Investigate the southwest portion of the backfilled UST excavation to determine whether the soil in this area remains contaminated by petroleum in excess of ADEC cleanup levels. Collect field duplicates for lab analyses to satisfy ADEC prior concerns that no field duplicates were collected during SERA Phase IV investigation. Fill analytical data gaps: No PAH data for soil collected at the site, previous non-detect benzene results were obtained at the MRL in excess of the Method Two migration to groundwater soil cleanup level of 0.02 mg/kg. Results:Samples from 4.6', 6' and 10' bgs analyzed for DRO, GRO, RRO were all below level A criteria and BTEX and PAH were below Method Two cleanup standards. Benzene was detected at 0.02 mg/kg but was a qualified J indicating that it is subject to a high possibility of being a false positive.Soil excavation and re-excavation activities have shown that POL contamination in soil at the site appears to have been remediated significantly through volatilization and biodegradation induced by aeration and mixing of the soil.

I39 **JBER-FT. RICH TU058 FORMER BLDG 786 UST 26** **SHWS S106425042**
WSW **6TH STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.258 mi.
1364 ft. **Site 3 of 4 in cluster I**

Relative: SHWS:
Lower
Actual: File Number: 2102.38.007
318 ft. Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.260712
Longitude: -149.686115
Hazard ID: 2033
Problem: In 2000, Building 786, the driver s training facility, was removed from the site and relocated to an undisclosed location. The building was heated by fuel oil and had a 500-gallon UST located east of the structure. The tank was removed with the building. An investigation from September 2001 to January 2002 revealed elevated soil and

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

groundwater levels for gasoline range organics (GRO), diesel range organics (DRO), and select metals in the vicinity of former Building 786. This information reopened the site from a previously closed status granted in 1994. The source(s) of the contamination is not known. Existing monitoring wells on the site have been historically monitored based on spill(s) and/or leaks associated with former fueling operations that may have included an UST. Historically, the general site area has supported military operations since at least 1950. Listed in the USTA 2 Party Agreement, Attach. D UST System Compliance Schedule for Upgrade or Closure: Tank ID 26, Bldg. 786, Driver's Training.

Actions:

Action Date: 9/28/2001
Action: Site Reopened
DEC Staff: Louis Howard
Action Description: Closed status of site withdrawn due to soil and groundwater contamination uncovered at the site. Groundwater monitoring results: 4.6 mg/L GRO and 140 mg/L DRO in well AP-5007, AP-5001 had 660 mg/L DRO and well AP-5009 had 2.1 mg/L GRO 420 mg/L DRO.

Action Date: 9/21/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UST removed in June 1994 soil samples contained up to 810 mg/kg Diesel Range Organics. Site contamination was below level C so site was closed out.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/31/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Groundwater monitoring results- Well AP-5007 DRO 55.3 mg/L and well AP-5001 69.3 mg/L DRO

Action Date: 8/29/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: Former Bldg. 786 Annual Report 2004 Table 3-1 Site 786 Well Information.

Action Date: 8/11/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft Site Characterization report for

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

TU058 which includes Bldg 762 and Bldg. 786. ADEC concurs with the conclusions and recommendations mentioned in the document for CS DB Hazard IDs 2754 and 2033. Building 762 (2754) is eligible for a cleanup complete determination, however Building 786 (2033) is not. After Building 786???s groundwater sampling results have shown that Table C groundwater cleanup levels have not been exceeded, ADEC will grant a ???cleanup complete??? determination for the entire site known as TU058 which includes both Buildings 762 and 786. A partial cleanup complete determination will not be granted for TU058 by ADEC based on results for Building 786.

Action Date: 7/24/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment.The following conclusions were made regarding former Building 786 of TU058:??? Based on previous investigations and the 2013 site characterization field investigation, DRO, GRO, benzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected in soil at concentrations above project screening levels. DRO was the most frequently detected contaminant with the greatest lateral and vertical extent.??? DRO in soil at concentrations greater than the 250 mg/kg screening level covers an areaapproximately 580 feet long by 190 feet wide centered around former Building 786, starting at a depth of 15 feet bgs and reaching a depth of approximately 80 feet bgs, for an estimated volume of 265,200 cubic yards.??? No constituents were detected in groundwater above 18 AAC 75.345 Table C cleanup levelsduring 2013. However, DRO was detected above its Table C cleanup level in a sample fromwell AP-5001 in 2012.??? Using the HRC for contaminated soil with the source area, the cumulative carcinogenic risk and noncarcinogenic HI estimates based on both industrial and hypothetical residential exposure scenarios are below the regulatory risk standards.??? The ADEC risk criteria for bulk hydrocarbons are met for contaminated soil with the sourcearea.??? The EPC for benzene in soil, based on a sitewide exposure area, was below the most stringentADEC Method Two, Table B1 cleanup level and, therefore, is not expected to pose unacceptable risk to human health.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant.The following are recommended for former Building 786 at TU058:??? Annual groundwater monitoring continues for at least one more year. If no analytes are detected in groundwater above 18 AAC 75.345 Table C cleanup levels during the 2014 sampling round, the USAF will request a ???Cleanup Complete??? designation because the site will meet soil and groundwater criteria established for site closure.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Updated USARAK institutional control (IC) policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property.

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 7/15/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the Draft Work Plan Environmental RA-O & LTM & Maintenance Joint Base Elmendorf-Richardson, Alaska. GW monitoring at the Former Building 786 site is conducted to document current GW conditions & evaluate trends in fuel-related constituents. History of the site near the former location of Building 786 is limited & is based on review & interpretation of aerial photos from 1950, 1957, & 1973. The only permanent structure associated with the site was Building 786, which was the driver???s education facility that was removed in 2000. Field activities include GW sampling, soil sampling during well installation, well installation & decommissioning, & monitoring well maintenance.GW samples will be collected in August 2011 & again in April 2012. Monitoring activities will include an initial GW elevation survey for development of potentiometric maps, followed by GW sample collection.Each GW monitoring well will be sampled for the following analyses & methods:-DRO by AK102-GRO by AK101-BTEX/VOCs by Method SW8260B-SVOCs by SW8270CSoil samples will be collected from borings during installation of replacement. Samples will be collected with a split spoon sampler & sample intervals will be based on professional judgment or other determining factors such as changes in soil conditions, high PID readings or target GW zones.Wells will be replaced (including the decommissioning of the existing well & installation of a new well in close proximity) at Former buildings 786. The wells to be replaced include AP-5009 at Building 786. Replacement wells will be installed a minimum of 16 feet from the decommissioned well to avoid impacts from grouting.See site file for additional information.

Action Date: 6/7/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Building 786 Groundwater Monitoring Report dated December 2008 Fort Richardson received.Groundwater sampling activities at Former Building 786 were conducted for the U.S. Army Directorate of Public Works (DPW) during December 2008 under United States Army Corps of Engineers (USACE) Contract Number W911KB-08-D-0005. The sampling event at Former Building 786 was conducted from December 8 to 11, 2008.After the ground surface was free of snow, it was discovered that well AP-5005 was erroneouslysampled as AP-5001 and AP-5001 was erroneously sampled as AP-5008 during the Decembersampling event. Additionally, well AP-5008 was not sampled. Shannon & Wilson later labeledthe wells with proper identification to prevent later misidentification. Appropriate correctionshave been made throughout this report including the hand-written field notes included inAppendix A. Well AP-5005 data has only been included in the quality control (QC) sections ofthis report.GRO was detected in five of the six wells sampled during the December 2008 sampling event,with concentrations ranging from 14.8J &181;g/L at AP-5009 to 37.2J

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

&181;g/L at AP-5001. Each ofthese concentrations is less than the ADEC groundwater cleanup level of 1,300 &181;g/L.DRO was detected in the six wells sampled during the December 2008 sampling event, withconcentrations ranging from 173J &181;g/L at AP-4529 to 8,950 &181;g/L at AP-5001. The concentrations of DRO in wells AP-4529, AP-5001, and AP-5007 exceeded the ADEC groundwater cleanup level of 1,500 &181;g/L.VOC concentrations during the sampling event are as follows:Chloroform was detected in one of six wells sampled during the December 2008 sampling event at a concentration of 1.48J &181;g/L at AP-4529.PAH were not detected during the December 2008 monitoring event.Temperature blank and cooler temperatures (7.2 &176;C and 8.1 &176;C, respectively) were high for SDG 1086618; corresponding results were non-detect, and flagged UJ due to potential volatilization and/or degradation of analytes.

Action Date: 6/30/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Building 786, located off of Sixth Street, was the site of underground storage tank (UST) 26, a 1,000 gallon heating oil tank. The UST was removed in June 1994 and soil samples contained up to 810 mg/kg diesel range organics (DRO).

Action Date: 6/27/2003
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Groundwater monitoring results-well AP-5001: 59 mg/L DRO, AP-4529 DRO 4.1 mg/L, AP-5009 32 mg/L DRO, AP-5008 5.3 mg/L DRO, and well AP-5007 25 mg/L DRO.

Action Date: 6/21/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Building 786 Groundwater Monitoring Report December 2008. 2.2 Environmental History Page 5The text states gasoline range organics exceeded ADEC groundwater cleanup levels (Table 5-1). ADEC will require the Army to analyze for ethylene dibromide (EDB) and 1,2, Dichloroethane (DCA). EPA 8260C is required for the analysis of 1,2-DCA. EPA 8011 or EPA 504.1 should be used when evaluating EDB. EDB soil samples should be field preserved in hexane. EPA 8260 will quantify EDB in ground water; however, the detection limits do not meet the Table C cleanup level of 0.00005 mg/L If EDB concentrations are less than applicable cleanup levels, further EDB analysis is generally not required (ADEC Draft Field Sampling Guidance Appendix F May 2010). 6.0 Conclusions Page 29ADEC concurs with the conclusions in this section.

Action Date: 5/21/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: The hydrocarbon risk calculator (HRC) was used to evaluate risk from petroleum contamination at TU058. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, & other compounds dissolved in petroleum???with the intention & purpose of assessing human health risk from this type of contamination. The estimated rounded cumulative cancer risk at TU058 for the current industrial & hypothetical residential exposure

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

scenarios, across all exposure pathways, (8 x 10-7 & 1 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at TU058 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (0.1 Bldg. 762/0.001 Bldg 786 & 0.2 Bldg 762/0.002 Bldg. 786 respectively) is below the regulatory risk standard of 1. TU058 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO/GRO aromatic & aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario. An ecoscoping form was completed for TU058 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed & that the TU058 site conditions are protective of the environment. Based on a review of the environmental records, ADEC has determined that TU058 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU058 in the Contaminated Sites Database.

Action Date: 4/2/2004
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft site investigation report for this site. If the Army were to conduct trenching in additional areas where fueling activities are suspected, soil samples must be analyzed for, at a minimum, gasoline range organics, diesel range organics, benzene, toluene, ethylbenzene, xylenes, and residual range organics. Should there be reason to suspect waste oil or other hazardous waste constituents, then it is expected that the Army would take additional sampling results to characterize for hazardous constituents (e.g.. chlorinated solvents, PCBs, etc..). Also, the Department recommends the groundwater sampling results narrative be checked for accuracy with regard to units: i.e. page 4-17 reports DRO concentrations ranging from 4.1 mg/kg to 75 mg/kg in groundwater monitoring wells. Results should have been in mg/L.

Action Date: 4/11/2002
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the Draft site investigation for 762/786. The ADEC concurs that additional ground-penetrating radar (GPR) and electromagnetic (EM) survey work within an expanded area around the Building 786 site be conducted. Based on the results from PCB and pesticide analyses, it appears that further analyses for these two classes of contaminants will not be necessary. Delineation of the groundwater plume downgradient of the site is necessary. The ADEC agrees that least two wells should be placed downgradient of AP-5009. Finally, the ADEC concurs that only GRO, DRO, BTEX and metals will be the only contaminants of concern for future groundwater sampling.

Action Date: 3/9/1994
Action: Update or Other Action

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

DEC Staff: John Halverson
Action Description: Letter from Army sent on compliance advisory letter dated 2/9/1994. The Army notes the concern of failure to meet certain time deadlines specified in the UST compliance agreement could jeopardize our excellent working relationship which we both worked on to achieve. Due to limited staffing we are having difficulty meeting the agreed upon deadlines. We wish to set up a meeting with your Contaminated Sites Office to discuss future deadlines. Tank 26 at Building 786 Driver's Training, Tank 57 at Bldg. 39600, Site Summit arescheduled for removal on or before August 31, 1994. Please find attached the Corrective Action Report prepared by the CORPS for soil piles 3B, 4, 5, 9, 10, 11, 12, and 13 that were thermally treated by Little Susitna (Co.). The CAR for the soil piles treated by Oil Spill Consultants is also attached.

Action Date: 3/16/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the Former Building 786 GW Monitoring Report May & September 2009. GRO was detected in six of the eight wells sampled in 2009, with concentrations ranging from 31.6J &181;g/L detected in the May sample from AP-5001 to 67.9 &181;g/L reported in the October 1 sample from AP-5007. These measured concentrations are less than the ADEC GW cleanup level of 1,300 &181;g/L.DRO was detected in four wells sampled during the 2009 sampling events, with concentrations ranging from 961 &181;g/L at AP-5008 in May to 29,500 &181;g/L at AP-5007 on October 1. The DRO concentrations detected in the spring & fall samples (6,600 &181;g/L & 2,670 &181;g/L, respectively) from AP-5001 & the 29,500 &181;g/L DRO concentration reported in the fall sample from AP-5007 exceed the ADEC GW cleanup level of 1,500 &181;g/L.DRO contamination has been the most persistent compound detected at Former Building 786. DRO was detected in four of the eight wells sampled during the 2009 sampling events. DRO concentrations in two wells were greater than the cleanup level during at least one of the two sampling events conducted in 2009. Concentrations of DRO at the site have generally decreased over time.ConclusionsDRO remains the primary contaminant of concern at the Former Building 786 site. DRO concentrations in two wells (AP-5001 & AP-5007) exceeded the ADEC 18 AAC 745.35 Table C Cleanup Criterion for this analyte. In general, the remaining wells had decreases in DRO concentrations between October 2005 & October 2009. Three PAH & four VOC compounds were detected in two Former Building 786 monitoring wells. These detections did not exceed ADEC 18 AAC 745.35 Table C Cleanup Criteria.Sentinel well AP-4536 lies at the northwest perimeter of the plume. The sample from well AP-4536 set a new historic high for GRO concentration in September 2009, but at a concentration less than the cleanup level.See site file for additional information.

Action Date: 3/16/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: May & September 2009 GW Report dated December 2010 received on March 16, 2011. Groundwater sampling activities at Former Building 786 were conducted for the U.S. ArmyDirectorate of Public Works (DPW) during 2009 under United States Army Corps of Engineers(USACE) Contract Number W911KB-08-D-0005.Well AP-5009 was not sampled during the

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

September 2009 monitoring event because the wellcasing had been damaged during the construction activities.GRO was detected in six of the eight wells sampled in 2009, with concentrations ranging from31.6J &181;g/L detected in the May sample from AP-5001 to 67.9 &181;g/L reported in the October 1sample from AP-5007. These measured concentrations are less than the ADEC groundwatercleanup level of 1,300 &181;g/L.DRO was detected in four wells sampled during the 2009 sampling events, with concentrationsranging from 961 &181;g/L at AP-5008 in May to 29,500 &181;g/L at AP-5007 on October 1. The DROconcentrations detected in the spring and fall samples (6,600 &181;g/L and 2,670 &181;g/L, respectively)from AP-5001 and the 29,500 &181;g/L DRO concentration reported in the fall sample from AP-5007 exceed the ADEC groundwater cleanup level of 1,500 &181;g/L.VOC constituent concentrations reported during the current sampling events are as follows,although these concentrations are less than the cleanup criteria:Acetone was detected in one of the eight wells sampled in May 2009 at a concentration of3.54J &181;g/L at AP-5001. Acetone was not detected in the seven sampled wells during the fall sampling event.Carbon tetrachloride was detected in one well (AP-4535) during the 2009 sampling events. Carbon tetrachloride concentrations of 0.670J &181;g/L and 0.380J &181;g/L were detected in the samples collected from well AP-4535 in May and September, respectively.Chloroform was detected in two wells, AP-4529 and AP-4535, during the May and September sampling events. The maximum chloroform concentration of 1.61 &181;g/L was detected in the sample from AP-4535.Fluorene was detected in samples from wells AP-5001 and AP-5007 during the 2009 sampling events. Fluorene was reported in the May (0.106 &181;g/L) and September (0.293 &181;g/L) samples from AP-5001. The October 1 sample from AP-5007 also contained 0.394J &181;g/L fluorene.PAH constituent concentrations reported during the current sampling events are as follows,although these concentrations are less than the cleanup criteria: Anthracene (0.316J &181;g/L) was reported only in the October 1 sample collected from AP-5007.Naphthalene concentrations of 0.0924J &181;g/L and 0.0517J &181;g/L were reported in the September samples collected from AP-5001 and AP-5008.Phenanthrene concentrations of 0.0415J &181;g/L and 0.308 &181;g/L were detected in the fall samples collected from AP-5001 and AP-5007, respectively.

Action Date: 3/1/2006
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Groundwater Monitoring Report Former Bldg. 786, Fort Richardson, AK December 2005 Contract W911KB-04-P-0091. Staff agreed with conclusions of report and requests reference for 18 AAC 75 be updated to reflect the as amended date to October 16, 2005 not May 26, 2004. GRO was not detected during the October 2005 sampling event. DRO was detected in all 8 wells during the October 2005 sampling event ranging from 188 ug/L at AP-4535 to 3,620 ug/L at AP-5007. DRO remains the primary contaminant at Former Building 786. Only one well, AP-5007 exceeded the ADEC 18 AAC 75.345 Table C Cleanup criteria for this analyte. Sentinel wells AP-4537 and AP-4536 lie at the northwest perimeter of the plume. These wells have had no increase in detections. *NOTE AP-5001 had 249 mg/L DRO in May/June 2005 and decrease to 1.1 mg/L in less than four months time. This could be due to a raising of the water table level and thus dilution of contamination that was present during a time of

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

lower water table levels. (80.4 ft. depth to water in October 2004 to 77.1 ft. depth to water in October 2005.)

Action Date: 2/9/1994
Action: Enforcement Action
DEC Staff: Janice Adair
Action Description: Compliance advisory signed by Janice Adair (Regional Administrator) sent to Army in reference to Fort Richardson UST compliance agreement for Tank 26 at Building 786. This advisory is being sent to notify the Army of its failure to comply, in a timely manner, with the Underground Storage Tank (UST) Compliance Agreement (agreement) Upgrading of USTs (Para. 25) and Free Product Recovery and Soil Remediation (Para. 40). In an effort to keep the working relationship that the Army and the department have established, the department would like to move forward with the agreement's intent and goals, which is to come into compliance with the UST regulations. A review of our records did not produce any information indicating the Army has complied with closure or upgrade requirements, outlined in Attachment D, for the following tanks and expected dates: UST 26, Bldg 786 Driver's Training 9/30/93, USTs 40 & 41, Bldg 979 POL Gas Station, 9/30/93, UST 57, Bldg 39600, Site Summit, 9/30/93, UST 92, Bldg 732 Resrv. Motor Pool 9/30/93. Attachment I Petroleum Contaminated Soil Stockpiles- The Army has not submitted a final corrective action report for each site as required by 18 AAC 78.340. Soil Pile (SP) and expected date of completion was 10/30/1993: SP 1 Bldg 8102 Arctic Valley, SP 3B Bldg. 796 Vehicle Maintenance, SP 4 Bldg. 908S 1117th Sig. Batt., SP 5 Bldg. 908N 1117th Sig. Batt., SP 6 Bldg 702 Gas Pump Bldg., SP 7 Flying Club, SP 8 Bldg 733, SP 9 Bldg 798 Motor Pool, SP 10 Bldg 782 Gas Station, SP 11 Fuel Depot, SP 12 Bldg 47622 Bryant Airfield, SP 13, and SP 15 Bldg 55804 Ammo Area A.

Action Date: 2/6/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Decision document for Bldg. 762 & 786 (TU058) received. DRO is identified as the COC in soil and groundwater for TU058.The selected remedy for TU058 is NA & LUCs for GW & LUCs for soil. This remedy was selected because DRO remains in soil & GW at this site above the following ADEC Table B2 Method Two soil & Table C Method Two GW cleanup levels:??? DRO in soil ??? 250 mg/kg??? DRO in GW ??? 1,500 &181;g/LAnnual GW monitoring & evaluation of NA will continue at wells included in the JBER GW Monitoring Program until DRO is below the GW cleanup level. Monitoring wells for the site included in the GW monitoring program may be adjusted with ADEC approval & as supported by annual LTM results. Bladder pumps will also be installed as necessary to ensure that GW samples are not impacted by the presence of a petroleum sheen.LUCs at TU058 will restrict soil excavation, transport of materials offsite, & use of GW until DRO is below soil & GW cleanup levels. LUCs are an integral part of the selected remedy. The LUCs are designed to prevent activities that could affect the performance of the other components of the selected remedy, to prevent the migration of contaminants in GW, & to limit resource use & prevent or control exposure at TU058 to protect human health & the environment. JBER is responsible for implementing (to the degree controls are not already in place), monitoring, maintaining, & reporting the identified controls. JBER shall seek prior concurrence from ADEC to (a) terminate LUCs, or (b) modify

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

current land use(s). In addition, JBER shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs, or any action that may alter or is inconsistent with the land use assumptions or land uses described in this decision document.JBER will provide notice to ADEC at least 6 months prior to any transfer or sale of TU058, including transfers to private, state, or local entities, so that ADEC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs.See site file for additional information.

Action Date: 2/24/1998
Action: Site Added to Database
DEC Staff: Bill Petrik
Action Description: QA\\QC revealed that this action was not previously added.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 12/12/2005
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 2004 Annual report for groundwater monitoring received. GRO and BTEX were below cleanup levels in groundwater. DRO was detected in six wells sampled in August with concentrations ranging from 371 ug/L at AP-4536 to 69,300 ug/L at AP-5001.DRO was detected in five wells in October with concentrations ranging from 545 ug/L at AP-4529 to 35,800 ug/L at AP-5001.Monitoring wells AP-5001, AP-5007, and AP-4529 were sampled on 26 August 2004 due to insufficient water in August 9, 2004. A second sampling event was conducted from 13-14 October, 2004. Samples could not be collected from AP-5009 during August due to insufficient groundwater. Groundwater depths were measured in feet from top of casing (FTOC). Global Positioning Satellite (GPS) locations were collected for each well sampled.Wells located in the southeast area of the projected plume exhibited a decrease of DRO concentrations from 2003 to 2004. The largest decrease in DRO concentrations was AP-5009.Well AP-4537 revealed a slight increase in PAH compounds in the northern region of the plume area. No other wells demonstrated an increase in PAH on the site.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place. 2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

(SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites. 3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites: a. will include specific limitations and controls on such work; b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements; c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources. 5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely. 6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/30/1950
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1950 air photo, the site was a wooded lot with the exception of a small clearing to the south of the future location of Building 786. The clearing shown in the 1950 photo was possibly the start of an

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

effort to prepare the land for further development. To the west of the site, a large number of Quonset huts were located in a support unit. A vehicle wash area was located between the Quonset huts and the site.

Action Date: 11/29/1973
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The 1973 aerial photo shows that the Quonset huts and support buildings had been removed from the site and a new building, Building 786, had been constructed.

Action Date: 11/29/1957
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A 1957 aerial photo indicates that the Quonset huts located to the west of the site in 1950 have been removed. About 30 Quonset huts, a command building, and two other support buildings had been constructed at the site. No historical information is available to describe the work conducted at the site or items stored in the Quonset huts.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair) and U.S. Army Colonel U.S. Army Garrison Commander. Purpose of the agreement is to bring Fort Richardson into compliance with Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding the Alaska Department of Military and Veterans Affairs and Army National Guard USTs). Modifications, extensions, and/or actions taken pursuant to paragraphs 9-10 (Schedule of Actions); 11-18 (Review and Comment on Documents); 19-22 (Subsequent Modification); 51 (progress Reports); 63-66 (Sampling and DatalDocument Availability); 72-77 (ExtensionslForce Majeure) and the USTMP may be effected by the agreement of the Project Managers. Except as specifically provided for in this Agreement, the terms of this Agreement may only be modified by the written agreement of the parties. The Anny agrees to modify this Agreement to contain new UST sites at the request of ADEC.Listed in Attachment D requiring either an upgrade or closure for UST 26.

Action Date: 1/10/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Fall 2010 GW Monitoring report (Draft) dated May 2011 received on December 30, 2011. GRO concentrations less than the cleanup level were detected in samples from three of the fivewells sampled during the current sampling event at Former Building 786. Except for the GROconcentration reported in a sample from well AP-5007 in September 2001, GRO concentrationsgreater than the cleanup level have not been observed at the site to date.DRO contamination has been the most

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

persistent compound detected at Former Building 786. DRO was detected in four of the five wells sampled during the 2010 sampling event. The 2010 DRO concentrations in samples from two wells, wells AP-5001 and AP-5007, are greater than the cleanup level. The current DRO concentrations in both wells (AP-5001 and AP-5007) have increased since the Fall 2009 sampling event.VOC constituents were detected in samples from two of the five wells sampled during the 2010monitoring event. Carbon disulfide was detected in the sample from AP-5001, and ethylbenzene, styrene, and xylenes were detected in the sample from AP-5007. The reported VOC constituent concentrations are less than the ADEC cleanup levels. At least on PAH constituent was detected in four of the five sampled wells at concentrations less than the ADEC cleanup criteria. The 2010 results showed an increase in PAH concentrations relative to the previous samplingevents. 1- and 2-methylnapthlene, phenanthrene and pyrene were detected for the first time inthe sample from AP-4536. Phenanthrene was also reported in samples from wells AP-5001, AP-5007, and AP-5008, with the current phenanthrene concentrations in AP-5001 and AP-5007 areat the greatest levels recorded in these wells.ConclusionsDRO remains the primary contaminant of concern at the Former Building 786 site. DRO concentrations in samples from two wells (AP-5001 and AP-5007) exceeded the ADEC 18 AAC 75.345 Table C Cleanup Criterion for this analyte. Four VOC and five PAH compounds were detected in wells within the estimated contamination plume during the current sampling event at Former Building 786. These detections did not exceed ADEC 18 AAC 75.345 Table C Cleanup Criteria.DRO and five PAH analytes were detected in the sample from well AP-4536, which is a sentinelwell located northwest of the contamination plume. The DRO and PAH constituent concentrations measured in the sample from Well AP-4536 are less than the cleanup levels. Consistent with the most recent sampling results, target analytes were not detected in the sample from AP-4537.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU058 Former Bldg 786 UST 26
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported
Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU058 Former Bldg 786 UST 26
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26 (Continued) **S106425042**

Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 786 UST 26
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 786 UST 26
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

I40 **JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20** **SHWS S110144080**
WSW **EAST OF C & 2ND STREETS FTRS-58 FAC ID 0-00788, FORMERLY FOR** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.258 mi.
1364 ft. **Site 4 of 4 in cluster I**

Relative: SHWS:
Lower
File Number: 2102.26.007
Actual: Staff: Not reported
318 ft. Facility Status: Cleanup Complete
Latitude: 61.260712
Longitude: -149.686115
Hazard ID: 2754
Problem: This site now consists of the soil and groundwater contamination over a large area that was detected during the investigation specific to USTs 19 and 20 (Bldg 762). Sampling in 2002, detected that the DRO contamination extends over a 3-acre area and to depth 80 ft bgs. Bldg 762 was the site of a GSA s gasoline station and is located east of the intersection of C and Second Streets in the main industrial area of Fort Richardson. A bioventing/air sparging system was installed in 1994. The interim remedial report showed no progress and the system was abandoned. The 2 tanks were removed in July 1995. A leachability study was completed in 1997 and recommended closure of this site. All petroleum contamination from underground storage tank has been dealt with to the maximum extent practicable, no further action required or planned. Institutional controls are in place and will continue. Site FTRS-058 Bldg. 762 UST 19 & 20. Site has been capped with asphalt to eliminate dust exposure and limit rain infiltration. Building 762 has

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

been replaced with new fueling site at Building 992. UST Facility ID 788. EPA ID: AK6214522157USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/30/1992
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Historically, the general site area has supported military operations since at least 1950. Building No. 762 had served as a driver???s training facility and was heated with heating oil stored in a 500-gallon underground storage tank (UST). Building 762 was used as a vehicle fuel station by the U.S. Army beginning in the 1950s. In September 1992, the diesel UST (19) failed a tightness test.
Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.
Action Date:	8/4/2010
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Draft Post Wide Work Plan, Fort Richardson, AK dated July 2010. 4.4 UST/AST Removal and Decommissioning Page 4-3The text states: ???A certified UST closure specialist will oversee all UST/AST decommissioning/closure activities??? ADEC requests the Army use the following text instead: ???An ADEC-certified UST closure specialist, with current certification, will perform or directly supervise all UST/AST decommissioning/closure activities.??? The requirements of 18 AAC 78.400 does not prohibit the employment of an uncertified person on the job site if a certified person exercises responsible supervisory control and is physically present onsite during the installation, repair, closure, reconfiguration, or while the tank tightness test, cathodic protection test, or inspection is being conducted.4.4.2 Removal and Cleaning of Tanks and Pipeline Page 4-4ADEC will require the Army, to comply with 18 AAC 78.085 (c) which states: ???The owner or operator shall document the name of the disposal firm, the disposal method, and the disposal location for all liquids, sludges, and UST components, including tanks, piping, and equipment.???4.4.3 Excavation of Petroleum-Contaminated Soil Page 4-5The text states: ???Once contaminated soil volumes and concentrations have been estimated, a management decision will be made as to the best approach to mitigate risks associated with contaminated soil.??? As the lead regulatory agency for petroleum contamination on Post, ADEC will require the Army to obtain concurrence from ADEC for any management decision as to the ???best approach??? to comply with 18 AAC 75 and 18 AAC 78 regulatory requirements associated with the petroleum

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

contaminated soils. For those FTR sites with non-petroleum contaminated soils, EPA concurrence will also be required.

Action Date: 8/29/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.2592 N latitude -149.6957 W longitude

Action Date: 8/24/2001
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the release investigation workplan for Buildings 762 and 786. Draft Release Investigation workplan Bldg. 762/786, Contract No. DAPC49-01-F-0155 dated July 2001 and the Groundwater Sampling Program Health and Safety Program Contract No. DAPC49-01-F-0167 dated August 2001, Fort Richardson, AlaskaThe Alaska Department of Environmental Conservation (ADEC) has received the above documents for review and comment during August 2001. Below are ADEC???s comments.General CommentsADEC does not review nor comment on health and safety plans, but will keep them on file for our records. Section 5 Sampling and Analysis Plan Pages 5-1 and 5-2ADEC requests the analyses for volatile organic compounds (VOCs), specifically benzene, ethylbenzene, toluene, and total xylenes, be able to detect the action levels specified in 18 AAC 75 for soil and groundwater (0.02 mg/kg and 5 ug/L respectively). ADEC further requests the Army analyze for PCBs and pesticides during well installation. It is requested that the analyses conducted for PCBs/pesticides be obtained from each boring where the highest PID field screening reading is observed.

Action Date: 8/11/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft Site Characterization report for TU058 which includes Bldg 762 and Bldg. 786. ADEC concurs with the conclusions and recommendations mentioned in the document for CS DB Hazard IDs 2754 and 2033. Building 762 (2754) is eligible for a cleanup complete determination, however Building 786 (2033) is not. After Building 786???s groundwater sampling results have shown that Table C groundwater cleanup levels have not been exceeded, ADEC will grant a ???cleanup complete??? determination for the entire site known as TU058 which includes both Buildings 762 and 786. A partial cleanup complete determination will not be granted for TU058 by ADEC based on results for Building 786.

Action Date: 7/30/2003
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Staff met with Army project manager to discuss preliminary results of well installations at the site. It appears there is an unidentified upgradient source which historically released diesel fuel contamination to the soils. Wells installed to date, have identified a three acre area which is impacted with diesel fuel. The total vertical and horizontal extent of contamination has yet to be determined.

Action Date: 7/25/2012

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft 2-Party Agreement GW Monitoring Report received for several sites including Bldg. 59000Based on soil sample results, current and historic groundwater sampling results the following conclusions can be drawn for the Building 762 site:Soil Sample Results from Installation of the Replacement Well AP-5682 (AP-3797R):- DRO was detected at low-level concentrations and well below the 250 mg/kg ADEC cleanup level in the soil sampled at the 5 to 10, 43 to 48 and 83 to 88 foot intervals.- BTEX and other VOC constituents in the soil were either not detected or were detected at low-level concentrations below ADEC cleanup criteria.- 1,2-Dibromoethane (EDB) was not detected in the in the primary or duplicate soil sample collected from 83 to 88 feet.- 1,2-DCA was not detected in any of the three primary or one duplicate soil samples.- Lead was detected at 3.7 mg/kg in the primary and duplicate soil sample collected from 83 to 88 feet and is below the 400 mg/kg ADEC soil cleanup level for lead.Historic and 2011 groundwater sample results:- BTEX has not been detected above ADEC cleanup levels in the deep or shallow aquifer wells at the Building 762 site.- DRO has been historically present in the deep, confined aquifer at concentrations less than the 1,500 ug/L ADEC cleanup level.- DRO was detected in the newly installed shallow aquifer source area well AP-5682 (AP-3797R) at a concentration less that the 1,500 &181;g/L ADEC cleanup criteria. DRO was not detected in the downgradient shallow aquifer well AP-5038.- Chloroform was detected in the newly installed shallow aquifer source area well AP-5682 (AP-3793R) at a concentration below the 5 &181;g/L ADEC chloroform cleanup criteria. Chloroform has historically been detected in the deep aquifer downgradient well AP-5004 and in shallow aquifer downgradient well AP-5038 at concentrations well below the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release at the Building 762 site.

Action Date: 7/24/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment. The following conclusions were made regarding former Building 762 of TU058:??? Based on previous investigations and the 2013 site characterization field investigation, DRO, GRO, benzene, 1,2,4-trimethylbenzene, and xylenes were detected in soil at concentrations above project screening levels. DRO and GRO were the most frequently detected contaminants with the greatest lateral and vertical extent.??? No constituents have been detected in groundwater above 18 AAC 75.345 Table C cleanup levels since 2011.??? DRO concentrations greater than the 250 mg/kg screening level and GRO concentrations greater than the 300 mg/kg screening level in soil cover an area approximately 90 feet long by 30 feet wide, starting at a depth of 18 feet bgs and reaching a depth of approximately 30 feet bgs, for an estimated volume of 1,200 cubic yards.??? Using the HRC for contaminated soil with the source area, the cumulative carcinogenic riskand noncarcinogenic HI estimates based on both industrial and hypothetical residential exposure scenarios are below the regulatory risk standards.??? The ADEC risk criteria for bulk hydrocarbons are met for contaminated soil within the source area.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant.The following are recommended

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for former Building 762 at TU058:??? Sampling of groundwater from monitoring wells AP-5000, AP-5002, AP-5004, AP-5038, and AP-5682 associated with former Building 762 should cease as contaminant concentrations in groundwater have been below 18 AAC 75.345 Table C cleanup levels since 2011. All monitoring wells associated with former Building 762 should be decommissioned.??? Former Building 762 should be issued a ???Cleanup Complete??? designation because the site meets the soil and groundwater criteria established for site closure

Action Date: 7/15/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the Draft Work Plan Environmental RA-O & LTM & Maintenance Joint Base Elmendorf-Richardson, Alaska. The JBER-Richardson Installation Restoration Program (IRP) sites include Building 28008, Former Building 987, Building 59000, the Biathlon Range, Former Building 762, & Building 786. These are petroleum-contaminated sites within a long-term monitoring program under a two-party agreement between the U.S. Army & ADEC. The & LTM for the JBER Richardson Multiple IRP sites includes GW sample collection & analysis at six sites, replacement of damaged wells at three sites (& associated soil sample collection), installation of new wells at one site, maintenance of existing monitoring wells, & monitoring & maintenance of product collection devices at two sites.The objectives of groundwater monitoring at Former Building 762 are to:?Continue monitoring current groundwater conditions near the Former Building 762 site;-Compare monitoring results to cleanup levels; and-Allow early detection of benzene or other fuel constituents in the deeper, confined aquifer.Beginning in the 1950s, the U.S. Army used the Building 762 site as a vehicle fuel station. In September 1992, the diesel fuel UST (Number 19) failed a tightness test. An initial release investigation was performed from December 1993 into early 1994. The release investigation identified petroleum-contaminated soil to a depth of approximately 30 feet below ground surface (bgs), and benzene was detected in two soil samples at depths of 20 and 25 feet (Dames and Moore, 1994). Both USTs at the site were taken out of service in October 1994. The building, canopy, USTs, and pump islands wereremoved during summer 1995, and the site was repaved (Dames and Moore, 1996).After the location was converted to a paved parking area, a number of activities occurred at the Building 762 site (DOWL/Ogden Joint Venture, 1996). In June of 1997, monitoring well AP-3797 was installed in the shallow aquifer to a depth of 80 feet. Groundwater sampling results indicated that benzene was present at a concentration of 13 ?g/L, and gasoline range organics were present at 400 ?g/L. This well was damaged beyond repair, and in 2000, additional wells (AP-5000, AP-5002, AP-5003, and AP-5004) were installed to determine whether contamination had reached the deep, confined aquifer present around 100 feet bgs. Petroleum contamination associated with the Building 762 site was not evident in the deep aquifer at that time. Groundwater monitoring was performed again in 2004.In 2007, an additional shallow aquifer monitoring well (AP-5038) was installed to replace decommissioned well AP-5003, and groundwater samples were collected.Groundwater monitoring will be conducted at all six JBER-Richardson sites. Samples will be collected in August 2011 for all sites and again in April 2012 for Building 762 and 786 sites. Monitoring activities at

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each site will include an initial groundwater elevation survey for development of potentiometric maps, followed by groundwater sample collection.Each groundwater monitoring well will be sampled for the following analyses and methods:-DRO by AK102-VOCs by SW8260B-PAH by SW8270 SIM

Action Date: 6/9/1994
Action: Cleanup Plan Approved
DEC Staff: Louis Howard
Action Description: Proposal for bioventing/air sparging system to address petroleum contaminated soils was approved.

Action Date: 6/9/1994
Action: Leaking Underground Storage Tank Corrective Action Underway
DEC Staff: Louis Howard
Action Description: Bioventing system operated at the site from June 1994 to July 1995. The bioventing system injected both air and nutrients into the contaminated subsurface soils during that time.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review and comment. Performance ObjectiveOptimized Exit StrategyPerformance Indicators&183; Continue annual LTM and associated reporting under existing work plan&183; Complete an approved OES Plan by May 2013&183; Complete an approved PP/ROD Revision by June 2013&183; Complete an approved Characterization/Cleanup Plan by November 2013&183; Coordinate, mobilize, and execute characterization/cleanup by December 2013&183; Complete an approved Characterization/Cleanup Report in 2014&183; OES Implementation Completion Plan&183; OES Confirmation ReportPotential RiskExtent of impacted soil presenting a direct contact risk to site workers is greater thananticipated Risk MitigationExcavate additional soil as needed from the upper 15 feet bgs to eliminate direct contact risk.Date of Achieving Performance Objective2nd Quarter 2013Planned ApproachPrepare an approved Proposed Plan, ROD, and OES Plan. Coordinate, mobilize, and execute Site Characterization by installing and sampling four soil borings, install bladder pumps in two groundwater wells and sample eight existing monitoring wells. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved OES Plan to achieve SC.

Action Date: 6/30/1997
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Soil boring and developed into a monitoring well (AP-3797). Soil samples were below Level A criteria, however, water samples indicated that benzene is above GW cleanup level of 5 ug/L. ADEC requested additional monitoring wells (minimum of 2) be installed. Benzene was at 13 ug/L and 14 ug/L in a duplicate from well AP37-97.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft Project Management Plan.Page

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2-31Failure to obtain work plan approval before implementing site work is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). Table 6-3JBER-ElmendorfGeneral commentsVadose zone soils shall not exceed maximum allowable levels for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In addition, sites with existing GW contamination above Table C cleanup levels will require that migration to GW cleanup levels be used for soil and ICs will be required. Once GW is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide???), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.7.1.2 Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following: ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed.Independent QA Oversight on Performance Based Contracts: The site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements. See site file for additional information.

Action Date: 6/21/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the groundwater monitoring report for building 762 (December 2008).

Action Date: 6/21/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the Draft Building 762 May and September 2009 Groundwater Monitoring Report. Conclusions Page 5-1ADEC concurs with the conclusions presented in this section. If COCs are below

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cleanup levels in the groundwater (both the deep and unconfined aquifers) for two consecutive years of groundwater sampling, then perhaps it is time to consider a cleanup complete determination with institutional controls for soil at Building 762 if soil is contaminated above applicable cleanup levels. During the last round of groundwater monitoring, samples will be collected and analyzed for all constituents that exceeded maximum contaminant levels (MCL) during the previous investigations. These results will be evaluated before a final determination is made that groundwater meets all cleanup requirements.

Action Date: 6/13/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1997, shallow aquifer monitoring well AP-3797 was installed to a depth of 80 feet bgs(Dowl/Ogden Joint Venture). Benzene was detected in groundwater at a concentration of 13 &181;g/L(above ADEC???s Method Two groundwater cleanup level of 5 &181;g/L), and gasoline-range organics(GRO) was detected at 400 &181;g/L (compared with ADEC???s Method Two groundwater cleanuplevel of 2,200 &181;g/L).

Action Date: 6/10/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Letter Work Plan received for review and comment.This letter work plan serves as an addendum to the 2013 Joint Base Elmendorf-Richardson (JBER) Basewide Uniform Federal Policy ??? Quality Assurance Project Plan (UFP-QAPP) (USAF, 2013) for annual long-term monitoring and associated field activities at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and State regulated sites.This letter work plan includes three tables which list the sites, sampling locations, and constituents to be collected and analyzed during 2013. Tables 1 and 2 are for sites CERCLA and State sites, respectively, on JBER-Elmendorf, and Table 3 is for sites on JBER-Richardson.Passive free-product recovery (of measurable LNAPL) with sorbent socks will continue at Sites TU058, TU101, and TU103 TU058 in accordance with the Final Work Plan Environmental Remedial Action-Operations and Long-Term Monitoring and Maintenance (USAF, 2011). Wells identified in Table 3 will be inspected monthly, free-product measurements will be collected and recorded at each well, socks will be replaced, and spent absorbent socks disposed of (as necessary).

Action Date: 6/1/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff received the Former Building 762 Groundwater Monitoring Report December 2008. Groundwater monitoring was conducted at Bldg. 762 in December 2008 and included collecting samples from two of the four monitoring wells and analyzing them for volatile organic compounds (VOCs), diesel-range organics (DRO), and polynuclear aromatic hydrocarbons (PAH).Based on historical and current data, through the December 2008 monitoring event, the following conclusions can be made:Benzene, toluene, ethylbenzene, or xylene has not been detected in the four on site deep or shallow aquifer wells at the Bldg. 762 site.Based on historic and current groundwater sampling results, the following conclusions canbe drawn:BTEX has not been detected in the

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deep or shallow aquifer wells at the Bldg. 762 site.DRO has been historically present in the deep, confined aquifer at concentrations less than the 1,500 &181;g/L ADEC cleanup level.Chloroform has been detected in the deep, confined aquifer in downgradient well AP-5004 and on site well AP-5002 at concentrations below the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.Carbon tetrachloride has been detected in the deep, confined aquifer in downgradient well AP-5004 and in the shallow, unconfined aquifer in AP-5038 at concentrations below the ADEC cleanup levels. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.PCE was detected in all the deep, confined aquifer wells (AP-5000, AP-5002, and AP-5004) at concentrations below the ADEC cleanup levels during the October 2007 monitoring event. These detections were likely unrelated to the historic diesel fuel release at the Bldg. 762 site. PCE was not detected in the December 2008 samples at the Bldg. 762 site.Contaminants of concern in the unconfined aquifer could not be evaluated because wellsconstructed within the source area have been decommissioned.DRO has been detected historically in the deep, confined aquifer at concentrations lessthan the Alaska Department of Environmental Conservation (ADEC) cleanup level of 1,500 micrograms per liter (&181;g/L).Chloroform has been detected in the deep, confined aquifer in downgradient well AP-5004 and on site well AP-5002 at concentrations less than the ADEC cleanup levels. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.Carbon tetrachloride has been detected in the deep, confined aquifer in downgradient well AP-5004 and in the shallow, unconfined aquifer in well AP-5038 at concentrations less than the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.Tetrachloroethene has been detected in the three deep, confined aquifer wells (AP-5000,AP-5002, and AP-5004) at concentrations less than the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.Contaminants of concern in the unconfined aquifer could not be evaluated because wellsconstructed within the source area have been decommissioned.

Action Date: 5/21/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: The hydrocarbon risk calculator (HRC) was used to evaluate risk from petroleum contamination at TU058. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, & other compounds dissolved in petroleum???with the intention & purpose of assessing human health risk from this type of contamination.The estimated rounded cumulative cancer risk at TU058 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (8 x 10-7 & 1 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at TU058 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (0.1 Bldg. 762/0.001 Bldg 786 & 0.2 Bldg 762/0.002 Bldg. 786 respectively) is below the regulatory risk standard of 1. TU058 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO/GRO aromatic & aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use

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scenario.An ecoscoping form was completed for TU058 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed & that the TU058 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that TU058 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU058 in the Contaminated Sites Database.

Action Date: 5/19/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft Annual Groundwater Monitoring Report for State Sites which includes this site. Main comment was concurring with the request to discontinue groundwater monitoring. However, prior to any proposed decommissioning, JBER must ensure that the monitoring wells associated with Buildings 762 and 786 be maintained in case they are needed for compliance program monitoring, 1,4-Dioxane monitoring of TCE sources as either an upgradient well or downgradient sentry wells or for PFOS/PFOA monitoring for PFC sources as either an upgradient well or downgradient sentry wells in the future.

Action Date: 5/1/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: By 1996, the success of the bioventing operation was deemed questionable. A leachability assessment was conducted to determine if groundwater could be impacted by the remaining petroleum contaminants. Modeling showed that benzene would reach ground water at 100 feet below ground surface within 100 year time span but remain below MCL of 5 ug/L.An in-situ treatability study using bioventing did not effect contaminant levels at the site, and was discontinued. Analysis of the results from the study indicates in-situ soil remediation is ineffectual at this site. Analysis indicates excavation, removal, of contaminated soils is not feasible due to the depth of contamination and safety hazards associated with such large excavations. Further, because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five (5) years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date: 4/30/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Annual Monitoring report received for review and comment.Historical sampling results for TU058 have indicated fuel constituents present in groundwater above State cleanup levels in 18 AAC 75 Table C and fuel constituents in soil above 18 AAC 75 Tables B1 and B2. DRO, GRO, and BTEX constituents have been historically

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detected at former Building 762, with only benzene concentrations exceeding cleanup levels; benzene has not been detected above cleanup levels since 2004. At former Building 786, GRO has historically exceeded groundwater cleanup criteria, and DRO concentrations have historically been above both soil and groundwater cleanup levels. Free product sheen has been historically observed (or inferred based on groundwater analytical results) at AP-5001 and AP-5007. Because previous groundwater samples from these wells were impacted by the presence of the free product, permanent bladder pumps were installed in November 2012 in an attempt to collect samples representative of actual groundwater concentrations.In August and November 2012, groundwater monitoring wells at former Building 762 were sampled for VOCs, DRO, and PAHs; groundwater monitoring wells at former Building 786 were sampled for DRO, GRO, VOCs, and PAHs; samples from select wells were analyzed for EPH.An OES Plan is in development for TU058 under the current PBR contract. Proposed actions include additional characterization, analysis of site risk using the HRC calculator, removal of free product from source area wells, and (if needed) excavation of contaminated soil. Annual groundwater monitoring and evaluation of natural attenuation will continue at wells included in the JBER Groundwater Monitoring Program until concentrations of DRO are below groundwater cleanup levels. Monitoring wells for the site included in the groundwater monitoring program may be adjusted with ADEC approval and as supported by annual long-term monitoring results.
Not reported

Action Date: 4/30/2001
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft release investigation for Building 762. Draft Release Investigation Bldg. 762 Fort Richardson, dated March 2001 The Alaska Department of Environmental Conservation (ADEC) has received the above document on April 12, 2001 for review and comment. Below are ADEC???s comments.General CommentsThe cover letter states that comments are expected back to the Army by May 9, 2001. ADEC wishes to state that it has thirty (30) days to comment from date of receipt of draft documents and not from the time the Army mails them out for review. ADEC interprets the deadline for comments on the document to be close of business May 12, 2001. See November 1993 UST Compliance Agreement Page 3 Review & Comment on Documents 12. Unless the Parties mutually agree to another time period, all draft documents shall be subject to a thirty (30) day period for review and comment.5.1 Conclusions Pages 5-1 and 5-2ADEC concurs that the chlorinated contamination found in the groundwater did not come from the two underground storage tanks at the site. However, ADEC believes the GRO and DRO groundwater contamination are more than likely associated with the site. Historically speaking, there was a September 1992 tank tightness testing of diesel fuel UST 19 which showed it had failed its tightness testing and UST Release Investigation ???A??? showed GRO at 900 mg/kg at 20 ft. bgs in boring 15. DEC concurs with continued monitoring of groundwater well AP-3797 for GRO and BTEX for Bldg. 762 and GRO, DRO, VOCs at Bldg. 786 (well AP-5001).

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik

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Action Description:	Ranking action added now because it was not added when the site was originally ranked.
Action Date:	4/2/2004
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and concurred with the recommendation to continue groundwater monitoring for benzene and gasoline range organics to try to establish a trend for contaminant concentrations.
Action Date:	4/12/1995
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Bldg. 762 USTs 19 & 20 and 47641 UST 94 Site Assessment Waiver RequestThe Alaska Department of Environmental Conservation, Defense Facilities Oversight Group (ADEC), has received a request for site assessment waiver for the above sites. ADEC will defer the requirement pending final confinnation sampling to verify level A cleanup criteria has been met by the in-situ bioventing remedial action. If level A criteria has been met, then no site assessment will be required. If level A cleanup criteria has not been met from this particular remedial action in a timely manner agreed to by ADEC and the Army, then a site assessment may be requested by the Department and another corrective action plan will be required to be submitted for review.
Action Date:	4/11/2002
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Draft Site Investigation Building 762/786 Fort Richardson, Alaska February 2002 Contract Number DAPC49-02-F-0155. Staff concurred that additional ground-penetrating radar (GPR) and electromagnetic (EM) survey work within an expanded area around the Building 786 site be conducted. Based on the results from PCB and pesticide analyses, it appears that further analyses for these two classes of contaminants will not be necessary. Delineation of the groundwater plume downgradient of the site is necessary. Staff agreed that least two wells should be placed downgradient of AP-5009. Staff concurred that only GRO, DRO, BTEX and metals will be the only contaminants of concern for future groundwater sampling.
Action Date:	3/30/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	In 2000, additional monitoring wells AP-5000, AP-5002, AP-5003, and AP-5004 were installedto determine whether contamination had reached the deep, confined aquifer that is present atapproximately 100 feet bgs. Results indicated petroleum contamination was not present in thedeep aquifer.
Action Date:	3/13/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft 2013 Annual report received for review and comment. The overall project objectives included collecting sufficient data to: ??? Monitor concentrations of contaminants of concern (COCs) at each site with sufficient precision and accuracy to evaluate their

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concentrations with respect to cleanup goals. ??? Identify potentially toxic and/or mobile transformation products. ??? Verify individual plume characteristics, such as downgradient, lateral, or vertical expansion or retraction. ??? Evaluate groundwater flow directions and hydraulic gradients to monitor plume migration and assess contaminant sources. ??? Evaluate the effectiveness of land use controls/ institutional controls (LUCs/ICs) to protect human health and the environment. ??? Identify and repair damaged monitoring wells to protect groundwater. ??? Identify monitoring wells that are no longer needed or are damaged beyond repair. In August 2013, groundwater monitoring wells at former Building 762 and former Building 786were sampled for DRO, GRO, RRO, VOCs, and PAH. No analytes were detected above 18 AAC75.345 Table C cleanup levels at either site. Sheen was not observed at any locations during the2013 sampling event; however, a slight fuel-like odor was observed at AP-5007 and AP-5008.No constituents were detected in groundwater above 18 AAC 75.345 Table C cleanup levels atthe former Building 786 during this sample round. However, DRO was detected above itsTable C cleanup level at well AP-5001 in 2012. Therefore, it is recommended that annualgroundwater monitoring at the former Building 786 site is continued for at least one more year.If no analytes are detected in groundwater above Table C cleanup levels during the 2014sampling round, cessation of groundwater monitoring at the site should be considered.

Action Date: 3/13/2006
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff received and reviewed the Building 762 Draft Groundwater Monitoring Report and approved the document as submitted.

Action Date: 2/6/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Decision document for Bldg. 762 & 786 (TU058) received. The selected remedy for TU058 is natural attenuation & LUCs for GW & LUCs for soil. This remedy was selected because DRO remains in soil & GW at this site above the following ADEC Table B2 Method Two soil & Table C Method Two GW cleanup levels:??? DRO in soil ??? 250 mg/kg??? DRO in GW ??? 1,500 &181;g/LAnnual GW monitoring & evaluation of natural attenuation will continue at wells included in the JBER GW Monitoring Program until concentrations of DRO are below the GW cleanup level. Monitoring wells for the site included in the GW monitoring program may be adjusted with ADEC approval & as supported by annual long-term monitoring results. Bladder pumps will also be installed as necessary to ensure that GW samples are not impacted by the presence of a petroleum sheen.LUCs at TU058 will restrict soil excavation, transport of materials offsite, & use of GW until concentrations of DRO are below soil & GW cleanup levels. LUCs are an integral part of the selected remedy. The LUCs are designed to prevent activities that could affect the performance of the other components of the selected remedy, to prevent the migration of contaminants in GW, & to limit resource use & prevent or control exposure at TU058 to protect human health & the environment. JBER is responsible for implementing (to the degree controls are not already in place), monitoring, maintaining, & reporting the identified controls. JBER shall seek prior concurrence from ADEC to (a)

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terminate LUCs, or (b) modify current land use(s). In addition, JBER shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs, or any action that may alter or is inconsistent with the land use assumptions or land uses described in this decision document.JBER will provide notice to ADEC at least 6 months prior to any transfer or sale of TU058, including transfers to private, state, or local entities, so that ADEC can be involved in discussions to ensure that appropriate provisions are included in the transfer terms or conveyance documents to maintain effective LUCs. If it is not possible for JBER to notify ADEC at least 6 months prior to any transfer or sale, then JBER will notify ADEC as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to LUCs.See site file for additional information.

Action Date: 2/27/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed & commented on the draft decision document.1-2 TableList the specific cleanup levels for each site. HRC (variation on Method 3), online calculator Method 3, & Method 2 are not all applicable at the same site. Pick one for the site-specific decision document. The cleanup level from 18 AAC 75.341 Method 2, Tables B1 & B2, Under 40-Inch Zone Table B1 Method Two: use the direct contact, outdoor inhalation or migration to GW cleanup level, whichever is more stringent).Table B2 Method Two use the ingestion, inhalation, or migration to GW, whichever is more stringent. Table B1 or B2 that applies at a site is the most stringent of the applicable exposure pathway-specific cleanup levels based on direct contact, inhalation, or migration to GW [Notes to Tables B1 & B2 18 AAC 75 (April 2012)]. 2.1, 2.2 & 2.32.0 Statement of Basis & PurposeWhile CERCLA excludes petroleum from the definition of a hazardous substance, ADEC regulations & State of Alaska statutes do not make this distinction.New Sections: 2.1 Final VerficationNot applicable for TU058, but for ???cleanup complete??? without ICs sites, list the borings or monitoring wells installed, when they were installed & sampled, the number of samples & number of times & years GW samples were found to be below Table C cleanup levels. Once GW contamination is below Table C for a period of time [per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (See Attachment 1 Memo to the Site File for OUs 4, 5, & 6 September 2003)??? e.g. two rounds of annual GW monitoring], at that time, no further action for GW will be required. During the final round of GW monitoring, samples will be collected & analyzed for all constituents (e.g., but not limited to: benzene & DRO for Building 762 & GRO & DRO for Building 786) that exceeded MCLs or Table C cleanup levels during the previous site investigations & subsequent GW monitoring events. These results will be evaluated before a final determination is made that GW meets all cleanup levels. This comment applies to ALL JBER-R & JBER-E PBER & non-PBR sites. See site file for additional information.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

Action Date: 2/23/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to Army RE: December 8, 1993 Work Plan UST Release Investigation A Seven Fuel Tank Locations Contract No. DACA 85-93-D-008, Dames and Moore. Staff received the document on January 28, 1994. It contains the plans for release investigation work at: Bldg. 712, 762, 782, 8102, 27004, 47622, and 47633. ADEC, DPW and the contractor have previously met at our office and discussed the draft work plan proposals for this investigation. The document appears to have addressed ADEC's concerns. Being that the field work has already been conducted, the department will not provide review and approval of the work plan, but will review the draft release investigation report which is to be submitted within 100 days of completion of field work.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Site added

Action Date: 12/30/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Fall 2010 GW Monitoring Report draft dated May 2011 received December 30, 2011. Results from the 2000 monitoring event indicated the presence of chloroform in samples from AP-5002 (2.5 &181;g/L) and AP-5004 (2.5 &181;g/L). In later monitoring events, chloroform concentrations reduced to non-detect in AP-5002. Chloroform concentrations of 1.42 &181;g/L, 1.48 &181;g/L, and 1.23 &181;g/L were reported in well AP-5004 during the December 2008, May 2009, and September 2009 sampling events, respectively.- Carbon tetrachloride was first detected in AP-5004 (0.55 &181;g/L [value estimated high]) during the July 2007 monitoring event. Carbon tetrachloride was again detected in the samples from well AP-5004 in December 2008 (0.85 &181;g/L [estimated value]), May 2009 (0.410 &181;g/L [estimated value]), and November 2010 (0.580 &181;g/L [estimated value]). Carbon tetrachloride was also detected in the shallow, unconfined aquifer well AP-5038 during the December 2008 (1.89 &181;g/L), May 2009 (1.24 &181;g/L), September 2009 (1.26 &181;g/L), and November 2010 (0.370 &181;g/L [estimated value]) sampling events.- Dichlorodifluoromethane was detected in the November 2010 sample from deep, confined aquifer well AP-5004 (0.370 &181;g/L [estimated value].- PCE has been detected once in samples collected from the deep aquifer wells AP-5000, AP-5002, and AP-5004 at estimated concentrations of 0.29 &181;g/L, 0.34 &181;g/L, and 0.30J &181;g/L, respectively, during the October 2007 monitoring event. PCE was not detected in the two wells (AP-5004 and AP-5038) sampled in December 2008 or the on-site wells sampled during the 2009 and 2010 monitoring events.Based on historic and current groundwater sampling results, the following conclusions canbe drawn: - BTEX has not been detected in the deep or shallow aquifer wells at the Bldg. 762 site.- DRO has been historically present in the deep, confined aquifer at concentrations less than the 1,500 &181;g/L ADEC cleanup level.- Chloroform has been detected in the deep, confined aquifer in downgradient well AP-5004 and on site well AP-5002 at concentrations below the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

at the Bldg. 762 site.- Carbon tetrachloride has been detected in the deep, confined aquifer in downgradient well AP-5004 and in the shallow, unconfined aquifer well AP-5038 at concentrations below the ADEC cleanup level. These detections are likely unrelated to the historic diesel fuel release at the Bldg. 762 site.- Dichlorodifluoromethane was detected in the November 2010 sample from deep, confined aquifer well AP-5004 (0.370 &181;g/L [estimated value]. The reported dichlorodifluoromethane concentration is less than the ADEC cleanup level.- PCE was detected in all the deep, confined aquifer wells (AP-5000, AP-5002, and AP-5004) at concentrations below the ADEC cleanup levels during the October 2007 monitoring event. These detections were likely unrelated to the historic diesel fuel release at the Bldg. 762 site. PCE was not detected in the November 2010 samples at the Bldg. 762 site.- Contaminants of concern in the unconfined aquifer could not be evaluated because wells constructed within the source area have been decommissioned.

Action Date: 12/30/1988
Action: Update or Other Action
DEC Staff: Ron Klein
Action Description: Underground storage tank (UST) Database shows a 12,000 gallon UST 82 installed in 1951 Tank ID 20 at Bldg. 762 Gas Station to be leaking and it is in service.

Action Date: 12/2/1993
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: Staff provided comments on the Draft Work Plan for UST Site Investigations Seven Fuel Tank Locations. Section I-1.2.2 Motor Pool Bldg. 762: The plan states UST 19 failed a tightness test. The date of the test was not provided. Please provide ADEC with more details on what was tested and the results of the test. Section 1-3.4.1 Subtask 4.2 Soil Borings: The criteria listed for locating soil borings does not include defining the horizontal extent of petroleum contamination. The overall objectives should be to determine whether or not contamination exists above action levels, defining the horizontal and vertical extent of cotnamination, and collecting sufficient site information to evaluate and select a remedial alternative or justify alternative cleanup levels.

Action Date: 12/12/2005
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Groundwater monitoring results received and benzene was the only contaminant of concern above cleanup levels in well AP-3797. Sample results for August 2004 were 57.5 ug/L and in October 2004 it was 55.5 ug/L. Toluene, ethylbenzene, and naphthalene were also detected at the in-source well AP-3797 butbelow clean-up concentrations. All other Former Building 762 wells (AP-5000, AP-5002, and AP-5004) were non-detect for BTEX, DRO, and PAHs.

Action Date: 11/22/2000
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Release investigation plan received. Plan was approved as submitted with clarification on BTEX analyses requirements for three wells.

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

Action Date: 11/22/2000
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Work Plan for Site Investigation Bldg. 762 Fort Richardson, dated November 2000 Contract No. DAPC49-00-F-0373The Alaska Department of Environmental Conservation (ADEC) has received the above document on November 9, 2000 for review and comment. Below are ADEC???s comments.5.5 Existing Wells Page 5-4The text states that three wells will be sampled and analyzed for various petroleum constituents as summarized in Table 5-1. The text does not specifically state that benzene, ethylbenzene, toluene, and xylenes (BTEX) will be sampled. However, the table does show GRO/BTEX being analyzed for in the three existing wells. ADEC requests that BTEX be included in the groundwater analyses for the existing monitoring wells. Upon incorporation or resolution of the comment above, ADEC will approve the plan as submitted.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair) & U.S. Army. Purpose of the agreement is to bring Fort Richardson into compliance with UUST regulations & avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, & corrective action (remediation) associated with USTs at Fort Richardson (excluding the ADMVA & ARNG USTs). After consultation with the project managers, the Army shall conduct initial abatement, containment, & free product recovery in a manner & time frames required in 18 ACC 78.230(a) for LUST sites. The Army shall submit Release Investigation work plans under the schedules in the USTMP These plans outline the course of the site investigation to delineate the vertical & horizontal level & extent of petroleum hydrocarbon contamination in soil & GW at each Site. Field work will be conducted by a qualified person as defined in 18 AAC 78.995. Each Release Investigation Plan shall incorporate data in the possession of the Army or its consultants & provide for gathering other data required under 18 AAC 78.230, site investigation requirements for corrective action under 18 AAC 78.240(c) & this Agreement.The Army shall submit to ADEC a Release Investigation report for each UST site having a documented release of petroleum products or hazardous substances. These reports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b), 18 AAC 78.240(c).If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the ADEC concluded that additional assessment is required.Modifications. extensions, &/or actions taken pursuant to paragraphs 9-10 (Schedule of Actions); 11-18 (Review & Comment on Documents); 19-22 (Subsequent Modification); 51 (progress Reports), 63 -66 (Sampling & Data/Document Availability); 72-77 (Extensions/Force Majeure) & the USTMP may be effected by the agreement of the Project Managers. Except as specifically provided for in this Agreement, the terms of this Agreement may only be modified by the written agreement of the parties. The Army agrees to

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

modify this Agreement to contain new UST sites at the request of ADEC.This site is listed in Attachment B as requiring a release investigation plan for UST 20. This site is listed on Attachment D as either requiring an upgrade or closure for USTs 19 & 20.See site file for additional information.

Action Date: 10/26/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Building 762 Report UST Release Investigations A received. Building 762 is located on the north side of D street, approximately, 750' W of First Street & is currently used as a motor pool for fueling military vehicles. Two 12,000-gallon fuel USTs designated USTs No. 19 & 20 are located N of Building 762. UST No. 19 is used for storage of diesel & UST No. 20 is used for storage of gasoline. The USTs are scheduled for removal.Evidence of surface spills has been observed at the site. Small areas of surface staining are visible to the E & NE of Bldg 762 on a 1986 aerial photo of the site. In 1993, Dames & Moore personnel observed a recently-stained area with dimensions approximately 25??? x 6??? on the ground surface southeast of the fill port island. A 55-gallon drum containing used spill-containment equipment with hydrocarbon odors was observed at the east end of the fill port island.GW was not encountered at a depth of 62??? bgs during this project. AP-3353 was analyzed for GRO, DRO, & BTEX. DRO were detected by the project lab at 246 & 270 mg/kg. DRO were detected by the QA lab at 305 mg/kg. AP-3349 was drilled approximately 6' W of UST No. 20. The boring was drilled to a depth of 42??? bgs. Gasoline odors &/or elevated PID readings were detected on soil samples collected from depths between 20 & 35??? bgs.AP-3349 *primary sample (PID 817 ppm) from 20??? bgs detected: GRO 933 mg/kg, benzene 1.82 mg/kg, toluene 12.9 mg/kg, ethylbenzene 3.65 mg/kg, xylenes 150 mg/kg, lead 10 mg/kg. QA soil sample triplicate (9400762069SL, -070SL, & -071SL) from boring AP-3354 was analyzed for GRO, DRO, & BTEX. GRO were detected by the project lab at 373 & 1,060 mg/kg. GRO were detected by the QA lab at 548 mg/Kg. DRO was detected by the project lab at 1,400 & 900 mg/kg. DRO was detected by the QA lab at 776 mg/kg.Building 762 is classified as a Level B site. The Level B soil cleanup criteria are 200 mg/kg DRO, 100 mg/kg GRO, 0.5 mg/kg benzene, & 15 mg/kg total BTEX. Bioventing is the recommended remediation method for the site. In comparison to the other pro-active cleanup measures, it has significantly lower costs & better implementability. Bioventing has a higher technical risk because of the uncertainty in the ability of the method to generate a large population of hydrocarbon degrading bacteria in the impacted soil; however, the risk is considered to be small & the consequence of failure not critical to the eventual remediation of the site.Decreasing the matrix ranking would tend to decrease the costs of all of the pro-active remediation alternatives, especially those involving soil excavation. It is recommended as part of any cleanup action at the site that the wells reported in the USGS database be abandoned.See site file for additional information.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20 (Continued) **S110144080**

Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported
Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU058 Former Bldg 762 USTs 19 & 20
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

41
WSW
1/4-1/2
0.260 mi.
1375 ft.

JBER-FT. RICH SS119 BLDG 791 **SHWS S118454885**
WEST OF 5TH STREET & EAST OF 6TH STREET, FORMERLY FORT RICHA **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
322 ft.

SHWS:

File Number:	2102.38.073
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.262606
Longitude:	-149.686322
Hazard ID:	26522
Problem:	As part of geotechnical investigation for construction of Building 791 in 2007, the US Army Corps of Engineers detected fuels, beta-BHC, and pentachlorophenol above cleanup levels in soil. 2016 additional investigation was conducted and only diesel range organics and naphthalene were detected above cleanup levels in the top 20 . Groundwater at up to 114' below ground surface is not impacted based on monitoring well results. After a Method Three calculation was performed and no exceedances were found, the site warranted a cleanup complete determination and is closed.

Actions:

Action Date:	4/2/2018
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Cleanup complete determination granted for SS117 Building 791. Groundwater at an average depth of 99' is not impacted and maximum depth of contamination is 20 feet below ground surface. Method three cleanup level for DRO is 10,300 mg/kg and naphthalene at 29 mg/kg. Maximum detected concentrations at 5' bgs for DRO is 1,080 mg/kg and naphthalene at 20' bgs is 0.0557 mg/kg. Based on the depth of contamination at the site, lack of groundwater contamination, the soil does not pose a migration to groundwater risk and the remaining concentrations are below the site-specific method three calculated ingestion cleanup levels for DRO and human health level for naphthalene. ADEC has determined the cleanup is complete at SS119. This determination is in accordance with 18 AAC 75.380(d) and does not preclude ADEC from requiring additional assessment and/or cleanup

JBER-FT. RICH SS119 BLDG 791 (Continued) **S118454885**

action if future information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment. See site file for additional information.

Action Date: 4/13/2016
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79879 name: Building 791

Action Date: 2/17/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the PSE Work Plan. There are three management options for sources reviewed in a PSE processes: a) No Further Action (NFA), in terms of planning for FFA remediation (such a decision would not prohibit future activity undertaken pursuant to State authority); b) inclusion in an RI/FS; or, c) recommendation for interim remedial action. Groundwater cleanup levels are to be based on the maximum detected concentration (as defined in 18 AAC 75, the Risk Assessment Procedure Manual and Cumulative Risk Guidance, both adopted by reference) and not statistics (i.e. 95 UCL) averaging concentrations from monitoring well results. Staff stated that if contamination was found in soil borings at 25 foot depth, then the boring and field screening shall continue and not be limited to a contractual 25 foot depth. See site file for additional information.

Action Date: 2/16/2016
Action: Site Added to Database
DEC Staff: Evonne Reese
Action Description: A new site has been added to the database

Action Date: 2/12/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Preliminary source evaluation work plan received for review and comment. SS119 is bordered by several sites with known contamination, including the SS013 MP barracks site to the south, TU058 DRO plume further south extending west, and the AT035 Maneuver Enhancement Brigade (MEB) Company Operations Facility to the west.The goals of this PSE are to characterize the nature and extent of contamination in soil andgroundwater at SS119. These goals will be achieved by advancing and sampling soil borings, as well as installing and sampling groundwater monitoring wells. A vapor intrusion investigation at Building 791 will be conducted as part of the site SS013 MP barracks remedial investigation presented under a separate cover. Four monitoring wells, three upgradient and one crossgradient from SS119, are also proposed under SS013 site activities. For more information, see site file.

Action Date: 12/5/2007
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: US CORPS of Engineers Chemical Data Report, Soil HTRW Survey, for the Enlisted Unaccompanied Personnel Housing, FTR196 memorandum received. 28 borings drilled and 54 samples were collected. Only two of the samples were analyzed for the full suite of SVOCs by SW8270. 4

JBER-FT. RICH SS119 BLDG 791 (Continued) **S118454885**

borings had DRO exceeding migration to groundwater cleanup level. RRO in Boring AP-5254 had detected 25,000 mg/kg which is greater than the maximum allowable concentration for RRO in 18 AAC 75 (22,000 mg/kg) and more than the ingestion value of 10,000 mg/kg or migration to groundwater value of 11,000 mg/kg. TCE and 1,1,2,2-tetrachloroethane, beta-BHC, PCBs, heptachlor epoxide and pentachlorophenol were all found to be above the cleanup levels. Contamination ranged from 0-15' bgs. For additional information, see site file.

Action Date: 1/23/2018
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft 2016 PSE Source Area SS119 ??? Bldg 791 NORTH DRO Site received for review and comment. Soil contamination was only found in the upper 20 feet of soil, which was located within ordirectly below the suspected soil stockpile. Results collected from deeper soil andgroundwater did not identify any compounds at concentrations above ADEC cleanup levels.The only compound driving carcinogenic risk was benzo(a)pyrene, which was detected atonly one location, indicating that benzo(a)pyrene contamination at the site is de minimis. TheADEC cumulative risk calculator (ADEC 2016) generated a hazard index of less than 1 and acarcinogenic risk standard of less than 1&215;10-5; therefore, no further action is recommended atSource Area SS119.See site file for additional information.

Action Date: 1/23/2018
Action: CERCLA SI
DEC Staff: Louis Howard
Action Description: Draft Preliminary Source Evaluation (PSE) Report approved without comment or changes by ADEC. This was a limited field investigation (aka PSE 2) per the Fort Richardson Federal Facility Agreement (1994). ADEC concurs that no further action (NFA), in terms of planning for FFA remediation is appropriate (such a decision would not prohibit future activity undertaken pursuant to State authority). See site file for additional information.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich SS119 Bldg 791
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: SoilSoil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich SS119 Bldg 791
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: SoilSoil

JBER-FT. RICH SS119 BLDG 791 (Continued) **S118454885**

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

42
NNW
1/4-1/2
0.276 mi.
1457 ft.

JBER-FT. RICH OUD DUST PALLIATIVE **SHWS** **S110144129**
OTTER LK-ROOSEVELT RD-796 DAVIS HWY. FTRS-49, FORMERLY FORT **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Higher

Actual:
347 ft.

SHWS:
File Number: 2102.38.004.09
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.276795
Longitude: -149.683006
Hazard ID: 2779
Problem: Soil contaminated with DDT (0.18 ppm), barium (58 ppm), lead (27 ppm). Maximum detected contaminants did not exceed EPA Reg. III RBCs using the most stringent residential land use scenario or even the State's most stringent level A criteria for petroleum. Site closed out. . Site FTRS-49. Dust Palliative (dust settling agent). Army POC Cristal Fosbrook 384-2173. Last staff assigned was Howard. Site W028EPA ID: AK6214522157

Actions:
Action Date: 9/28/2000
Action: Record of Decision
DEC Staff: Louis Howard
Action Description: OUD ROD signed memorializing that the site will be considered closed. Prior to the 1970???s, road oiling, using waste oils, was a common practice conducted on Fort Richardson to control dust on gravel roads and parking areas. During the 1995 Preliminary Source Evaluation TRPH was detected at a maximum concentration of 260 mg/kg and no other contaminants were detected. No further action required under CERCLA or Contaminated Sites Program.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/31/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.287 N latitude -149.7067 W longitude

JBER-FT. RICH OUD DUST PALLIATIVE (Continued) **S110144129**

Action Date:	3/29/1999
Action:	Proposed Plan
DEC Staff:	Louis Howard
Action Description:	Preferred alternative for contaminated groundwater at buildings 35-752, 796 and 45-590 is monitored natural attenuation combined with natural attenuation. Soil and sediment PCB contamination preferred alternative at Building 35-752 is phytoremediation and if not effective after two seasons-thermal desorption will be implemented. Additionally, windows and doors of Building 35-752 will be sealed with plywood and 8 foot security fence to prohibit access to PCB contaminated dust inside the building. Cooling pond and trench will be filled in and the source of water rerouted to sanitary sewer. COCs in GW include benzene, trichloroethene, iron, manganese, aluminum.
Action Date:	2/17/1997
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Site added
Action Date:	2/12/1998
Action:	Site Closure Approved
DEC Staff:	Louis Howard
Action Description:	3 CERCLA RPMs signed decision document memorializing that no further action is required under CERCLA based on the site information for the site. No action is necessary under Alaska cleanup rules either since no action levels were exceeded.
Action Date:	12/2/1997
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Site ranked by staff based on new information. No EPA risk-based concentrations (RBCs) or level A soil matrix criteria exceeded. Recommend site closure.
Action Date:	11/4/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Memorandum for the Record Subject: Additional Information Regarding Operable Unit D Sites. A visit to Bldg 796 and discussions Mr. Dennis Hyder, chief of the DOL Vehicle & Weapons Repair Shop at that location provided the following information concering an underground neutralization tank, database ref. R059, OU D: Mr. Hyder also verified some information regarding past FRA dust palliative practices:a. He indicated it was a fairly routine and frequent practice during the summer months to request frequent ???oiling??? of the Bldg 796 parking area by Roads and Grounds personnel. This was confirmed by Mr. Travis Barber, current Roads and Grounds chief, who also described some other areas that were frequently oiled. These included the road to Otter Lake, the road to the landfill, and the Bldg 796 parking area, along with other unspecified areas similar to Bldg 796. Mr. Barber stated that roads located further out into the FRA maneuver were not oiled, that this practice was restricted to more frequently used roads close to, and sometimes within the main cantonment area. b. Mr. Barber stated that road maintenance at that time consisted of more frequent grading than currently occurs. Backfill of certain roads was accomplished on an as needed basis. It was his opinion that sampling 8-10??? deep would suffice in obtaining

JBER-FT. RICH OUD DUST PALLIATIVE (Continued) **S110144129**

road samples from that particular era.

Action Date: 11/3/1994
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: FFA Meeting notes for OUD. Buildinq 35-752Former Drum Storaqe Area8 shallow borings have been completed with samples from 6 inches and 2 feet below groundsurface (bgs). Based on preliminary results 2-20 foot soil borings have been located.Preliminary results had high levels of TPH and DRO from soil boring 5. Soil boring 8 hadhits of some SVOCs at 6 inches bgs not identified in the other samples. The 2-20 soil borings are scheduled to be advanced today.Coolinq PondsNot sampled yet. [8 sediment samples. 1 angled soil boring from beneath pond sediment. 3 borings completed as monitoring wells. Sample 3 new and 2 existing monitoring wells.]Concrete FloorNot sampled yet. [27 wipe samples.]Backfill Soils in Former USTs Location4-20 foot soil borings advanced. Scheduled to be completed today. [2 monitoring wells yet to be sampled.]Stormwater Outfall to Ship CreekNot sampled yet.Buildinq 7OO/7188 shallow borings have been completed with samples from 6 inches and 2 feet below groundsurface (bgs). Preliminary analytical results have been received and will be evaluated today.Based on the preliminary results 2-20 foot soil borings will be located. One soil boring had a strong petroleum odor throughout.Buildinq 7048 shallow borings have been completed with samples from .6 inches and 2 feet below groundsurface (bgs). Preliminary analytical results have been received and will be evaluated today.Based on the preliminary results 2-20 foot soil borings will be located. One soil boring had some petroleum odor at 2 feet bgs.Buildinq 7962 soil borings located inside the building. One was advanced from 2.5 to 3 feet bgs and onewas advanced to about 4 feet bgs. These borings were planned to be 20 feet bgs but becauseof height restraints inside the building had to be advanced with hand methods. The sampleswere collected from below the anticipated level of former piping connections. Samples from 2-20 foot soil borings have been collected outside the building. Significant soil staining was encountered at approximately 14 to 16 feet bgs from the boring located at the former septic crib. Preliminary laboratory analysis is still pending. Based on the preliminary laboratory analysis, 1 monitoring well will be installed.Buildinq 9554-20 foot soil borings have been advanced at this location. One of the soil borings had definiteindication of petroleum contamination. Sampling activities are completed at this site.Dust Palliative Sampling at the dust palliative locations is completed. 3 composite samples have been collected form each of the 4 dust palliative locations.Fire Trainins Area10 shallow samples have collected from the Fire Training Area. Preliminary analytical resultshave yet to be received. Based on the preliminary results 3-20 foot soil borings will be located. l-20 foot soil boring will be located outside the Fire Training Area.The majority of the samples had a strong petroleum odor. Field PID readings were high; oneat 2,500 units. A second Fire Training Area has been identified.Grease PitsOne of the two grease pits identified in the Work Plan has been located with a good degree ofreliability. The location of the second grease pit is confused because several pits have beenlocated in the area. All the pits in the area have since been identified as human waste (sewage disposal) pits. No sampling has occurred at this site.Backsround Samplinq1 shallow boring and l-20 foot soil boring has been sampled from each of the 4

JBER-FT. RICH OUD DUST PALLIATIVE (Continued) **S110144129**

backgroundlocations. Sampling activities are completed at these sites.
Not reported

Action Date: 10/15/1997
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: PSE 2 report received. The study area consists of three roadways and one gravel parking lot:??? A 1-mile unpaved section of UC 5497 between Roosevelt Road to the north and the turn off to the water reservoir to the south. This section is also known as the road to Otter Lake.??? Roosevelt Road east of the Alaska Railroad right of way.??? UC 5997 (Davis Highway) between Sixth Street and Roosevelt Road.??? The east side parking lot at Building 796The objectives of the investigation at the Dust Palliative sites were to qualitatively evaluate the impact of road oiling over a large area. Groundwater was not investigated because the intentof the PSE2 was to identify specific contaminants impacting soils in the Dust Palliative site. Agroundwater investigation, if necessary, could be included as part of an RI. Three composite samples were collected from each of the four locations. Each composite sample consisted of four grab samples. Grab samples were collected from a depth of 18 inches bgs. Equal volumes of each set of four grab samples were mixed in a stainless steel bowl to make one composite sample. The samples were then placed in appropriate sample containers.OVM readings from field composite samples from Roosevelt Road east of the Alaska Railroad right of way ranged from 7.0 ppm to 18.0 ppm. At UC 5497, OVM readings were 44 ppm and 55 ppm. At Building 796 and UC 5997, OVM readings ranged from 0.8 ppm to 2.5 ppm. Each sample was tested for TRPH, PCBs/organochlorine pesticides, chlorinated herbicides, SVOCs, and metals.Although provisional dose response factors have been developed for JP-4, JP-5, gasoline, anddiesel fuel (EPA 1992b), these values are not appropriate for this evaluation. These values arebased on fresh petroleum products and do not accurately represent the composition, and therefore the toxicity, of weathered petroleum products. They have not been subjected to rigorous peer review and are not routinely used, even by EPA, in risk assessment. As a result, bulk hydrocarbon measurements (GRO, ORO, and TPH) were not included in the semi-quantitative risk assessment.No contaminants of concern were identified which exceeded EPA's Region III Risk based concentrations using the residential land use scenario. No contaminant levels were detected which exceeded the State's most stringent criteria (level A) for petroleum. Site recommended for closure.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich OUD Dust Palliative
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

43
NE
1/4-1/2
0.291 mi.
1535 ft.

AKARNG FT. RICHARDSON CAMP CARROLL
BLDG. 57112, DAVIS HIGHWAY
FORT RICHARDSON (JBER), AK 99505

SHWS **S107029073**
N/A

Relative:
Higher

Actual:
393 ft.

SHWS:

File Number:	2102.38.048
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.277330
Longitude:	-149.645010
Hazard ID:	944
Problem:	Release from oil and water separator during sewer system construction contains hazardous waste. Amount, extent of contamination, impact to human health unknown. Soil is known to be contaminated but impact to groundwater unknown.This is the OMS 6. 12/19/90 last correspondence letter to General Schaffer from Rich Sundet ADEC. Last staff assigned were Howard and Pexton.

Actions:

Action Date:	6/16/1995
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Initial ranking. Action code added because it wasn't when the site was originally ranked.
Action Date:	4/29/2005
Action:	Site Closure Approved
DEC Staff:	Debra Caillouet
Action Description:	A letter was sent to the AKARNG today stating that DEC considered this a NFRAP as there is no contamination remaining the site is closed Not reported
Action Date:	4/22/2005
Action:	Update or Other Action
DEC Staff:	Debra Caillouet
Action Description:	This site is the OMS 6, there is a letter in the file dated 11/30/1993 agreeing that the site should be closed except that DEC needed confirmation that the soils in the former that had been excavated and stockpiled had been treated.
Action Date:	4/22/2005
Action:	Update or Other Action
DEC Staff:	Debra Caillouet
Action Description:	Staff recieved photographs of the site that have no evidence of a stockpile remaining.
Action Date:	3/16/2004
Action:	Update or Other Action
DEC Staff:	Sarah Cunningham
Action Description:	File number assigned: 2102.38.048.
Action Date:	12/13/1990
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Chlorinated solvents, heavy metals, and petroleum contaminants.
Action Date:	11/26/1990
Action:	Notice of Violation

AKARNG FT. RICHARDSON CAMP CARROLL (Continued) **S107029073**

DEC Staff: John Halverson
Action Description: Letter to Major General Schaffer requesting submittal of workplans for identification of vertical/lateral level and extent of surface/subsurface contamination, cleanup of soil/groundwater contaminated from site activities, disposal of contaminated materials. All workplans to be accompanied by a quality assurance/quality control plan.

Contaminants:
Staff: Not reported

Contaminate Name1: AKARNG Ft. Richardson Camp Carroll
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

44
WSW
1/4-1/2
0.320 mi.
1692 ft.

JBER-FT. RICH FTR269C BLDG 789 COF **SHWS S111240562**
5TH STREET AND D STREET, FORMERLY FORT RICHARDSON BEFORE 10/ **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
315 ft.

SHWS:
File Number: 2102.38.060
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.260783
Longitude: -149.687986
Hazard ID: 25677
Problem: Soil borings advanced in anticipation of military construction planned for the area detected diesel range organics, PCBs, and TCE from unknown origin. The Company Operations Facility military construction site and associated parking lot are located on JBER-Richardson along Fifth Street, north of D Street and south of Davis Highway. The COF Building site is located to the east of Fifth Street and east of the Parking Lot site.

Actions:
Action Date: 8/4/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation (ADEC) has received the Draft 2011 Time Critical Removal Action Memorandum, Proposed FTR269C Company Facility Parking Area, JBER, AK July 2011 for review and comment on July 21, 2011. ADEC has no objection to the JBER-Richardson conducting a removal of PCB-contaminated soil from the proposed FTR269C Parking Area, near the current Building 789. This site is eligible as a new source area to be addressed by the Federal Facility Agreement. ADEC believes an remedial investigation is necessary to determine fully the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants, or

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

contaminants at FTR269C [e.g. trichloroethylene (TCE) and its degradation products]. TCE was found in 6 borings at levels exceeding 18 AAC 75.341(c) Table B1 Method Two migration to groundwater cleanup level of 0.020 mg/kg.

Action Date: 7/6/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 2011 TIME-CRITICAL REMOVAL ACTION MEMORANDUM PROPOSED FTR269C COMPANY OPERATIONS FACILITY PARKING AREA received electronically July 6, 2011. This TCRA Memo documents the decision by Joint Base Elmendorf-Richardson (JBER)-Richardson to remove PCB-contaminated soil from the proposed FTR269C Company Operations Facility (COF) Parking Area, near the current Building 789. As the lead agency, JBER-Richardson has secured funding to conduct this removal action.The existing Building 789 is scheduled to be demolished & replaced with a paved parking area as part of MILCON activities during 2012. This removal action is being conducted to prevent, minimize, &/or mitigate damage to the public health & welfare or to the environment, which may otherwise result from release of this contamination. This includes actions to prevent &/or minimize potential exposure of PCBs to nearby human & animal populations, & to remove PCBs in the surface/subsurface soil that may migrate offsite as particulates in air or water.JBER-Richardson is authorized to conduct this TCRA pursuant to the CERCLA 42 USC Section 9604 & Executive Order 12580 (53 Federal Register 2923). In addition, this action is consistent with the Federal Facility Agreement (FFA) for JBER-Richardson signed in 1994 (U.S. Army 1994).This TCRA Memo was prepared as part of a proposed TCRA under CERCLA Section 104 to address PCB soil contamination identified during a Preliminary Site Evaluation (PSE) at the site. The CERCLIS ID for the site is AK6214522157.Contaminants of concern at the site include PCB Aroclor 1260 & TCE; however, since PCBs present a more significant risk to public health & the environment, this TCRA will focus on the PCB contamination only. TCE soil concentrations will be monitored during the TCRA, but excavation activities will be guided by the PCB contamination.The threats posed by the PCB-contaminated soils & vegetation at the site are time-critical, based on their presence at &/or near the ground surface. Onsite workers, both those currently using the site & those involved in the demolition & construction activities, could be exposed when accessing the site. During construction activities, PCB contamination in the surface soil also has potential to migrate to adjacent soil, water & air. The appropriateness of the removal action to address a threat to public health & welfare or the environment is based on two of the eight factors listed in the CFR Title 40, Section 300.415(b)(2)[4] of the National Contingency Plan (NCP):1. Actual or potential exposure to nearby human populations (i.e., site construction workers) from hazardous substances, pollutants or contaminants; & 2. Levels of hazardous PCBs in soils largely at or near the surface that may migrate.The exposure pathways for TCE include direct contact, outdoor inhalation, & migration to groundwater. At this time there does not appear to be a complete exposure pathway for the TCE contamination. TCE near the surface only exceed the ADEC Method Two migration to groundwater cleanup level of 0.020 mg/kg. Soil samples collected at greater depths did exceed the outdoor inhalation cleanup level of 0.57 mg/kg but, due to the significant soil depth, the outdoor

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

inhalation pathway is not complete; therefore, TCE contaminated soils will not be removed under this TCRA.An estimated 100 cyds of contaminated soil will be excavated & disposed of under the proposed action. All PCB-contaminated soil exceeding the ADEC Method Two cleanup level of 1 mg/kg will be containerized & transported to an approved disposal facility consistent with the offsite rules under CFR 40 121(d)(3).To verify that cleanup levels have been achieved, excavation confirmation samples will be collected pursuant with the requirements specified in 40 CFR 761.61.This removal action is consistent with the long-term remedy for the site and will achieve thecleanup goals to remove PCB contamination above ADEC cleanup criteria and mitigate thethreat to human health and the environment. These measures are appropriate components ofremoval actions according to 40 CFR 300.415(e).Excavation and offsite disposal of the PCB-contaminated soil at a regulated disposal facility isthe only viable, time-efficient option at this site.This decision document represents the selected TCRA of PCBs in the soil at the FTR269CCOF Parking Area on JBER-Richardson. It has been developed in accordance with CERCLAas amended, and is consistent with the NCP. Conditions at the site meet the NCP Section300.415(b)(2) criteria for a TCRA. This decision document is based on the AdministrativeRecord (AR) for the site. A copy of the AR is available at AK Resources Library and Information Service (ARLIS) located at the University of Alaska Anchorage(UAA) Consortium Library, 3211 Providence Drive, Suite 111, Anchorage.

Action Date: 7/20/2011
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 5/28/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: AT035-MEB COF UST and Soil Removal Action Final report received.The UST encountered southeast of the COF Building foundation during permitted construction activities was successfully removed and recycled in October 2011. In addition, 87.59 tons (approximately 50 cubic yards) of contaminated soil was removed and thermally treated in January 2012. Contamination is still present at the site, as indicated by analytical samples collected during the removal activities. Contaminated soil could not be further excavated without potential damage to the COF Building foundation, which limited the effectiveness of the removal action and the ability to accurately determine the extent of contamination.The site has been added to the ADEC Contaminated Sites Program and it is recommended that is added to JBER???s Geodatabase. Additional site characterization is necessary to determine the extent of contamination remaining onsite. Based on the current knowledge of the nature and extent of contamination, it is recommended that the site be monitored for natural attenuation; however, subsequent investigation activities may result in additional recommendations.ADEC reviewed and approved, subject to this and other institutional controls, the cleanup at AT035 UST site as protective of human health, safety, welfare, and the environment. ADEC has determined, in accordance with 18 ACC 75.325 ??? 390 site cleanup rules, that cleanup has been performed to the maximum extent practicable, even though residual DRO-contaminated

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

soil exists on-site. Further cleanup was determined to be impracticable because the remaining contaminated soil is beneath the COF Building foundation. ADEC, as part of its approval, will modify the proposed cleanup techniques or require additional cleanup techniques for the site (following regulations applicable at that time) as ADEC determines to be necessary to protect human health, safety, and welfare, and the environment

Action Date: 5/13/2010
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC reviewed and commented on the Draft 2010 Work Plan FTR269 Maneuver Enhancement Brigade Complex Site Investigation, Fort Richardson, AK April 2010. 1.3 Previous Environmental Work Page 1-4The text states in January 2010, the U.S. Army Corps of Engineers (USACE) conducted geophysical and analytical sampling at the proposed construction sites. Ten borings were advanced at the Barracks site, eighteen at the COF building and parking lot sites, and six at the New Fueling Point. Analytical samples were collected from approximately 10 percent of the soil borings or four borings. The results of this sampling event were not available at the writing of this Work Plan. ADEC requests the Army provide one hard copy and one electronic copy of the complete report of this sampling event to ADEC for its records. The complete analytical laboratory report(s) shall be included as part of all submittals to the department for which environmental samples have been collected, analyzed and reported. 3.2.5 Equipment Decontamination Procedure Page B-3-3The text states sampling equipment that is not disposable will be decontaminated with a potable water and Liquinox/Alconox solution and rinsed with potable water between sampling. A decontamination or equipment blank is used to determine if contamination occurred from sampling equipment such as pumps and bailers and checks to make sure equipment decontamination procedures have been effective. ADEC will require the Army to collect decontamination or equipment blanks (one per set of 20 samples, minimum of one) should it decide to use equipment which is decontaminated between samples. 3.3.2 Soil Sampling Page B-3-6The text states one methanol trip blank for analysis of VOCs by SW8260 and one methanol trip blank for AK101 analyses will be included in every cooler containing VOC or GRO samples. In some cases, one trip blank can be used for both analyses. At least one trip blank is required for each cooler for each method. ADEC will require the Army to collect at least the minimum methanol trip blanks at one per set of 20, minimum of one for all soil samples being analyzed for GRO, BTEX or VOCs regardless of the number of coolers used for sampling. ADEC requests the Army update Table B-3-3 to include methanol blanks and decontamination blanks. Table B-3-1 ADEC will require the Army to use methanol preservative for AK101 and cool to 4o ? 2oC not < 25 oC. RCRA Metals containers-amber glass sample collection bottles are to be certified clean for trace metals analysis. The metals analysis must include arsenic, barium, cadmium, chromium, lead, nickel, and vanadium (e.g. EPA 6010C, EPA 6020A, or 7000 series). PCB has no preservation and 40 days to analysis of extract (recommended). PCBs must be prepared using extraction method 3540C or 3550C. For releases where leaded gasoline and aviation gasoline are suspected contaminants of concern, ADEC requires analysis for EDB and 1,2-DCA. EPA 8260 is required for the analysis of 1,2-Dichloroethane (1,2-DCA). EPA 8011 or EPA 504.1 should be used when evaluating

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

ethylene dibromide (EDB). EDB soil samples should be field preserved in hexane.

Action Date: 4/29/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email to John Halverson (ADEC) from Mark Prieksat (JBER): Since Louis is out, I wanted to ask you for approval to transport/dispose of DRO-contaminated soil at the Muni Landfill. Louis had approved transport/treatment of 2700 cubic yards of soil from this same site at ASR, but subsequent to that request we determined that we could dispose of low level (less than 1000 mg/kg) DRO-contaminated soils at the Muni Landfill at a cost savings of about $100K. We collected the required analyticals for review by the landfill and they have approved the disposal request. I am attaching the request to transport form (as well as the previous form that Louis had approved), the approval letter from the Muni Landfill, as well as the analytical results. Sorry for the short response time, but we have been working this with the Muni for some time and would like to start transporting soil on 2 May 2011. Please let me know if you need additional information to approve this request.

Action Date: 4/29/2011
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: John Halverson
Action Description: Approximately 1200 cubic yards of diesel range organics (DRO)-contaminated soil will be transported to the Municipality of Anchorage Landfill for disposal. The soil contains less than 1000 mg/kg DRO in accordance with the landfill permit requirements, Soils contaminated with DRO at concentrations greater than 1000 mg/kg have been transported to ASR for disposal in accordance with previous ADEC approval. Soil came from the FTR296 COF Building Site - North of 5th Street and D Street, JBER Alaska. Approved by John Halverson Environmental Program Manager I.

Action Date: 4/29/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from the Army re: FTR 269C site fuel contamination. The USACE collected soil samples from borings at the FTR 269C site during geotech drilling efforts. The samples were analyzed for presence of fuels, RCRA metals, pesticides, VOCs, PAHs, and PCBs, with results indicating that DRO is the only contaminant of concern at this site (see attached trip report). The USACE contractor (Jacobs Engineering) has developed a WorkPlan for further investigation of this site and that WP has been sent to you for review and comment. I would like to discuss using this WP (or a more generic version) as a pre-approved plan for investigation at other similar sites that may be encountered during this construction season. The Army would provide adequate notification in accordance with the FFA if contamination is detected at a site, but could then proceed to investigate the site using a pre-approved plan. This would allow more timely and proactive investigation of these sites, without continuing to produce similar WPs for every site. Addendums could be produced for each additional site to indicate sample locations, number of samples, and analyses and sentto you for review and comment. Please consider this and we can discuss next week after the Nike Site meeting.

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Action Date: 4/29/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: MEMORANDUM FOR CEPOA-PM-M (TeVrucht) SUBJECT: Report of Industrial Hygiene Air Monitoring and Chemical Findings, Brigade Complex, Maneuver Enhancement Brigade (MEB), Phase I , Fort Richardson, Alaska (FTR269, 09-076) received from the Army.The U.S. Army Corps of Engineers, Alaska District, Engineering Division, Engineering Services Branch, Materials Section (CEPOA-EN-ES-M) was tasked by the Project Management Branch (CEPOA-PM-M) to conduct worker exposure monitoring during geotechnical drilling operations. Thirty-four borings were completed during the geotechnical investigation on the FTR269 project sites. Ofthese borings, four were chosen for chemical sampling. Two additional borings were sampled due to field screening measurements that indicated possible contamination. The objectives of the project were to conduct exposure monitoring for project specific locations to evaluate employee exposure to contaminants associated with past military use of the land. See Figure 1 for theproject location.On 23 March 2010, Ms. Teresa Lee, US Army Corps of Engineers Alaska District (Corps) conducted employee exposure monitoring to BTEX (benzene, ethylbenzene, toluene and xylene). Personal monitoring was conducted on USACE employees during geotechnical drilling operations due to the presumed fuel contamination.Summary of Field Activities: Two soil samples were collected on 11 February 2010 at the FTR269B project site from boring AP-5522. Two soil samples were collected on 23 March 2010 at the FTR269A project site from boring AP-5544. Six soil samples including a duplicate and a trip blank were collected 24-25 March, 2010 at the FTR269C project site from borings AP-5534 and AP-5528. All other borings (AP-5517 through AP-5543) were screened using a photoionization detector (PID). USACE chemist Teresa Lee (CEPOA-EN-ES-M) and geotechnical engineers Inocencio Roman and Tu Nguyen (CEPOA-EN-ESSG) performed the field screening activities while senior driller Lyle Cain and junior drillers Paul Owens and Chris Bean performed drilling activities. CliffordCormier and Adam Sunders, Dynasty Drilling, also performed drilling operations on the FTR269C project site. PID readings were zero, and no obviously contaminated soil was observed, with the exception of borings AP-5536, AP-5535 and AP-5534. Boring AP-5535 had PID readings beginning at an interval of 2.5-4.5 ft. of 8 parts per million (ppm). The readings increased with depth to amaximum cold PID reading of 87 ppm at 9.5-11.5 ft. Boring AP-5536 had a cold field screening PID reading of 62 ppm beginning at the depth of 14.5-16.5 ft. USACE chemist Teresa Lee performed all sampling activities.These results demonstrate that chemicals of concern were not found in the borings that were sampled for project sites FTR269A and FTR269B, with the exception of arsenic. However, arsenic concentrations are considered to be within background limits for all three project sites. DRO contamination was found on project site FTR269C at a concentration above the ADEC clean up limit of 300 mg/Kg associated with boring AP-5536 (4000 mg/Kg). Field screening indicated similar contamination at boring AP-5535 from a depth of 5-15 feet. Further site investigation for FTR269C is scheduled for spring 2010 by Jacobs Engineering Group, Inc.Based on the enclosed personal monitoring, continue utilizing established workpractices and established safety protocols. Should site conditions or processes changeadditional evaluations should be performed.

Action Date: 4/22/2013

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff commented on the AT035 MEB Complex, COF UST & Soil removal report.Conclusions and RecommendationsADEC reviewed and approved, subject to this and other institutional controls, the cleanup as protective of human health, safety, welfare, and the environment at AT035 UST site. No further cleanup is necessary at this site. ADEC has determined, in accordance with 18 AAC 75.325 ??? 390 site cleanup rules, that cleanup has been performed to the maximum extent practicable even though residual diesel range organics contaminated soil exists on-site. Further cleanup was determined to be impracticable because the remaining contaminated soil is beneath the COF Building foundation. ADEC will, as part of its approval, modify proposed cleanup techniques or require additional cleanup techniques for the site (following regulations applicable at that time) as ADEC determines to be necessary to protect human health, safety, and welfare, and the environment.Pursuant to 18 AAC 75.325(i)(1) and (2), notification and ADEC approval is required prior to moving soil that is, or has been, subject to the cleanup rules found at 18 AAC 75.325-.370. At this site, in the future, if soil is disturbed or removed from the site it must be characterized and managed following regulations applicable at that time.
Action Date:	4/22/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Cleanup complete with ICs granted to UST encountered SE of the COF Bldg. foundation during permitted construction activities. DRO contaminated soil remains but is inaccessible from further excavation without potential damage to the COF foundation. Should the soil become accessible in the future, additional remedial action will be necessary for the petroleum contamination associated with the former UST. PCB and TCE contamination not associated with the UST will be addressed by site AT035.
Action Date:	4/19/2010
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Email from Mark Prieksat RE: Report of potential contamination at FTR-269C. The USACE geotech drillers reported what appears to be POL contamination that was encountered at the FTR-269C (COF) site, between 5th and 6th Streets, west of the FTR196 Barracks that is currently under construction. The soil registered ~75 ppm on the PID, but the contamination has not been identified at this time. We are working with the USACE to conduct additional site characterization and will notify you as soon as we have data results for this site.
Action Date:	4/13/2011
Action:	Offsite Soil or Groundwater Disposal Approved
DEC Staff:	Louis Howard
Action Description:	CONTAMINATED SOIL DISPOSAL AUTHORIZATION CS11005 FT. Richardson letter from Municipality of Anchorage-Solid Waste Services Department to Jacobs Engineering, CC: Eileen Olson. This is in response to your request to dispose of 1200 +/- cubic yards of contaminated soil from Ft. Richardson. On the basis of the information provided in your letter, and with the approval and concurrence of the ADEC Contaminated Sites and Solid Waste Programs, the soil samples meet

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Solid Waste Services??? criteria for disposal. Accordingly, you are authorized to dispose of this material in the Anchorage Regional Landfill.Prior to disposal, please have your hauling agent contact Mr. Nissen (ph.317-6864, fax 428-1697) or Mr. Jim Brown (ph.428-1027, fax 428-1697) to make specific disposal arrangements at least 24 hours prior to intended delivery. The hauling agent must present a copy of this letter to the ARL Scalehouse or the load will be rejected NO EXCEPTIONS. Attendant at the time the soil is brought to the landfill. The fee is No Charge per land agreement.This authorization expires on May 31, 2011. If this material is not disposed of by this date, you will have to request another letter of authorization.

Action Date: 3/4/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: Staff reviewed and commented on the April 28, 1998, closure of UST, Alternate ID 789-A, located near the west side of building 789 on Fort Richardson, Alaska. Facility ID 0-000788, ADEC tank 7. Event ID 2271.The Department of Environmental Conservation (Department) has reviewed the site assessment report received on August 7, 1998, documenting the closure of the above mentioned regulated underground storage tank (UST). The report summarizes the information collected during closure of the 1000-gallon UST used to store used oil. Based on the information presented in the site assessment document, the Department is requesting additional information be submitted:???Information contained in the report indicates approximately 50 cy of soil was excavated from the UST excavation. The soil was temporarily stockpiled and field screened to help determine if hydrocarbon contamination was present. Figure 2, on page 5, lists the field screening results, ranging from 2.9 to 5.1 units. However, no confirmation samples were collected from the stockpile before the soil was returned to the excavation. 18 AAC 78.320(c) [now 18 AAC 78.605(c)] specifies the sampling requirements for untreated stockpiles. It specifically requires a minimum of two grab samples be collected and analyzed for untreated stockpiles of 50 cy or less, and one additional sample for each additional 50 cy of soil. Please provide the Department with an explanation as to why confirmation samples were not collected from the untreated stockpile.???The Department believes the contractor mistakenly assigned the site a matrix score of 26. The Department believes a mistake occurred by assigning a ???0??? value to the ???Volume of Contaminated Soil??? category, for less than 10 cy of contaminated soil. Because the 50 cy stockpile had positive field screening results, and no confirmation samples were collectedand analyzed the to verify the stockpile was not contaminated, the Department has to assume all 50 cy of excavated soil was contaminated. This volume of contaminated soil equates to a category score of five, (5) and changes the over all matrix score to 31. A 31 score would make this site a level ???B??? site, instead of a level ???C??? as reported. Please reevaluate the ADEC Matrix Score Sheet submitted in the report, and either submit an explanation defending the score submitted by your contractor, or submit a new matrix score sheet to reflect the changes discussed above. Upon receipt of the requested information the Department will review all the information submitted and make a determination whether correction action will be required at this site. Please note, I believe there is a misunderstanding as to the UST identification number assigned to

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

the UST decommissioned under this report. The report indicates the decommissioned tank is assigned an ADEC identification number of 788-789A. Our records list this tank as number 07 for your facility (0-000788). I believe 789-A is an identifier the Department of the Army used to identify this tank, which also corresponds to the alternate ID listed in our data base. The Department will generally list an alternative ID when the owner assigns an identifying number to the UST other than the one we use. There is no need to correct this information in the report.

Action Date: 3/3/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from Mark Prieksat (JBER) to Louis Howard: I received your response letter for the FTR269C site and have directed the contractor to finalize the Work Plan. We will be testing for the presence of TCE during excavation and will notify of any changes to site conditions. Attached is a request to transport form for the FTR269C site. We will probably start excavation and testing about 15 Mar 11.

Action Date: 2/8/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: FTR269 MEB Complex Company Operations Facility Work Plan Addendum (Draft) received. This Work Plan Addendum describes the planned activities to be conducted at the FTR269Maneuver Enhancement Brigade (MEB) Complex, Company Operations Facility (COF) on Joint Base Elmendorf-Richardson (JBER), Alaska. The work described in this addendum will be conducted in accordance with all plans and procedures outlined in the Fort Richardson Post Wide Work Plan (U.S. Army Engineer District, Alaska [USAED] 2010). Appendices to the Work Plan include the Site Safety and Health Plan (SSHP), Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), Environmental Protection Plan (EPP), Storm Water Pollution Prevention Plan, Waste Management Plan (WMP), Stockpile Construction Plan, Geophysics Investigation Plan, and Munitions and Explosives of Concern (MEC) Support Plan.The primary objective of the work at the COF Building site is to excavate contaminated soil inpreparation for construction-related activities and future site users. Project activities include soil sampling, excavation of contaminated soil, and waste management. These activities are designed to identify and remove soil contaminated with diesel-range organics (DRO) inconcentrations greater than the Alaska Department of Environmental Conservation (ADEC) Method Two, migration to groundwater cleanup level of 250 milligrams per kilogram (mg/kg) (Oil and Other Hazardous Substances Pollution Control 18 AAC 75 [ADEC 2008]) from areas planned for future construction activities.Project Execution ApproachAn estimated 5,400 cubic yards (cy) of soil will be excavated from a triangular area within thefootprint of the proposed COF building (Figure 2). Soil will be excavated and treated or disposed of off site. Although the proposed amount of soil from within the triangular area willbe removed, it is estimated that only 50 percent of this soil will have DRO concentrationsexceeding 250 mg/kg. Analytical samples will be collected to confirm that cleanup levelshave been achieved. All analytical samples will also be submitted for DRO and TCE analysissince TCE contamination was identified near the excavation area.

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Action Date:	2/23/2011
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	The Alaska Department of Environmental Conservation (ADEC) has received the above document for review and comment on February 16, 2011. Based on the information provided, ADEC will approve the work plan as submitted. TCE was mentioned as being identified in the northern portion of the site at concentrations exceeding Table B1, migration to groundwater cleanup levels. If TCE were discovered to be more widespread at FTR269, then it may be eligible as a new source area to be addressed by the Federal Facility Agreement. As it stands now, none of the borings within the proposed excavation area have any detections of TCE.
Action Date:	11/8/2011
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Final Removal Action Work Plan addendum received. This Work Plan Addendum describes the planned activities to be conducted at the FTR269Maneuver Enhancement Brigade (MEB) Complex, Company Operations Facility (COF)Parking Area on Joint Base Elmendorf-Richardson (JBER), Alaska. The work described inthis addendum will be conducted in accordance with all plans and procedures outlined in theFort Richardson Post Wide Work Plan (U.S. Army Corps of Engineers [USACE], AlaskaDistrict 2010). Appendices to the Post Wide Work Plan include the Site Safety and HealthPlan (SSHP), Field Sampling Plan (FSP), Quality Assurance Project Plan, EnvironmentalProtection Plan, Storm Water Pollution Prevention Plan, Waste Management Plan (WMP),Stockpile Construction Plan, Geophysics Investigation Plan, and Munitions and Explosives ofConcern (MEC) Support Plan. An Accident Prevention Plan (APP) detailing the site-specificsafety plans and procedures is attached to this Work Plan Addendum (Attachment 1).The primary work objective at the COF Parking Area is to excavate contaminated soil inpreparation for construction-related activities and future site users. Project activities include soil sampling, excavation of contaminated soil, and waste management. These activities are designed to identify and remove soil contaminated with polychlorinated biphenyls (PCB) inconcentrations greater than the Alaska Department of Environmental Conservation (ADEC)Method Two direct contact cleanup level of 1.0 milligrams per kilogram (mg/kg) (Oil andOther Hazardous Substances Pollution Control, 18 Alaska Administrative Code [AAC] 75[ADEC 2008]) from areas planned for future construction activities.This removal action will include the following definable features of work:??? Mobilize all equipment and personnel to the site. Safety signage and truck crossing signswill be installed prior to and during excavation activities.??? Excavate the area shown in Figure 2 to a depth of 3 feet bgs, thereby removingapproximately 100 cy of soil.??? Collect excavation confirmation samples from the excavation floor and walls to confirmthe removal of PCB contamination greater than or equal to 1.0 mg/kg.??? Excavate additional soil, as necessary, based on excavation confirmation sample results.??? Transport PCB Aroclor 1260-contaminated soil to a permitted treatment, storage, anddisposal facility (TSDF) for disposal.??? Backfill the excavation with clean soil.??? Demobilize all equipment and personnel.Excavation of soil will be guided by analytical results and field observations. Approximately100 cy of soil will be excavated. The excavation depth

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

will be 3 feet bgs and extend laterally30 feet by 30 feet (Figure 2). The estimated 100 cy of contaminated soil will be containerizedinto intermodal containers and transported to a permitted TSDF for disposal.Should potentially hazardous drums or other debris be encountered within the excavation, these items will be removed for further investigation. If MEC or suspected MEC are encountered, then all work will stop until an unexploded ordnance (UXO) technician or explosive ordnance disposal (EOD) personnel evaluates the item. All practices and procedures from the MEC Plan, Appendix H to the Post Wide Work Plan (USACE 2010), will be followed before work continues.Analytical excavation confirmation samples from both the excavation floor and walls will becollected at a frequency in accordance with Title 40 Code of Federal Regulations (CFR) Part761, and specifically the U.S. Environmental Protection Agency (EPA) guidance documentField Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup (EPA 1986). Sampleswill be collected following a 15-foot by 15-foot grid pattern. Subsamples will be collected fromeach 15-foot by 15-foot grid block. Each subsample will be spaced 5 feet apart. A maximumof nine subsamples will be combined into one composite analytical sample.The proposed excavation area is 30 feet by 30 feet and 3 feet deep, which will result in fourcomposite samples from the floor and eight from the walls. Samples will be collected andsubmitted to SGS of Anchorage, Alaska for analysis with a 1-day turnaround time. All samples will be analyzed by SGS using Methods SW8082 (PCBs) and SW8260 (TCE) in accordance with the FSP, Appendix B to the Post Wide Work Plan (USACE 2010). Although excavation confirmation samples will be analyzed for both PCBs and TCE, the excavation activities will be guided only by the PCB results.
Not reported

Action Date: 11/8/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Spill Summary Report received from Army to ADEC PERP staff. Estimated 10,000 gallons spilled. Release volume estimated. Plan to excavated about 25 CY and stockpile or ship for thermal treatment. Assigned spill 11239931001 (case closed and transferred to CS Program 1/5/2012). FTR 269C construction site. Previously undeveloped area north of intersection of D and 5th Streets on JBER-Richardson. This is a known contaminated site. Joint Base Elmendorf-Richardson (Richardson side of installation).Cause of Spill: Unknown - Former heating oil tank and bldg foundation were discovered during construction activities at the site.Initial field screening did not indicate presence of contamination. Soil samples collected after tank removal indicate presence of weathered diesel (heating oil). Anticipate excavation of 25 cubic yards of soil to remove the extent of contamination. Soil will either be stockpiled on JBER per 18 AAC 78 or hauled directly to ASR. Excavation could be limited due to location next to building foundation.Tank was removed, cleaned, and disposed. Soil will either be stockpiled on JBER per 18 AAC 78 or hauled directly to ASR. Excavation could be limited due to location next to building foundation. Treatment will probably occur in April-May 2012.Historical release from former heating oil tank. Based on analytical data the contamination is weathered diesel fuel (about 1200 mg/kg). The amount of fuel released is unknown as is the date of release. Anticipate that about 25 cubic yards of soil will be excavated and stockpiled pending complete analytical testing.

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Stockpile will meet requirements of 18 AAC 78 and soil stored pending availability of treatment facility and funding to treat the soil.

Action Date: 11/1/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Final TCRA Memorandum received. This removal action is consistent with the long-term remedy for the site and will achieve thecleanup goals to remove PCB contamination above ADEC cleanup criteria and mitigate thethreat to human health and the environment. These measures are appropriate components ofremoval actions according to 40 CFR 300.415(e).Excavation and offsite disposal of the PCB-contaminated soil at a regulated disposal facility isthe only viable, time-efficient option at this site.Compliance with state and federal regulations, to the extent practical, is an overallrequirement for this TCRA. The following federal Applicable or Relevant and AppropriateRequirements (ARARs) were identified for the site:??? Clean Water Act??? Resource Conservation and Recovery Act??? Toxic Substances Control Act??? Occupational Safety and Health Administration??? Department of TransportationThe following state ARARs were identified for the site:??? Oil and Hazardous Substances Pollution Control regulations??? Alaska Water Quality Standards??? Solid Waste Management regulationsThe response actions presented in this TCRA Memorandum are scheduled to begin as soon aspossible to minimize the potential threat to human health and the environment posed bycontamination at the site. Execution of the preferred action remedy will be initiated uponapproval of this TCRA Memorandum.PCB soil excavation activities will be completed in approximately 3 days unless excavationconfirmation sample results identify additional PCB-contaminated soils. The transport of thesoil to the offsite disposal facility and the final disposal of the soil are expected to becompleted within 30 days of excavation.JBER is undertaking the proposed removal action as lead agency pursuant to CERCLA,Section 104(a). In accordance with 40 CFR 300.415(j), onsite removal actions conductedunder CERCLA are required to abate, prevent, minimize, stabilize, mitigate, or eliminate therelease or threat of release of substances hazardous to public health, welfare, and theenvironment. ADEC risk-based cleanup levels will be used to indicate when substantialendangerment to public health, welfare, and the environment has been mitigated, and will bereferenced in regard to CERCLA hazardous substances. JBER followed CERCLA guidanceto evaluate this proposed TCRA.A delayed action, or no action, will increase the potential for continued endangerment topublic health, welfare, and the environment. Exposure to PCB-contaminated soils exceedingADEC cleanup criteria may pose a threat to human health if the use of the site were to changeduring the planned future development at the site.This TCRA Memorandum represents the selected TCRA of PCBs in the soil at the FTR269CCOF Parking Area on JBER-Richardson. It has been developed in accordance with CERCLAas amended, and is consistent with the NCP. Conditions at the site meet the NCP Section300.415(b)(2) criteria for a TCRA. This decision document is based on the AdministrativeRecord for the site. A copy of the Administrative Record is available at Alaska ResourcesLibrary and Information Service (ARLIS) located at the University of Alaska Anchorage(UAA) Consortium Library, 3211 Providence Drive, Suite 111, Anchorage.

Action Date: 10/31/1995

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Site Assessment Report, Bldg 789 UST 789a Fort Richardson, AK September 26, 1995.The Department of Environmental Conservation-Defense Facilities Oversight group (DEC) hasreceived a copy of the above referenced report for bldg 789 tank 789A.General CommentsThe document does not specify as to the reason for replacing the piping for tank 789a andconducting the site assessment. Normally a site assessment is required before a permanentclosure or a change-in-service is completed, or to meet the requirements of AS 46.03.380(b), orwhen required by 18 AAC 78.210 or 18 AAC 78.230. DEC requests the Army specify thereason for replacing the piping under the applicable section mentioned above.Specific Comments page 2The text states the piping was found to be in good condition based on visual observations by theconsultant during the removal. DEC requests information that required the piping to be removedin the first place. DEC further requests information on when the new piping was replaced fortank 789A and by which firm's certified worker. It is noted on Figure 1 that the 2 feed pipe and vent pipe were removed and replaced with new 2 pipes, but it does not list what specificmaterials are used in the piping. 18 AAC 78.055(5) Repairs Allowed repaired tanks and piping must be tightness tested asrequired by 18 AAC 7S.065(d) and IS AAC 7S.070(c) within 30 days after repairs are completeand before bing placed back in operation. DEC requests the Army furnish tank and pipingtightness test methodes) and results for UST 7S9A. If the Army cannot provide results fortightness test results for both the tank and new piping then it must furnish results from themonthly monitoring of the repaired portion of the UST (i.e. piping) for releases, using a methodspecified in 18 AAC 7S.065(e)-(i).4.1 Project Criteria page 6The text references ADEC criteria and the previous use of the UST as a waste oil tank forjustification of the EPA test methods used for analyzing the soil from the project. In addition to 8l00M, 80l5M, 418.1,8020, the consult~mt was required to analyze for volatile chlorinatedsolvents, PCBs and leachable metals (18 AAC 78.315(g)). ADEC is requesting additionalanalyses be performed on the stockpiled soils from this site and if results indicate the soil ishazardous then it must be disposed of properly. Be aware that soils additionally contaminatedwith a hazardous substance other than petroleum product are subject to 18 AAC 75, and may besubject to 18 AAC 60, 62, 70, and 72.5.3 Conclusion and Recommendations page 12ADEC cannot approve a closure at this time until the analyses and results from additionalsampling as indicated above is performed. If the results show no action levels were exceeded forPCBs, leachable metals and volatile chlorinated solvents, then ADEC will grant closure for789A.

Action Date: 1/9/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army sent a Waiver From USTMP for Leaking USTs to ADEC (L. Howard)On Thursday, January 5,1995, you had a discussion with Mr. Samuel Swearingen of Public Works, Environmental Compliance Branch, concerning four underground storage tanks(UST) that failed tank tightness testing. Tanks 754A, 759A, 81 building 59000 and 30A building 79a, failed tank tightness testing, and had release reports filed with Alaska Department of Environmental Conservation(ADEC).

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

Fort Richardson's Underground Storage Tank agreement with ADEC, under attachment C, requires initiation of a siteassessment(SA) within 30 days and submittal of the SA to ADEC within 60 days. The above referenced tanks have been emptied of all product, the fill lines sealed and padlocked to prevent refilling of the UST. All four tanks are scheduled to be removed and possibly replaced in the spring/early summer of 1995. Fort Richardson is requesting that the SA required by the USTMP be waived until the USTs are removed, at which time a SA and if necessary a release investigation will be conducted on each of the above referenced sites, following the time line specified in attachment C of the USTMP.Your concurrence, and/or comments are requested as soon as possible to allow Public Works to make alternate arrangements if this course of action is not agreeable.

Action Date: 1/9/1995
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the Army's Request letter for a Waiver of the USTMP schedule at Fort Richardson, Alaska.The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on January 9, 1995, a facsimile copy of the above request for delaying site assessment (SA) work as required in Attachment C of the Underground Storage Tank Management Plan(USTMP). As outlined under para 90 Modification ADEC will grant an extension on SA workfor only the following tanks: 754a, 789a, and 81 at bldg. 59000 and 30a at bldg. 798. Normally, the USTMP requires initiation of a SA within 30 days of confirmation. However, since weatherconditions in Alaska often dictate when work can be conducted, the start date for initiating a SA or release investigation will be no later than May 15, 1995. ADEC will require the timeline in the USTMP be followed for these tanks after this date.

Action Date: 1/5/2012
Action: Spill Transferred from Prevention Preparedness and Response Program
DEC Staff: Louis Howard
Action Description: Spill transferred by PERP staff Michele Sherwood. Spill no. 11239931001; spill date = 11/6/11; substance = diesel; quantity = unknown.

Action Date: 1/2/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79101 name: JBER-Ft Rich Bldg 789 FTR269C

Action Date: 1/13/2012
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: JBER-Richardson emails a request to transport soil from the FTR269C site where they discovered an empty heating oil tank during construction. Tank was probably 40+ years old and was discovered when driving survey stakes to mark the building foundation. Several holes had been cut into the top of the tank and it was partially filled with soil. Initial field screening did not indicate that contamination was present but they did detect contamination in the analytical samples collected from underneath the tank. Samples were analyzed for GRO/DRO/RRO/PAH/BTEX with only DRO exceeding cleanup

JBER-FT. RICH FTR269C BLDG 789 COF (Continued) **S111240562**

levels. Four of the six analytical samples collected from the excavation exceeded the ADEC migration to groundwater cleanup level for DRO ranging from 445 to 1,210 mg/kg. All other analytes were below cleanup levels. Results in a spreadsheet from SGS laboratory shows only the hits above cleanup levels. Analytes not shown in the table were not detected (BTEX and PAHs). The 6,610 mg/kg DRO result is from the soil removed from the tank and containerized.Jacobs will attempt to remove the contaminated soil and haul to ASR. Not sure if they can remove all the contamination because the tank was located within about 10 feet of the new building foundation. The entire FTR269C site will be investigated under the PBC contract and we will drill borings and sample the tank site under that contract. Approval to transport granted by ADEC-Based on the information provided in the 1/13/2012 email, in accordance with 18 AAC 75.360 (3)(D), ADEC will approve the transport of an estimated 130 cubic yards of petroleum contaminated soil to ASR for treatment in accordance with their approved facility operations plan.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich FTR269C Bldg 789 COF
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	Not reported
Control Details Description1:	Not reported
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

J45 **JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY** **SHWS** **S110144176**
West **DAVIS HIGHWAY FTRS-53 FAC ID 0-00788, FORMERLY FORT RICHARDS** **INST CONTROL** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.337 mi.
1778 ft. **Site 1 of 2 in cluster J**

Relative: **Lower**

Actual: **322 ft.**

SHWS:

File Number:	2102.38.056
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.264284
Longitude:	-149.688663
Hazard ID:	2753
Problem:	A 775 gallon heating oil UST removed from west side of building in 1991. Also known as Site G, Veterinary Clinic. Residual contamination remains for diesel range organics above cleanup level B (200 mg/kg) at depths greater than 20 feet bgs. These depths were determined at the time to be beyond the reach of normal excavating equipment. Further, sloping the sides of the excavation at a one-to-one (45 degrees) ratio for safety and health considerations would have resulted in undermining both Bldg 47-811 and the Davis Highway. For these reasons, alternatives involving excavation were not considered viable and the site was conditionally closed out. Site FTRS-53. Building 47811, USTs 71 and 72. Last staff assigned were Halverson and Howard. UST Facility ID 788. Site W027, 1990 RFA SWMU 102. EPA

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

ID: AK6214522157 Formerly in LUST database as LUST reckey no. 199721X004813 Event ID 489

Actions:

Action Date:	9/7/1998
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	The purpose of the August 17 and 18, 1998 sampling event was to document the site contaminant levels after remedation by the bioventing/soil vapor extraction system. Two borings were drilled to about 50' bgs and soil samples for chemical testing were collected 10' bgs and at 5' intervals until boring completion. All were analyzed for GRO, DRO, RRO, BTEX, PAHs. No sample exceeded the category B cleanup levels of: 100 mg/kg for GRO, 2,000 mg/kg for RRO, 0.5 mg/kg for benzene, or the 15 mg/kg for total BTEX. Several samples exceeded the ADEC UST regulation cleanup level B limit of 200 mg/kg for DRO. Higheste DRO was 4,200 mg/kg. AP-3926 was located near the southern limit of the tank excavation and AP-3927 was located within the former excavation limit. Boring AP-3926 bgs for DRO: 20' 120 mg/kg, 25' 4,200 mg/kg, 30' 1,500 mg/kg, 35' 1,300 mg/kg, 40' 330 mg/kg, 45' 18 mg/kg, and 50' 26 mg/kg. Boring AP-3927 DRO bgs: 10' 25 mg/kg, 15' 220 mg/kg, 20' 2,900 mg/kg, 25' 1,200 mg/kg, 30' 440 mg/kg, 35' 170 mg/kg, 40' 280 mg/kg, 45' 2,000 mg/kg, 50' 1,300 mg/kg (most are above Level B criteria for DRO:200 mg/kg).DRO levels in AP-3927 are elevated from 15 to 30 ft. bgs, then increase again at 40 to 50 foot depth. Field observations are consistent with these data. It is not known why contamination is discontinuous in that area.

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/2/1993
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Action Date:	7/3/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the draft work plan. The text states: ???The soil borings will be advanced using a direct-push technology drill rig to depths of 25 feet bgs. Soil samples will be collected at 5-foot intervals to the total depth of the boring. Soil cores will be examined for evidence of hydrocarbons (e.g., staining or odor) and will be screened for organic vapors using a PID.???If contamination is present at 25??? bgs, the Air Force shall collect additional samples in a similar fashion as TU053-SB01. To ensure vertical extent of soil contamination at these locations are delineated, these soil borings will be advanced to two ???clean??? sample intervals beyond the bottom of contaminated soil if the contamination does not extend to the water table, or to one ???clean??? sample interval below the bottom of contaminated soil if the contaminated soil extends to or below the water table. The 25??? maximum depth is an arbitrary number and if contamination is still indicated at 25??? depth, ADEC expects the Air Force to adequately delineate the vertical extent of contamination in these ???lateral??? extent borings. Table 18-1 may have to be edited to include these additional samples for the ???lateral??? extent borings beyond 25??? as a contingency should contamination be present at 25??? bgs.

Action Date:	7/2/1998
Action:	Institutional Control Record Established
DEC Staff:	Louis Howard
Action Description:	Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date:	6/7/2006
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	ADEC has received information from the Army regarding discovery of contaminated soil encountered during excavation work for a new working dog facility (FTR299) currently underway in the area west of Bldg 47-811. ADEC has previously on December 15, 1998, officially closed out the site (LUST reckey no. 199721X004813 Event ID 489). Upon further review of the 1998 Post-Remedial Site Investigation, it was shown that a heating oil tank had leaked and residual contamination remains for diesel range organics above cleanup level B (200 mg/kg) at depths greater than 20 feet bgs. These depths were determined at the time to be beyond the reach of normal excavating equipment. Further, sloping the sides of the excavation at a one-to-one (45 degrees) ratio for safety and health considerations would have resulted in undermining both the site and the Davis

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Highway. For these reasons, alternatives involving excavation were not considered viable by the Army and ADEC. ADEC has reviewed the site information and based on current report of contaminated soil being encountered at the site, it will be changing the site status for the site from officially closed to conditional closure. Residual soil contamination must be dealt with in accordance with Title 18, Chapter 75 of the Alaska Administrative Code, Oil and Other Hazardous Substances Pollution Control regulations (18 AAC 75, as amended through October 16, 2005). The Army had not placed this site in its GIS as an area of concern where contaminated soil remains in place above cleanup levels. ADEC requests the Army add this site to its GIS database with the required institutional controls and dig permit caveats required of sites with residual soil contamination above cleanup levels. Additionally, excavated soil which is currently stockpiled and determined to be contaminated needs to be properly managed, transported, and treated in accordance with 18 AAC 75.

Action Date: 6/7/2006
Action: Update or Other Action
DEC Staff: Aggie Blandford
Action Description: File number reassigned to 2102.38.056 (formerly 2102.26.043).

Action Date: 6/30/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP work plan received for review and comment. At TU053, four new soil borings will be drilled as discussed below: ??? One source area boring will be drilled near post-remedial action sample locations to assessresidual DRO contamination, to delineate vertical extent, and to collect source area soil samples for GRO, DRO, RRO, petroleum-related volatile organic compounds (VOCs)(benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]), polycyclic aromatichydrocarbon (PAH), volatile petroleum hydrocarbon (VPH), and extractable petroleum hydrocarbon (EPH) analysis. If groundwater is encountered, a sample will be collected and analyzed for GRO, DRO, RRO, BTEXN, PAHs, EPH, and VPH.Three borings will be drilled north, southeast, and southwest of the excavation extent to assess the lateral extent of contamination. Samples will be analyzed for GRO, DRO, RRO, BTEXN, and PAHs.Up to approximately 28 primary soil samples will be collected and analyzed for GRO, DRO, RRO, BTEXN, and PAHs. Three of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be tested for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and will be analyzed for fraction of organic carbon (foc).

Action Date: 6/2/2006
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Construction for a new working dog facility (FTR299) is currently underway in the area west of Bldg 47-811. Historical records indicate this was a former UST site that received closure from ADEC in 1998. On 02 June 2006, the site workers stopped work and notified DPW Environmental that contamination had been encountered. A site visit and historical research support that the contamination is associated with the UST removal. The site photographs show the approximate northern extent of the excavation where the contamination was found,

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

as well as the sampling location. In addition to sampling, the Army plans to screen and stockpile contaminated soils on a short-term liner for characterization and disposal.

Action Date: 6/10/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73729 name: auto-generated pm edit Ft. Rich Bldg. 47811 UST 72

Action Date: 5/15/1995
Action: Cleanup Plan Approved
DEC Staff: Louis Howard
Action Description: A bioventing evaluation was performed, and the results indicated that this site was a viable remedial alternative for the site. In March 1995 a soil vapor extraction (SVE) bioventing system was installed by Agra Earth and Evironmental. The bioventing system consisted of two independent arrays separated by an aquitard at approximately 22 feet below ground surface (bgs). The shallow system included 2 vapor extraction wells installed to approximately 22 ft. bgs. The deeper system had 4 deep air injection wells installed to approximately 55 ft. bgs, and five passive wells installed to a depth of approximately 40 ft. bgs. Air was injected into the deeper wells and vented through the passive wells. The regenerative blowers for the two systems were housed in a common treatment shelter.

Action Date: 4/22/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: After three years of bioventing confirmational sampling of soils showed that the level of contamination is not below DEC cleanup levels (200 mg/kg DRO category B) for the site at depth (i.e. >20 ft. bgs). Letter of conditional closure sent to Army on 12/15/1998.

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 3/18/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Release investigation Release Investigation Report Underground Storage Tank Sites Fort Richardson Alaska was performed by Harding Lawson Associates in 1993. Diesel range organics (DRO) were found in boring AP-3242 bgs: 10’ ND, 15 8.8 mg/kg, 20’ 474 mg/kg, 25’ 2,450 mg/kg, 30’ 1,220 mg/kg, 35’ 918 mg/kg, 40’ 73-86 mg/kg, 45’ 221 mg/kg, and 50’ 240 mg/kg. AP-3177 had DRO bgs: 10’ 11,000 mg/kg and 15’ 551 mg/kg. Cleanup level matrix level is B 100 mg/kg GRO, 200 mg/kg DRO, 2,000 mg/kg RRO, 0.5 mg/kg benzene, and total BTEX of 15 mg/kg.

Action Date: 3/17/2015
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Action Date: 3/12/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff issued a cleanup complete determination for TU053. This decision document memorializes the site history, cleanup actions, cleanup complete determination, & standard conditions for long-term site management for CS DB Hazard ID 2753 & file number 2102.38.056Contaminants of ConcernDiesel Range Organics (DRO), Gasoline Range Organics (GRO)Cleanup LevelsThe cleanup level for soils at TU053 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). The cleanup level for soils at TU053 containing GRO contamination is 1,400 mg/kg in the Under 40-inch Zone based on the maximum allowable concentration, inhalation, & ingestion pathways within the 0 to 15??? interval below ground surface (bgs). Based on the analytical data for soil samples collected in 2014, modeling using the Hydrocarbon Risk Calculator (HRC), ADEC agrees the residual DRO & GRO in soil at the site does not pose a migration to groundwater concern.In 2014, DRO concentrations in soil was found to be below 15??? bgs, ranging from 319 mg/kg to 2,130 mg/kg (15 ??? 20??? bgs). GRO concentrations in soil was found to be below 15??? bgs ranging from 350 mg/kg to 543 mg/kg. The 95 H-UCL, for DRO including the 1993 11,000 mg/kg results for the DRO source area yielded a 95 UCL of 2,348 mg/kg. The source area has been vertically & laterally defined, except to the south of TU053-SB05, where DRO & GRO were detected at concentrations of 1,990 & 382 mg/kg, respectively. ADEC agrees with that the concentrations are not expected to increase further to the south away from the source. Therefore, for the purposes of evaluating current & future site risk, the extent of contamination has been sufficiently delineated. Groundwater was not encountered during investigation or excavation activities at TU053, & no groundwater monitoring wells have been constructed onsite. Data indicate that the petroleum contamination has not reached groundwater. Groundwater was estimated at approximately 100 feet bgs (approximately 55 feet below the depth of contamination at the site) based on water level monitoring conducted at TU058 & DA085, it is unlikely that groundwater has been impacted by DRO or GRO soil contamination from releases at TU053.Cumulative Risk EvaluationThe HRC was used to evaluate risk from petroleum contamination at TU053. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, & other compounds dissolved in petroleum???with the intention & purpose of assessing human health risk from this type of contamination.The estimated rounded cumulative cancer risk at TU053 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (6 x 10-7 & 1 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at TU053 for the current industrial & hypothetical residential exposure scenarios, across all exposure pathways, (0.021 & 0.04 respectively) is below the regulatory risk standard of 1. TU053 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO/GRO aromatic & aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for TU053 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

that a more in-depth risk evaluation is not needed & that the TU053 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that TU053 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TT053 in the Contaminated Sites Database.

Action Date: 2/27/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Site Characterization report received for review and comment. The following conclusions were made regarding TU053:??? Based on previous investigations and the 2014 site characterization field investigation, DROand GRO are present in soil at concentrations above project screening levels at TU053. Historically (prior treatment by SVE/bioventing), benzene, ethylbenzene, and 2-methylnaphthalene were detected above the project screening levels; however, in 2014, all results for these compounds were well below the screening levels.??? DRO was historically detected at a maximum concentration of 11,000 mg/kg. DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 90 by 35 feet (3,200 square feet), starting at a depth of 10 feet bgs and reaching a total depth of approximately 45 feet bgs. The total volume of contaminated soil is approximately 4,100 cubicyards. The extent of contamination has been vertically defined, and contamination has beenlaterally defined except to the south of TU053-SB05. The source area has been vertically and laterally defined, except to the south of TU053-SB05, where DRO and GRO were detected at concentrations of 1,990 and 382 mg/kg, respectively. However, concentrations are not expected to increase further to the south away from the source. Therefore, for the purposes of evaluating current and future site risk, the extent of contamination has been sufficiently delineated??? Although not detected above the screening level in any historical samples, GRO was detectedabove the screening level of 300 mg/kg in two 2014 samples: the 15-to-20-foot samples fromTU053-SB01 (543 mg/kg) and TU053-SB05 (382 mg/kg). The GRO is comingled with DRO detected above screening levels, is vertically defined, and is laterally defined except to the south of TU053-SB05.??? Data indicate that contamination has not reached groundwater. The depth to groundwater isestimated at approximately 100 feet bgs (approximately 55 feet below the depth of contamination at the site) based on water level monitoring conducted at TU058 and DA085, located approximately 4,500 feet southwest and 2,100 feet south of TU053, respectively. ??? Using the HRC for contaminated soil within the source area, the cumulative carcinogenic riskand noncarcinogenic HI estimates, based on both industrial and hypothetical residentialexposure scenarios, are below the regulatory risk standards for the direct contact, outdoor airinhalation, and groundwater ingestion pathways.??? Concentrations of all detected non-hydrocarbon analytes were below their respective 18 AAC75.345 Table B1 cleanup levels; therefore, the vapor intrusion pathway is consideredincomplete.??? Using the HRC for contaminated soil at the source area, the ADEC risk criteria for bulkhydrocarbons are met for the direct contact, outdoor air inhalation, and groundwater

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

ingestionpathways.??? The migration to groundwater criteria are attained in surface and subsurface soils in accordancewith 18 AAC 75.340, supporting a Cleanup Complete determination.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant (less than 0.5 acre). See Ecoscoping form in Appendix D.RecommendationsThe following are recommended for TU053:??? No further investigation or cleanup of soil and groundwater associated with Building 47811.??? Agreement from ADEC to grant a ???Cleanup Complete??? designation because the site meets thecriteria established for site closure.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Contaminated soil.

Action Date: 12/15/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Institutional controls on soil contamination left in place at depths greater than 15 feet. Soils excavated by any party at the site that are above Level A criteria will require treatment to be remediated to these levels. The following policy applies for soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required: 1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1; 2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 annual precipitation zone; 3. The soil is not placed within 100 feet of water wells, surface waters, and drainage ditches; and 4.The written approval from the landowner of the off-site location is required. The off site disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval to dispose of soil off site that does not meet the criteria shall be made by the ADEC Section Manager.

Action Date: 10/24/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to USARK APVR-RPW-EV RE: Bldg. 47811 Bioventing Conceptual Design contract DACA 85-94-D-0014The Alaska Department of Environmental Conservation-Defense Facilities Oversight group(ADEC) has received, on October 24, 1994 the above referenced document. Below are ADEC'scomments. Page 2 refers to subsurface soils at building 908 South? Please correct text to refer to bldg. 47811 site.3.0 Blower Design and BioventinglSVE Blower Installation Phase page 3 para. 3To meet the requirements of the air quality program, please provide an estimate of the quantityof volatile hydrocarbons emitted to the atmosphere from the blower being operated at fullcapacity. With the exception of this minor detail, the design is approved as submitted.

Action Date: 10/11/1991

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Harding Lawson reportSite G: Building 47811. Veterinary ClinicUST 72, a 775-gal10n tank previously containing diesel (heating oil), was removed from the west side of Building 47811 (Plate 9). The final excavation was approximately 22 feet deep and measured 54 feet by 36 feet at the surface. The volume of soil removed during tank excavation was approximately 531 cubic yards. A replacement tank was not installedSamples from excavation limits showed diesel range organics (DRO) up to 8,900 mg/kg.

Action Date: 1/31/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: During remediation in 1996 (biovent/SVE system installed in 1995) samples were taken by AGRA Earth and Environmental Inc. (Interim Remedial Action Report No. 2 for Soil Vapor Extraction System at Building 47-811 Fort Richardson, Alaska to determine what, if any, progress was being made towards cleanup level B by the treatment system. Boring CB-3 bgs: 25' 1,900 mg/kg, 30' 880 mg/kg, 40' 12 mg/kg. Borgin CB-2 bgs: 25' 560 mg/kg, 35' 62 mg/kg.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU053 Bldg 47811 UST 72 USTA 2 Party
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU053 Bldg 47811 UST 72 USTA 2 Party
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 2753
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 7/2/1998
File Number: 2102.38.056

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Hazard ID: 2753
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 3/17/2015
File Number: 2102.38.056

46
ENE
1/4-1/2
0.347 mi.
1830 ft.

JBER-FT. RICH BLDG 49000 UST 250 **LUST** **S122436127**
BUILDING 49000 E OF N END OF RUNWAY **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Higher

Actual:
399 ft.

LUST:
Facility Name: JBER-FT. RICH BLDG 49000 UST 250
Facility Status: Open
Record Key: Not reported
File ID: 2102.26.082
Oname: U.S. Air Force - Elmendorf
Lat/Lon: 61.27053 -149.6384
Lust Event ID: Not reported
CS or Lust: LUST
Borough: Anchorage
Staff: Louis Howard
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

K47
WSW
1/4-1/2
0.352 mi.
1861 ft.

EARECKSON AIR STATION FT02 **SHWS** **S104894000**
AIRCRAFT MOCKUP/DRUMS/FTA, NORTH END OF RUNWAY C **INST CONTROL** **N/A**
AMCHITKA, AK 99546

Site 1 of 4 in cluster K

Relative:
Lower

Actual:
313 ft.

SHWS:
File Number: 2649.38.001, 2649.38.003
Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov
Facility Status: Active
Latitude: 52.725228
Longitude: 174.078631
Hazard ID: 42
Problem: Eareckson AS is situated on Shemya Island, approximately 1,500 miles southwest of Anchorage, Alaska at the westernmost tip of the Aleutian Islands. Shemya Island is part of the Near Islands group of the Aleutian Archipelago. Shemya Island is owned by the U.S. Government and is under the jurisdiction of the United States Fish and Wildlife Service (USFWS) as part of the Alaska Maritime National Wildlife Refuge. The U.S. Army first developed facilities on Shemya Island in 1943 to support operations against the Japanese occupation forces on the nearby islands of Attu, Agattu, and Kiska. In 1954, the site was deactivated, and was turned over to the Civil Aeronautics Authority in 1955. In 1958, the Air Force returned to Shemya Island to support various Air Force and Army strategic intelligence gathering activities. It has remained active in this capacity to the present.
In 1995, the station was downsized and reverted to caretaker status and a private operation and maintenance contractor took control of the facility under contract to the Air Force.FT002 is the located on the western end of the island and consists of three areas: Aircract

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Mock-Up Area(MA), Fire Training Area (FTA), and Abandoned Drum Disposal Area (ADDA). The MA was used for fire-fighting training from 1983 to 1988. Cylindrical tanks were configured to resemble an aircraft fuselage, which were located within two concentric earthen berms on asphalt. Petroleum products were used as accelerants during fire training at the site. From 1996 through 2000, a bioventing system was installed and operated to remediate petroleum contamination. The FTA was used for fire training activities from the early 1970s to the mid-1980s. Debris and approximately 1,100 cubic yards of petroleum contaminated soils were removed to a depth of 3 to 4 feet in the late 1980s. The ADDA is a drainage on the north side of the abandoned runway that was used to dispose of drums. Approximately 30 buried drums and 35 to 40 cubic yards of visibly contaminated sediments were removed in 1996.

Actions:

Action Date: 9/27/2011
Action: Site Characterization Report Approved
DEC Staff: Jonathan Schick
Action Description: Contaminated Sites Staff submitted a letter to the Air Force's Remedial Project Manager approving the finalization of the Long-Term Monitoring Report with the inclusion of the agreed upon changes including adding the reccommendation for groundwater sampling at the landfill sites in the conclusion section.

Action Date: 9/1/1984
Action: Preliminary Assessment Approved
DEC Staff: No Longer Assigned
Action Description: Installation Restoration Program, Phase I Records Search, 5073rd Air Base Group, Shemya Air Force Base, Alaska (dated September 1984) prepared by JRB Associates

Action Date: 8/8/2014
Action: Update or Other Action
DEC Staff: Jessica Morris
Action Description: The USAF submitted the 2012 Land Use Control Management Plan, which included land use controls for FT02 at Eareckson Air Station.

Action Date: 8/7/2014
Action: Institutional Control Record Established
DEC Staff: Jessica Morris
Action Description: Institutional Controls established and entered into the database. The Eareckson Base General Plan and Land Use Control Management Plan shows boundaries for the site that restricts excavation of soil and groundwater use. The Base dig permit approval process includes restriction for the site.

Action Date: 8/7/2014
Action: Exposure Tracking Model Ranking
DEC Staff: Jessica Morris
Action Description: A new updated ranking with ETM has been completed for source area 71022 Fire Training Activities.

Action Date: 8/5/2005
Action: Proposed Plan
DEC Staff: Jeff Norberg
Action Description: Proposed Plan for Eareckson AS Sites FT01, FT02, FT03, and SS07; revised draft dated February 2005 received on February 11 (see

EARECKSON AIR STATION FT02 (Continued) **S104894000**

related entry on August 31, 2004); ADEC comment letter issued on March 10, 2005; comment resolution meeting during site visit on March 15, 2005; ADEC participated in calls and e-mails with Air Force contractor regarding Proposed Plan status and outstanding issues related to updated risk assessment data from May through July 2005; Risk assessment data approved by State Risk Assessor Aug 2005; Final Proposed Plan submitted and approved on August 5, 2005

Action Date: 8/31/2004
Action: Update or Other Action
DEC Staff: Gretchen Pikul
Action Description: Proposed Plan for Remedial Action; 1st draft dated July 2003 and received on July 16; received 1st draft of updated risk assessments on July 30; ADEC commented on August 4 and 5; comment resolution meeting August 22 and 27; internal briefing August 26; final Proposed Plan delayed due to funding issues and changes in Air Force guidance and policy; Proposed Plan comment resolution meeting on March 15, 2004; ADEC participated in calls and e-mails with Air Force contractor regarding Proposed Plan status and wording in April and May 2004; 2nd draft Proposed Plan submitted on June 1, 2004 and ADEC sent comments via e-mail on June 3; 2nd draft of updated risk assessments for FT01 and FT03, and FT02 and SS07 received June 7 and 14, respectively; ADEC comments (Lindsay Smith, ADEC Risk Assessor) were sent on July 1; July 22 ADEC call to Air Force on status of Updated Risk Assessments and comment resolution meeting date; Updated Risk Assessments comment resolution teleconference on July 26 ??? updated and final Air Force Comment Response, cumulative risk calculation spreadsheets, and information on outstanding issues to be submitted by early 1st week of August; ADEC sent e-mails on status of outstanding deliverables on August 6 and 13, e-mails and calls regarding this information occurred in August and information will not be available before September 1 for ADEC Risk Assessor to review (ADEC Risk Assessor to be back in office in October 2004).

Action Date: 8/27/2014
Action: Long Term Monitoring Established
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Sites Program approved the Final Work Plan for Environmental Long Term Monitoring and Site Inspections ((FT001, FT002, FT003, OT048, SS007, LF015, LF018, LF024, LF026, SS010, SS023, ST035, SS025, ST009, ST044, ST046, ST050, ST051) and Limited Site Characterization (Building 3055 Area) at Eareckson Air Station, Alaska. This scope of work is not sufficient to meet the long term monitoring objectives outlined in the most recently established RODs. The USAF will hold a scoping meeting with ADEC to plan additional well installation to meet these long term monitoring requirements.

Action Date: 8/16/1999
Action: Update or Other Action
DEC Staff: Gretchen Pikul
Action Description: Remedial Investigation Baseline Groundwater Monitoring Report, August - September 1998, Basewide Monitoring Activities and Findings - Final dated June 18, 1999

Action Date: 8/10/1990
Action: Update or Other Action
DEC Staff: No Longer Assigned

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Action Description:	Installation Restoration Program, Stage I Final Technical Report for Shemya Air Force Base, prepared by CH2M Hill
Action Date:	7/9/2015
Action:	Institutional Control Update
DEC Staff:	Jessica Morris
Action Description:	ADEC approved the July 2015 U.S. Air Force Land Use Control Management Plan, Pacific Air Forces Regional Support Center Installations. The plan includes land use controls for FT002 at Eareckson Air Station.
Action Date:	7/3/2001
Action:	Update or Other Action
DEC Staff:	Gretchen Pikul
Action Description:	Technical Memorandum - Risk Assessment Assumptions for Decision Documents (draft final dated January 8, 2001, ADEC comment letter dated March 19, 2001, comment resolution meeting on May 18, 2001, final received June 11, 2001, ADEC e-mail comments after reviewing final document dated July 3, 2001).
Action Date:	7/29/2003
Action:	Update or Other Action
DEC Staff:	Gretchen Pikul
Action Description:	Technical Memorandum Results of 1995 IRP Field Program (dated January 1996 and received on July 29, 2003).
Action Date:	7/23/2001
Action:	Update or Other Action
DEC Staff:	Gretchen Pikul
Action Description:	FT02 Soil Sampling Summary Report (draft dated March 22, 2000; received April 6, 2001; ADEC comment letter dated April 18, 2001; final dated July 11, 2001 and received on July 16 - all ADEC comments were incorporated into the final version; ADEC approval letter dated July 23)
Action Date:	6/16/2000
Action:	Update or Other Action
DEC Staff:	Gretchen Pikul
Action Description:	Final FT02 Remedial Action, Operation, Maintenance and Monitoring Manual (dated April 1997) received June 16, 2000
Action Date:	6/15/1996
Action:	Update or Other Action
DEC Staff:	Ray Burger
Action Description:	Biovent system installed at FT02-MA.
Action Date:	5/24/2001
Action:	Update or Other Action
DEC Staff:	Gretchen Pikul
Action Description:	Year 2000 Basewide Monitoring Program Report (draft final dated April 9, 2001, ADEC comment letter dated May 24, 2001)
Action Date:	5/20/2015
Action:	Institutional Control Compliance Review
DEC Staff:	Jessica Morris
Action Description:	The ADEC Contaminated Sites Program approved the Final Report for Environmental Long Term Monitoring and Site Inspections ((FT001,

EARECKSON AIR STATION FT02 (Continued) **S104894000**

FT002, FT003, OT048, SS007, LF015, LF018, LF024, LF026, SS010, SS023, ST035, SS025, ST009, ST044, ST046, ST050, ST051) at Eareckson Air Station, Alaska.

Action Date: 5/12/2015
Action: Meeting or Teleconference Held
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Sites Program participated in a project scoping meeting with the US Air Force regarding various sites at Eareckson Air Station. A remedial investigation/feasibility study for multiple compliance and LUST sites is scheduled to occur in 2015/2016. Additional groundwater wells will also be installed for long term monitoring at several IRP sites.

Action Date: 3/31/2017
Action: Report or Workplan Review - Other
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Sites Program approved the Final UFP-QAPP Site Investigation for Perfluorinated Compounds and Long Term Management Studies, Eareckson Air Station. The work plan was approved with the condition that the monitoring program proposed was not sufficient to meet the requirements in the RODs. ADEC requires a work plan for remedy implementation to establish an adequate monitoring program.

Action Date: 3/15/1996
Action: Site Characterization Report Approved
DEC Staff: Ray Burger
Action Description: Final Remedial Investigation / Feasibility Study Report, Volume IV, Eareckson Air Station, Alaska (Formerly Shemya Air Force Base Alaska). Not reported

Action Date: 3/10/2000
Action: Update or Other Action
DEC Staff: Gretchen Pikul
Action Description: Comprehensive Basewide Monitoring Report, June 1999 Basewide Monitoring Activities and Findings (draft dated October 1999); ADEC comment letter dated January 7, 2000; final dated 1-31-00, received by Air Force on 3-1-00, and ADEC on 3-10-00)

Action Date: 2/1/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Shemya Air Force Base, Alaska 1992 Installation Restoration Program Field Investigation Report, prepared by CH2M Hill; report finalized in February 1993 (4 volumes).

Action Date: 12/10/2001
Action: Update or Other Action
DEC Staff: Gretchen Pikul
Action Description: Decision Document Report Volumes III and IV (draft dated March 1996; draft final dated April 1997 and received May 1997; ADEC comment letter dated October 1, 1997 with extensive comments; related meetings in 1998 on October 30, November 23, November 24 and December 30; related meetings in 1999 on January 20 and 26, February 2 and 25, June 22-25 during site visit, August 24 during FY00 project scoping meeting, and October 1; received Review Draft Decision Documents on November 30, 1999 ADEC comment letters in February 2000; related

EARECKSON AIR STATION FT02 (Continued) **S104894000**

meetings in 2000 on January 4; related meetings in 2001 on January 4 and 16; ADEC comment letter on Draft Final Technical Memorandum - Risk Assessment Assumptions for Decision Documents (dated March 19) with comment resolution meeting on May 18, final memorandum dated June 2001; draft Proposed Plan for 6 sites received August 24, ADEC comment letter dated September 19, 'response to comments' received December 10, 2001).

Action Date: 12/1/1992
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Site Investigation Report, Shemya AFB, Alaska. Prepared by Woodward-Clyde Consultants.

Action Date: 11/27/2017
Action: Site Visit
DEC Staff: Jessica Morris
Action Description: ADEC staff travelled to Eareckson Air Station for 3 days to conduct site visits and institutional control inspections. Site visits were conducted to all pertinent sites and meetings were held to with ADEC and USAF to discuss a path forward for the sites.

Action Date: 11/14/2016
Action: Site Visit
DEC Staff: Jessica Morris
Action Description: ADEC staff travelled to Eareckson Air Station for 4 days to conduct site visits and become familiar with the ecology and topography of the island. Site visits were conducted to all pertinent sites and meetings were held to with ADEC and USAF to discuss a path forward for the sites.

Action Date: 11/1/2004
Action: Update or Other Action
DEC Staff: Jeff Norberg
Action Description: 2004 Supplemental Field Investigations at Sites LF18, FT01, FT02, and FT03 (sampling to address data gaps prior to ROD for referenced sites); draft report dated October 2004 received November 1, 2004; ADEC issued comment letter dated December 10, 2004; comment resolution meeting held on December 20; based on findings additional groundwater sample collected from MW-01 at Site LF18 for DRO/PAH in January 2005; final report received January 20, 2005; ADEC issued approval letter on January 25, 2005.

Action Date: 10/27/2011
Action: Site Characterization Report Approved
DEC Staff: Jonathan Schick
Action Description: Contaminated Sites Staff submitted a letter to the Air Force Project manager stating that all of the agreed upon changes were made to the 2011 Summary Report for Long Term Monitoring and Maintenance Activities at Eareckson Air Station for sites FT002, SS007, OT048, LF018, LF024, and LF026. The Final Report is approved.

Action Date: 10/22/2015
Action: Update or Other Action
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Sites Program reviewed and commented on a draft scope of work for investigation, remedial process optimization, and

EARECKSON AIR STATION FT02 (Continued) **S104894000**

long term management studies at several sites for Eareckson Air Station.

Action Date: 10/21/2010
Action: CERCLA ROD Approved
DEC Staff: Jonathan Schick
Action Description: ADEC and USAF representatives have signed the Record of Decision for three Fire Training Grounds at Eareckson Air Station. Based on the results of environmental investigations conducted at the three Fire Training Grounds addressed in this Record of Decision, no CERCLA hazardous substances are considered COCs or COECs and the USAF has determined that no action is necessary under CERCLA to protect public health or welfare of the environment at any of the three Environmental Restoration Sites.ADEC Contaminated Sites Staff concurred that the slelcted remedy complies with state law. Investigations conducted at the FT001, FT002, and FT003 have shown that the contamination is from discharges of petroleum products and, therefore, there is no action necessary under CERCLA and no remedy is being selected under CERCLA. Metals were detected at these three sites; however, there are no anthropogenic sources for these metals at the three fire training sites and these sites will contain a requirement for confirmation sampling for metals to verify that the conclusion that they are not antropogenic in origin. Additionally groundwater and surface water monitoring will be conducted for petroleum products under the State Decision Document.

Action Date: 10/21/2010
Action: Update or Other Action
DEC Staff: Jonathan Schick
Action Description: The Final Non-CERCLA Decision Document was signed by USAF and ADEC representatives for three Fire Training Grounds at Eareckson Air Station. As lead agent under CERCLA, the USAF has issued a no action ROD under separate cover for these sites - in part because petroleum is not considered a hazardous substance under the CERCLA petroleum exclusion. Because petroleum is a hazardous substance under state law, these sites need to be addressed under state regulations. The Aircraft Mock-Up Area (MA), Fire Training Area (FTA), and Abandoned Drum Disposal Area (ADDA) together conprise FT002 and cannot support unrestricted use due to petroleum hydrocarbons remaining in place. Institutional Controls with monitored natural attenuation is the selected remedy for FT002-MA. At FT002-FTA, the remedy is ICs to restrict subsurface activities. ICs with MNA of surface water and sediments is the selected remedy for FT002-ADDA.

Action Date: 10/19/2000
Action: Update or Other Action
DEC Staff: Gretchen Pikul
Action Description: FT02 Bioventing Workplan and Sampling Analysis Plan (draft dated June 13, 2000; ADEC comment letter dated June 14, 2000; final dated July 24, 2000; final received August 25, 2000; 2 issues not addressed in final version; acceptable final version submitted on December 27, 2000).

Action Date: 10/10/2013
Action: Update or Other Action
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Sites Program approved the Environmental Long

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Term Management Report for several sites. Continued long term monitoring was recommended for FT002.

Action Date: 1/9/2014
Action: Update or Other Action
DEC Staff: Jessica Morris
Action Description: The ADEC Contaminated Site Program approved the Final Eareckson Air Station Five Year Review Report. The report recommended continued monitoring at FT002. The report also included recommendations to determine whether the bioventing system can be decommissioned, and to schedule decommissioning if so.

Action Date: 1/15/1996
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Final Remedial Investigation / Feasibility Study Report, Volume III, Eareckson Air Station, Alaska (Formerly Shemya Air Force Base Alaska). Not reported

Contaminants:
Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Periodic Review
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Groundwater Monitoring
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Surface water monitoring
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Groundwater Use Restrictions
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Periodic Review
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Groundwater Monitoring
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

EARECKSON AIR STATION FT02 (Continued) **S104894000**

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Surface water monitoring
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station FT02
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Signed CS Determination
Control Details Description1: Groundwater Use Restrictions
Contaminant CTD: CS database notation and signed decision document ICs include: - updates to the Eareckson AS Base General Plan to include restriction areas for soil and groundwater - update USAF land records to include site boundaries and IC requirements. - conduct visual inspections in conjuction with MNA every 2 years- conduct MNA of petroleum hydrocarbons in groundwater at FT002-MA and surface water and sediment at FT002-ADDA every two years
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 42
Facility Status: Active
Action: Institutional Control Record Established
Action Date: 8/7/2014
File Number: 2649.38.001, 2649.38.003

Hazard ID: 42
Facility Status: Active
Action: Institutional Control Compliance Review
Action Date: 5/20/2015
File Number: 2649.38.001, 2649.38.003

Hazard ID: 42
Facility Status: Active
Action: Institutional Control Update
Action Date: 7/9/2015
File Number: 2649.38.001, 2649.38.003

J48
West
1/4-1/2
0.354 mi.
1870 ft.

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY — **SHWS** — **S107029080**
5TH STREET & DAVIS HWY. FTRS-61, FORMERLY FORT RICHARDSON BE — **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 2 in cluster J

Relative:
Lower

Actual:
319 ft.

SHWS:

File Number:	2102.26.012
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.263611
Longitude:	-149.689167
Hazard ID:	1491
Problem:	Petroleum contaminated soil identified during the removal of two 300 gallon used oil tanks. Residual contamination remains at site but is below cleanup levels. There was a drum storage site nearby and a reference in the report dated 2/11/91 to a possible contamination from the drums. FTRS-61 Bldg 798 UST 30A & 30B. Site W001, 1990 RFA SWMU 79. POC for the Army Cristal Fosbrook 384-2173. Last staff assigned was Howard. UST Facility ID 788. Formerly Event ID 2267, reckey 1998210011801. EPA ID: AK6214522157RCRA SWMU 38 UST Used oil tank 1 near bldg. 798 and 39 UST used oil tank2 near bldg. 798USTA 2 Party Attach. I Petroleum Contaminated Soil Stockpiles Located at Landfill.

Actions:

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/20/1995
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Site Assessment, Building 798 UST 30a Fort Richardson, Alaska August 31, 1995The Alaska Department of Environmental Conservation-Defense Facilities Oversight group(ADEC) has received, on September 14, 1995, a copy of the above referenced report for building798 tank 30A. Based on the data presented in the report it appears the site does not exceed level C cleanup criteria and ADEC considers the site closed.

Action Date:	6/16/1995
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date:	5/16/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY (Continued) **S107029080**

Action Description: April 1994 Draft UST Release Investigation, Building 798 USTs 30a and 30b contract no. DACA85-93-D-0013. Fort Richardson, AlaskaThe Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on May 6, 1994, a copy of the above referenced report for building 798. Below are our comments regarding the document.2.2 Geology and Hydrogeology page 5The text states there is one well located within one-quarter mile of the site (AP-2976). There was no reference in the report to exactly where the well is located in relation to the site. Please include information on AP-2976 in one of the figures such as the Post Map.5 Remedial Alternatives page 20ADEC concurs that the level D cleanup criteria was not exceeded at this site and will consider the site closed out. However, closing out of this site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that may cause risk to human health or the environment, then future investigation and/or remedial actions may be required by ADEC.

Action Date: 3/3/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: Letter to Army (Col David Brown Directory of Public Works) RE: The April 28, 1998, closure of UST, Alternate ID 30C, located near the west side of building 798 on Fort Richardson, Alaska. Facility ID 0-000788, ADEC tank 165. Event ID 2267.The Department of Environmental Conservation (Department) has reviewed the site assessment report received on August 7, 1998, documenting the closure of the above mentioned regulated underground storage tank (UST). The report summarizes the information collected during closure of the 1000-gallon UST used to store used oil. Based on the information and laboratory data presented in the site assessment document, the Department is requesting additional information be submitted:???Information contained in the site assessment report indicates approximately 70 cy of soil was excavated from the UST excavation. The soil was temporarily stockpiled and field screened to help determine if hydrocarbon contamination was present. Figure 2, on page 5, shows the field screening results ranged from 4.4 to 13.9 units. However, no confirmation samples were collected from the stockpile before the soil was returned to the excavation. 18 AAC 78.320(c) [now 18 AAC 78.605(c)] specifies the sampling requirements for untreated stockpiles. It specifically requires a minimum of two grab samples be collected and analyzed for untreated stockpiles of 50 cy or less, and one additional sample for each additional 50 cy of soil. Please provide the Department with an explanation as to why confirmation samples were not collected from the untreated stockpile. ???It is unclear from the site assessment report whether all the piping was removed and the piping trench fully assessed for contamination. In general, piping should always be removed if practical. In-place closures are allowed by the Department; however, the owner must fully assess the piping run for contamination. If confirmation sampling indicates contamination exist, the piping must be removed unless doing so would put the building in danger of structural failure. If assessment of the piping is not practical, the owner must provide the Department with a copy of all repairs made on the UST system, leak detection records, and results of a hydrostatic test indicating piping was tight at the time of closure. Please

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY (Continued) **S107029080**

provide the Department with information detailing how the piping was closed, and if the piping run was fully assessed for contamination.???The site assessment report indicates the closure involved UST 30A (ADEC 163). However, our records indicate UST 30A, a 300-gallon used oil tank, was closed in 1990. Please verify the identification of the UST closed under this closure report. If the correct UST identification is tank 30C, as indicated in your cover letter, please submit an amended UST closure notice and a post-closure notice.Upon receipt of the requested information the Department will review all the information submitted and make a determination whether correction action will be required at this site.
Not reported

Action Date: 2/9/1994
Action: Notice of Violation
DEC Staff: Janice Adair
Action Description: Compliance advisory signed by Janice Adair (Regional Administrator) sent to Army in reference to Fort Richardson UST compliance agreement for Tank 26 at Building 786. This advisory is being sent to notify the Army of its failure to comply, in a timely manner, with the Underground Storage Tank (UST) Compliance Agreement (agreement) Upgrading of USTs (Para. 25) and Free Product Recovery and Soil Remediation (Para. 40). In an effort to keep the working relationship that the Army and the department have established, the department would like to move forward with the agreement's intent and goals, which is to come into compliance with the UST regulations. A review of our records did not produce any information indicating the Army has complied with closure or upgrade requirements, outlined in Attachment D, for the following tanks and expected dates: UST 26, Bldg 786 Driver's Training 9/30/93, USTs 40 & 41, Bldg 979 POL Gas Station, 9/30/93, UST 57, Bldg 39600, Site Summit, 9/30/93, UST 92, Bldg 732 Resrv. Motor Pool 9/30/93. Attachment I Petroleum Contaminated Soil Stockpiles- The Army has not submitted a final corrective action report for each site as required by 18 AAC 78.340. Soil Pile (SP) and expected date of completion was 10/30/1993: SP 1 Bldg 8102 Arctic Valley, SP 3B Bldg. 796 Vehicle Maintenance, SP 4 Bldg. 908S 1117th Sig. Batt., SP 5 Bldg. 908N 1117th Sig. Batt., SP 6 Bldg 702 Gas Pump Bldg., SP 7 Flying Club, SP 8 Bldg 733, SP 9 Bldg 798 Motor Pool, SP 10 Bldg 782 Gas Station, SP 11 Fuel Depot, SP 12 Bldg 47622 Bryant Airfield, SP 13, and SP 15 Bldg 55804 Ammo Area A.

Action Date: 2/11/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Fall of 1990 two 300 gallon used oil tanks were removed and approximately 200 cubic yards of petroleum impacted soil was excavated and stockpiled. Lab results indicate that residual contamination remains. Report lacks detail on what was done, limits of excavation, sample collection procedures and locations. Not clear if samples were properly analyzed for metals, chlorinated compounds and PCBs.

Action Date: 12/26/2000
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Army's Decision Document for No Further Remedial Action Planned, Bldg 798, Underground Storage Tank 30A & 30B. This decision document

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY (Continued) **S107029080**

describes the rationale for No Further Remedial Action Planned (NFRAP) at Bldg 798, Fort Richardson, Alaska. This alternative was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), and Army Regulation 200-1, as applicable.Bldg 798, located at the intersection of the Davis Highway and Fifth Street, is the 98th Maintenance Battalion Motor Pool. Removal of underground storage tank (UST) 38 was required by the Fort Richardson-State of Alaska, Department of Environmental Conservation (ADEC) UST Compliance Agreement. Soil samples taken at the time of the removal contained diesel range organics (DRO) and Total Petroleum Hydrocarbons both above the standards specified in 18 Alaska Administrative Code 78, UST Regulations, for a level C clean-up of 1,000 milligrams per kilogram (mg/kg) DRO and 2,000 mg/kg Total Petroleum Hydrocarbons. The release investigation for this site consisted of five (5) soil borings to 30 feet below ground surface. Contamination was found at up to 1,400 mg/kg diesel range orangics and 8,500 mg/kg Total Petroleum Hydrocarbons. A soil potential leachability assessment conducted during the release investigation indicated that contamination would not reach the groundwater table. Based upon the leachability assessment, ADEC concurred with closure on 13 November 1996.This decision document was developed by the Directorate of Public Works, Environmental Resource Department with concurrence from the Alaska Department of Environmental Conservation (ADEC). SUMMARY OF SITE RISK-Soil contamination at this site ranged up to 1,400 mg/kg DRO and 8,500 mg/kg Total Petroleum Hydrocarbons. These levels are above the ADEC standards of 1,000 mg/kg DRO and 2,000 mg/kg Total Petroleum Hydrocarbons. However, paving at the site eliminates the potential for inadvertent inhalation of vapors or fumes and the ingestion of contaminated soil. Futher, pavement at the site acts as a cap, limiting leaching of rain water to the groundwater. A soil potential leachability assessment indicates that contamination at the site will not pose a risk through potential contamination of groundwater at the site.SUMMARY OF REMEDIAL ALTERNATIVES-Evaluation of remedial alternatives was not conducted for this site. Residual contamination levels at the site required a release investigation, but closure was achieved through alternative clean-up standards based upon a soil potential leaching assessment.

Action Date: 1/9/1995
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Request letter for a Waiver of the USTMP schedule at Fort Richardson, Alaska.The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on January 9, 1995, a facsimile copy of the above request for delaying site assessment (SA) work as required in Attachment C of the Underground Storage Tank Management Plan(USTMP). As outlined under para 90 Modification ADEC will grant an extension on SA workfor only the following tanks: 754a, 789a, and 81 at bldg. 59000 and 30a at bldg. 798. Normally, the USTMP requires initiation of a SA within 30 days of confirmation. However, since weatherconditions in Alaska often dictate when work can be conducted, the start date for initiating a SA or release investigation will be no later than May 15, 1995. ADEC will require the timeline in the USTMP be followed for these tanks after this date.

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY (Continued) **S107029080**

Action Date: 1/1/1992
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Used oil.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 798 USTs 30A & 30B USTA 2 Party
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

49
SW
1/4-1/2
0.369 mi.
1950 ft.

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN **SHWS S113929784**
6TH AND A STREETS, FORMERLY FORT RICHARDSON BEFORE 10/01/201 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
306 ft.

SHWS:
File Number: 2102.38.069
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.254693
Longitude: -149.684193
Hazard ID: 26005
Problem: The spill site was identified during barracks construction in 2005; however, dieldrin remains in the soil at SS090 capped with a geotextile and raised flower bed constructed over the top of the site. The pesticide spill area is located on the northwest corner of the intersection and is surrounded to the north and west by an asphalt parking lot, to the south by A Street, and to the east by 6th Street. The existing soil data at SS090 show that a pesticide release to surface soil has resulted in vadose zone contamination in an approximate 50-foot arc from the intersection of 6th and A Streets to a depth of approximately 20 feet bgs.

Actions:
Action Date: 9/9/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft remedial action plan submitted with CSM.The Battalion/Brigade HQ, Barracks Complex and Company Operations Facilities (COFs) islocated in the northwest quadrant ofthe intersection of Sixth Street and' A' Steet at FortRichardson. An area of dieldrin-contaminated soil has been discovered very near the corner ofSixth Street and' A' Steet at the southeast corner of the construction site. This location is at the margin of the main (asphalt-surfaced) parking lot for the Barracks Complex. The breadth and depth of the soil contamination has been delineated. Based on the contaminant type and the extent of the contamination, a conceptual site model has been developed. A risk assessment of the various

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

contaminant pathways leads to the conclusion that completion of the asphalt pavement over the parking lot combined with an extension of the pavement beyond the parking lot curb to the street corner curb would interrupt all pathways. Therefore, completion and extension of the asphalt-paving work at this site will eliminate any potential risk to human health or the environment.It is anticipated that the parking area will be paved by the third week of September 2008.The final asphalt cover will cover the entire dieldren contamination source area. Theasphalt will be extended from the curb edge of the parking area to the street comer/curband will act as an impervious cap to the contaminated soil area thus making all exposure pathways incomplete. Therefore, our recommendation is to authorize the construction contractor to complete the asphalt paving as specified and to extend an asphalt cover of the same material as the pavement to the street comer up to the curb and to a distance north and west of 100 feet from the comer. If any potentially contaminated soil must be removed from this area, it will be containerized, sampled, and properly disposed. Because contamination above risk-based cleanup levels will remain in place (but under the pavement cap), Land Use Controls will be established and enforced at this site. A complete physical description of the site, the levels of contamination left in place, and information on the hazards of dieldrin and the site investigation described herein will be placed in the Fort Richardson Geographic Information System (GIS) database. This information will be available for any persons investigating the need for soil excavation at or near this site. In accordance with the FF A and these attachments, this action will require a decisiondocument that clearly outlines that this area is subject to the Fort Richardson'sInstitutional Control Policy. This action will be reviewed as part of the Five YearReview process. In addition, this site and the decision document will be described in thenext public quarterly newsletter and discussed at the next Fort Richardson RestorationAdvisory Board (RAB).

Action Date: 9/26/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army email back to EPABill/LouisI assumed that we would be completing a formal decision document in accordance with the attachments of the FFA. This I was hoping this would allow this site to be part of the FFA and carried through to the five year reviews, etc.I agree, this probably will be happening more and more. So I think a written plan of what we discussed in August outlining the concept of utilizing the attachments to the FFA. In addition, maybe it would be useful to develop a good example of the ROD/DD with the paragraphs from the FFA and attachments that the RPM's are referencing. Also, I have been told that as of October 1, 2008 all training lands will be transferred to Fort Wainwright. Apparently, the training lands will officially remain with the Army, with oversight by Fort Wainwright personnel and the cantonment area will become part of the Joint Base i.e. Elmendorf. I was informed that this will be completed even though the BRAC/REALIGNMENTwas originally designated fence to fence. The main sites that will become part of Fort Wainwright include Poleline Road, Nike Site Summit, Roosevelt Road and Eagle River Flats. I don't see this as an immediate issue (over the next 6 months) but the preparation of documents, potential site transfers will require completion over the next year. Until Joint Basing takes

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

effect, Fort Richardson still serves as the proponent for all Fort Richardson sites listed in the FFA. Since the BRAC language and all subsequent discussion have not included splitting sites, I am seeking assistance now on the procedures, funding issues, responsibility dates, etc. I am still trying to gather information on exactly what this means as well as what requirements with the FFA is anticipated on the Military's side. I will be passing this up to our Attorney for his assistance and input. Bill-if you could check into how Fort Lewis/and the Air Force Installation (I can't remember the name) are handling their FFA's and CERCLA requirements. Let me know your thoughts

Action Date: 9/25/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA Bill Adams email to Army (Dick Nenahlo and Cristal Fosbrook) re: Barracks Complex Remedial Action Plan-RecapDick, I finally had an opportunity to discuss this site with Mary Queitsch. She is going to research it some more but has the opinion that the FFA intended that this type of action be documented in a ROD or possible a ROD amendment to an existing OU. Her concern is how theinstitutional controls are carried forward and enforced, if necessary, without a decision document. I will be discussing this with her again next week in preparation for the upcoming FFA meeting. Given construction plans at Ft. Richardson this type of situation will likely reoccur and we need to have a strategy for documenting decisions in enforceable documents.I certainly don't look forward to a ROD process so I am open to discussing other options that will get us to the same endpoint.

Action Date: 8/9/2017
Action: CERCLA ROD Approved
DEC Staff: Louis Howard
Action Description: ADEC signed the ROD for SS090 documenting the selected remedy for the site. The selected remedy for soil at SS090 includes the following major components: Maintenance of the soil cap (45 feet in diameter by approximately 6 feet high), topped with a minimum of 3 inches of soil and vegetated for erosion control Maintenance of the asphalt parking lot within the land use control boundary Institutional controls. SS090 cannot support unlimited use and unrestricted exposure due to dieldrin remaining in soil after implementation of the selected remedy. Land use restrictions are required as part of this response action and will be achieved through imposition of land use controls (LUCs) in the form of institutional controls (ICs) that limit the use and/or exposure to those areas of the property that are contaminated. Maintenance of the cap will include performing annual inspections, repairing damage, and maintaining the asphalt, top soil, native grasses, HDPE, and geotextile fabric, as needed. ICs will continue to restrict soil excavation and transport of materials offsite, prevent activities that could affect the performance of the cap, and prevent or control human exposure to dieldrin in soil.See site file for additional information.

Action Date: 8/29/2007
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: April 2006 USACE Geotechnial findings report FTR243 Barracks Complex

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received. A total of 61 test borings were drilled & range in depth from 15 to 30 feet. The borings have been designated AP-5016 to AP-5076. Groundwater was not encountered in any of the borings. Photo-Ionization Detection (PID) readings of collected soil samples range from zero to 4.5 parts per million. These readings indicate no Volatile Organic Compound contamination at the boring locations.All reported GRO, DRO, & RRO were below soil cleanup levels. The total arsenic & total chromium concentrations exceed the cited ADEC soil cleanup levels for contaminated site, but lie within established soil background concentration ranges at Fort Richardson.Pesticides: Trace 4,4???-DDT, & its breakdown product 4,4???-DDE, were detected in a few samples. This finding is common at military facilities in AK & is most likely due to past broadcast application of the pesticide. Dieldrin was detected in AP-5076 at 1.32 mg/kg at 2.5 feet bgs, which is above the ADEC screening level of 0.015 mg/kg (Migration to GW), but well below the Inhalation level of 8.0 mg/kg, which is the level at which construction activities may be significantly impacted. If project requirements necessitate excavation of soil in this vicinity, disposal of the contaminated soil will become the responsibility of the project (i.e. contractor).Volatiles: Trace levels of methylene chloride were detected in two borings (AP-5036 &AP-5039) at levels above the ADEC screening level of 0.015 mg/kg. However, the results for these samples (0.0334 mg/kg & 0.0458 mg/kg) are well below the Inhalation level of 180 mg/kg, which is the level at which construction activities may be significantly impacted. If project requirements necessitate excavation of soil in this vicinity, disposal of the contaminated soil will become the responsibility of the project (i.e. contractor).Summary: Indications of significant chemical contamination were not noted in the soil samples collected during the project foundation study. The arsenic & chromium detected in the soil are considered to be consistent with documented background concentrations. Methylene chloride (a common lab contaminant) was detected at elevated levels in two samples; dieldrin was also detected in one sample. These detections were above the ADEC screening levels but below Inhalation levels, indicating that significant impact to construction activities is not likely.Recommendations: The areas impacted by chemical contamination are highly localized. If these areas will be excavated, the contractor will need to include provisions for dealing with the contamination in his construction plans. Although significant chemical contamination was not found during the investigation, construction activities may encounter areas of soil contamination that were not revealed by the foundation study. Consequently field screening of soil, particularly for POL contamination, is recommended during construction excavation & soil moving activities.See site file for additional information.

Action Date:	8/22/2008
Action:	Conceptual Site Model Submitted
DEC Staff:	Louis Howard
Action Description:	CSM submitted for review. The origin of the dieldren contamination is believed to be from a localized spill or release from historic pesticide spraying on recreational facilities. The small surface area and the shallow depth of the identified contamination is an indication of a small spill or, possibly (given the fact that a fire hydrant is on that corner) the site was a convenient place for a pesticide applicator to clean out his tanks at the end of a day???s

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work. Dieldrin is one of a number of insecticides that, historically, were dispersed by ???broadcast??? spraying.Physical FeaturesThis area is contained within the proposed parking lot for the Barracks Complex currently under construction. Access to this source area was previously part of the Football Field and Recreational Facilities and therefore its use was unrestricted. The area was delineated by orange fencing and designated as a restricted area since it was originally found in 2007. The remainder of the parking lot has been paved with asphalt except for the dieldren area. A concrete sidewalk surrounds the parking area and meets up with ???A??? Street and 6th. The anticipated future use of the area is to be an asphalt covered parking area for solider who live within the BarracksGeologic conditions are characterized on Fort Richardson generally complex and are a sequence of alluvium and buried till to depths on the order of 200 feet. The sequence of alluvium and till in areas overlie Bootlegger Cove Formations, a dense marine clay that acts as a local aquitard. Two major groundwater systems have been identified in the area of Fort Richardson, a shallow and deep system. The shallow system occurs under unconfined conditions and tends to be absent in this part of the Post. The deep aquifer in this area generally is encountered around 100 feet BGS. NATURE AND EXTENTLaboratory analyses were performed on soil samples collected from the parking lot. Elevated levels of dieldrin were detected at concentration ranging from no detect to 1.7 mg/kg. A summary table for analytical data can be found _____. These results were compared with three potentially applicable environmental standards for unrestricted use: ???USEPA Region 3 industrial standard:0.12 mg/kg???ADEC ingestion standard:0.50 mg/kgEleven of the _____samples analyzed were above these levels. Using a semi-qualitative risk approach, a conceptual site model (CSM) was completed for both current-unrestricted use and future-restricted use. The ADEC form and graphic model are attached in appendix ----------EXPOSURE ASSESSMENTCurrently there are two pathways that are complete, incidental soil ingestion and dermal absorption of contaminants from soil. CONCLUSIONSIt is anticipated that the parking area will be complete during September 2008. This final asphalt cover will cover the entire area with evaluated dieldren. The asphalt plan will extend to the street corner/curb and will act as an impervious ???cap??? to the area thus making all pathways incomplete. Therefore, our recommendation is to authorize the construction contractor to complete the asphalt paving as specified and to extend an asphalt cover of the same material as the pavement to the street corner up to the curb and to a distance north and west of 100 feet from the corner. If any soil remains from this area, it will be containerized and sampled for potential disposal. Because this area will have contamination above risk based cleanup levels, it will require Land Use Controlls be established.In accordance with the FFA and attachments, this action will require a decision document that clearly outlines that this area is subject to the Fort Richardsons Institutional Control Policy and this action will be reviewed as part of the five year review. In addition, this will be described in the next public quarterly newsletter and discussed at the next Fort Richardson RAB.

Action Date:	7/26/2016
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Technical Memorandum ??? Annual Inspection and Maintenance of Sites

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AT052, DP051, SS013, and SS090 received for review and comment. In May 2014, it was observed that an approximate 10-foot-by-5-foot area of the cap was damaged.In June 2014, a patch consisting of two layers of 10-mil HDPE and a thin layer of topsoil wasplaced over the raised bed. In September 2014, eight bollards were installed on the perimeter ofthe raised bed to prevent further cap damage.On May 21, 2015, additional maintenance of the cap was completed by ChemTrack under subcontract with CH2M HILL. Activities included placement of an additional topsoil layer, reseeding of the area with a native plants/seed mix, and installation of coconut erosion control matting. The clean soil was obtained from American Landscaping Inc., and was certified as clean fill as documented in a May 8, 2015, letter that was included in the SA033 Site Closure Report. Approximately 40 bank cubic yards of loosely compacted soil was applied and compacted manually with a rolling drum, for an approximate 6- to 12-inch thickness across the surface of the mound. A final land survey was performed. Biweekly inspections were completed through July 8, 2015. Native grass has been established and was observed during the 2015 inspection.

Action Date: 7/25/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Analytical data report received. May 2008 Wider Area Confirmation SamplingDieldrin results06A 0-3' bgs 1.04 mg/kg 3-6' bgs 1.5 mg/kg, 06C 6-9' bgs 0.549 mg/kg, 06D 12-16' bgs 0.0105 mg/kg. 06E (dup of 06D) 12-16' bgs 0.0158 mg/kg, 06F 16-20' bgs 0.144 mg/kg, 09B 4-8' bgs 0.096 mg/kg, 12A 0-4' bgs 0.0181 mg/kg, 12B (dup of 12A) 0-4' bgs 0.02 mg/kg. (NOTE: April 2012 Current 18 AAC 75 Table B1 cleanup levels for Dieldrin: MGW 0.0076 mg/kg, direct contact 0.32 mg/kg).

Action Date: 7/23/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Field Activities Report received for review & comment. SITE SUMMARY AND RECOMMENDATIONSDamage to the cap was observed and repaired in May and June 2014. Bollards were installed around the perimeter of the site in September 2014. Additional soil cover and seeding of the area is planned for 2015. No additional deficiencies were observed during the LUC inspection in October 2014. LUC inspections will continue to be conducted annually in accordance with the Remedial Action Completion Report SS090 ??? Barracks Construction Dieldrin Spill Site.RecommendationsSite SS090 is identified as a Green priority. No Further Action and continuation of LUC inspections are recommended for this site.

Action Date: 7/1/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the draft PSE report. ADEC concurs with the recommendations for SS090 as ???cleanup complete with institutional controls??? pending resolution of any EPA comments on the document. Per the Fort Richardson Federal Facility Agreement (FFA), ADEC requests that a decision memorandum be drafted for signature by the signatories to the FFA, that ???no further action??? in terms of planning for FFA remediations (such a decision would not prohibit future activity undertaken pursuant to State Authority (1994 FFA,

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Attachment 1: 3.3 Preliminary Source Evaluations).

Action Date: 6/3/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft Remedial Action Completion Report. Main comments dealt with defining unlimited use and unrestricted exposure terminology and land use control modifications, land use changes being communicated to both EPA and ADEC.

Action Date: 6/3/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the Draft Remedial Action Completion Report for SS090 ??? Dieldrin Spill Site, Located on JBER-Richardson, Alaska dated May 2015. Main comments were on the defining unlimited use/unrestricted exposure and notification requirements to both EPA and ADEC when JBER proposes any changes to land use, land use controls, corrective measures taken when land use controls are breached

Action Date: 6/25/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft PSE report received for comment and review.ConclusionsThe following conclusions were made regarding SS090:??? Dieldrin in soil is present at SS090 at concentrations above the screening level; however, the lateral and vertical extent of the soil contamination has been defined.??? Soils with dieldrin concentrations above the ADEC direct contact criteria are contained beneath a cap and potential exposure pathways are considered incomplete.??? Groundwater has not been affected by the dieldrin soil contamination.??? Potential risks to human health based on current site use (commercial/industrial land use scenario) are considered acceptable.??? There are no potential risks to the environment/ecological receptors.??? There are no remaining data gaps associated with this site.RecommendationsThe following are recommended for SS090:??? EPA and ADEC concurrence that no further investigation or remedial action for soil or groundwater is necessary at this time (response complete). ADEC to grant a ???Cleanup Complete with ICs??? designation.??? Land use restrictions???LUCs and a cap???implemented as part of a previous response actionhave achieved the remedial action objectives and will continue to limit the use and/or exposureto soil at the site until concentrations of dieldrin in soil allow for UU/UE. The site is listed as a contaminated site within the JBER and ADEC databases so that the IC of the dig permitprocess remains effective in protecting future construction workers, employees, and residentsuntil the dieldrin-contaminated soil is adequately remediated.??? Complete annual site inspections and include the site in the Annual Long-term Management(LTM) Report for CERCLA Sites.??? Inclusion of this site in the 5-year review report because dieldrin remains in soil and does notallow for UU/UE. The next 5-year review for Fort Richardson is due on February 22, 2018.

Action Date: 5/9/2017
Action: Update or Other Action
DEC Staff: Louis Howard

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Action Description:	Final ROD for SS090 received. The site-specific remedial action objective (RAO) for SS090 is to prevent human exposure to dieldrin in soil at concentrations above levels that allow for UU/UE. This RAO is used along with site-specific applicable or relevant and appropriate requirements (ARARs) to help select a cleanup standard for soil. The cleanup level for dieldrin in soil is 0.44 mg/kg, which is the 18 AAC 75 promulgated ADEC human health cleanup level.Selected remedy is: Capping and ICs will restrict human exposure to dieldrin in soil at concentrations above the cleanup level so that the potential exposure pathways (direct contact and ingestion) remain incomplete (see Figure 2). Maintenance of the cap (raised bed) built in 2008 as a part of the IRA during construction of the adjacent barracks and parking area includes performing annual inspections, repairing damage to the adjacent asphalt area, the cap, and maintaining the top soil and native grasses. It is estimated that maintenance of the top soil and native grasses will be required every 10 years, and the cap liner (two layers of HDPE and a layer of geotextile fabric) is anticipated to require replacement in 30 years.ICs were implemented during the IRA and would continue in accordance with USAF Land Use Control Guidance. ICs are a legal or administrative process that restrict soil excavation and transport of materials offsite and are designed to prevent activities that could affect the performance of the cap, prevent or control human exposure to dieldrin in soil at SS090, and protect human health and the environment.See site file for additional information.
Action Date:	5/6/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC has received the final version of the UFP-QAPP SC Work Plan for SS090 Barracks Construction Dieldrin Spill Site, ADEC CS DB Hazard ID 26005 on JBER-Richardson on May 3, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.
Action Date:	5/6/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 79407 name: Barracks Construction FTR 243 SS090
Action Date:	5/27/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC email to AF and EPA re: SS090 LUC Breach.Record this for the next annual LUC report as an LUC failure/breach and add it for the Fifth Five Year review (under Remedy Implementation Status Table-Brief Status as well as the Site-Specific Implementation of LUCs and Other Measures portion of the Technical Assessment Section of the 5YR) regarding LUCs. ADEC is in agreement with the approach outlined below. Analyze via 8081B, applicable cleanup level that the method needs to meet is 0.0076 mg/kg or 7.6 ug/kg. A check of the Draft May 2014 Letter WP Addendum Remed Action-Ops & Monitoring (Contract No. FA8903-09-D-8589 / Task Order 0016) shows no such site is listed to be inspected (CERCLA or STATE) for LUCs??ADEC comments on the draft UFP-QAPP for SS090 (Guess the note to the LUC Plan does nothing for contractors with snow plows or AF maintenance personnel with same). Absent any potential GW contamination, the existing soil

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contamination exceeds the direct contact level & migration to GW cleanup level for dieldrin (0.32 mg/kg & 0.0076 mg/kg, respectively). These levels are based on excess carcinogenic risk of 1x 10-5. The presence of the geotextile cap underneath the flower bed eliminates the contact pathway to human receptors as long as it remains in place. At a minimum, ICs will be required by ADEC [per 18 AAC 75.325(i)]as long as the dieldrin contaminated soil above the direct contact level remains beneath the geotextile cap at the site, even if GW is not shown to be impacted by dieldrin. JBER, shall add a note to the LUC Plan to alert personnel to the potential presence of contaminants in soil & prevent disturbance or transport of dieldrin contaminated soil from the site without ADEC notification & an approved work
plan----------
----------Bollards around the perimeter of the no dig/no snow plow zone sounds like a good idea.

Action Date: 5/23/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from Air Force (G. Fink) to ADEC and EPA re: SS090 JBER-Richardson LUC breach. It has come to our attention that the cap at the SS090 Dieldrin Spill Site has been damaged (see photo). It appears that a snowplow may have been overly aggressive and probably assumed the mound was a pile of snow. To our surprise, the cap goes over the mound with about 3 of topsoil covering it. We expected the cap to be at grade with the soil mound placed on top. We spoke to the contractor that did the work and he said that clean soil from the job site was used for the mound and a geotextile membrane wrapped the soil and was tucked underneath (i.e. the burrito effect). Recall that the dieldrin contamination left in place was below the surface of the grade. Our game plan is to apply a temporary geotextile patch and additional topsoil to limit any immediate potential exposure. Once we run dig permits we will grab a sample (for peace of mind, even though it is clean soil), repair the membrane and add more topsoil. Funding permitted, we plan to place bollards along the parking lot side to prevent this from happening again. Are you in agreement with this course of action and do you require an approved work plan to complete the work? My take is that it falls under the maintenance category and not a cleanup action. Therefore a WP would not be required. Do you agree? Obviously, we would like to accomplish this work as quick as we can.The good news story is that breach was brought to our attention by a contractor that does routine construction work on JBER. The rapport that Don Aide has developed during his dig permit reviews has given us an extra set of eyes in the field to identify any potential problems. Let me know if you have any questions or concerns.Thanks,Gary

Action Date: 5/20/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Remedial Action Completion Report received for review and comment. The response action summarized in this RACR and selected as the final remedial action isnecessary to protect the public health or welfare or the environment from actual or threatenedreleases of hazardous substances into the environments. The results of the risk evaluationindicate that the interim remedial action was successful in

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mitigating/controlling direct contactrisks.USAF has determined that the RAO was met and no further response actions are required based on the following information:??? The lateral and vertical extents of soil contamination have been defined.??? Soils with dieldrin concentrations above the ADEC direct contact CUL and EPA RSLs for residential and industrial land uses are located beneath a cap (raised bed constructed of approximately 5 to 6 feet of soil, two layers of 20-mil HDPE, a geotextile fabric cap, and topsoil), and current and potential future exposure pathways are incomplete.??? Potential risks to human health based on current site use (commercial/industrial land use scenario) are acceptable.??? The RAO has been achieved and LUCs will continue to limit the use and/or exposure to soil at the site until concentrations of dieldrin in soil allow for UU/UE.Long-term management will continue at SS090, including the following:??? Completion of annual site inspections and inclusion in the Annual Long-term Management Report for CERCLA Sites.??? Inclusion of this site in the five-year review report because dieldrin remains in soil and doesnot allow for UU/UE. The next five-year review for Fort Richardson is scheduled for February 2018.

Action Date: 5/13/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff emailed approval for sampling analysis plan and EPA had no comments on the SAP.

Action Date: 5/1/2008
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the work plan.Equipment DecontaminationDisposable equipment will be used to the greatest extent possible to avoid the need for equipment decontamination. Decontamination of sampling equipment will be consistently conducted in order to assure the quality of samples collected. Non-disposable sample handling equipment, such as the Macrobore sampler, will be wiped free of excess soil before the collection of each sample. The Macrobore tube interior will be wetted with a non-sudsing detergent and wiped clean with paper towels. The drive cap, cutting shoe, and piston point will be immersed in a nonsudsing detergent/water mix, scrubbed clean, and rinsed with non-potable water. Further cleaning will not be done unless necessary. However, a new PVC insert will be used for the collection of each sample. The use of flammable solvents (e.g., hexane, methanol) for equipment decontamination will be avoided. ADEC will require at least one decontamination blank must be collected and analyzed for every 20 soil samples collected each day (mininimum of one). This blank is a sample of contaminant-free media used to rinse sampling equipment. It must be collected after completion of decontamination procedures and before sampling. ADEC requests the Army update Table 2 and/or text to show minimum number of required decontamination or equipment blank samples.Data Quality Review/Chemical Data ReportADEC requests the Technical Memorandum 06-002 (as amended October 2006) be followed and a completed laboroatory data review checklist version 2.5 (as amended April 16, 2008) be included in the report.

Action Date: 4/5/2017

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Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC concurs with the responses to its comments on the ROD for SS090.

Action Date: 3/26/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Update on the DRAFT Outline of the PA/SI for FTR243; Barracks Complex Site received. Dieldrin was originally discovered in one boring during the geotechnical investigation preceding the construction of the Barracks Complex at this site. The results of a follow-up preliminary site investigation in October 2007 indicated dieldrin-contaminated soil at the southeast corner of the construction site at the corner of Sixth St. and ???A??? St. at Fort Richardson. A total of six borings within a ~20 foot diameter circle all showed some level of contamination???from less than 100 ppb to 1,700 ppb. Extended site characterization is planned for May-June 2008. This characterization work is focused on defining the horizontal and vertical extent of the dieldrin-contaminated area. This plan will use the point roughly at the center of the current six borings as a reference point. Three lines that radiate from this center point will be marked on the ground. One line will be directed approximately north (the ???northern line???). Another line will be directed approximately west (the ???western line???). The third line will be directed approximately northwest of the center point (the ???northwestern line???). Borings will be drilled as follows:A.An initial boring will be drilled within the area of the current group of six borings. B.Along the ???northern??? and ???northwestern??? lines, three borings will be drilled at distances of 20 feet, 50 feet, and 90 feet from the center point. Along the ???western??? line, borings will be drilled at distances of 20 feet and 50 feet. (Only two borings will be drilled on the western line because, during the original geotechnical work, a boring was drilled at ~120??? from the center point and the analytical results of the samples collected were non-detect for dieldrin.)C.Finally, two borings will be drilled across the intersecting streets (Sixth and ???A???)???one directly to the east and one directly to the south of the center point and at a distance of approximately 40 feet from the centerline of the street. As each of the borings progresses, soil samples will be collected for laboratory analysis (EPA SW-846 Method 8081B) at 0-3 feet, 3-6 feet, and 6-9 feet bgs.During the drilling, a ???EnviroGard Chlordane in Soil Test Kit??? (EPA Method 4041 (by immunoassay)) will be used to screen all soil samples. The boring described in A. above will be drilled first. The three soil samples from this boring (which has already been determined to be contaminated) will be forwarded to the analytical laboratory for expedited turnaround. The laboratory results will be compared with the field screening results to assist us in the interpretation of the field screening results from the remainder of the borings. That is, a correlation between the field screening results and the analytical results will, it is hoped, provide a higher level of certainty as to the depth at which contamination ends. If (and based on the results of the boring in A. above) the field screening results for the 6-9 feet depth soil samples are ???non-detect,??? it will be concluded that the contamination has gone no deeper than 9 feet bgs. If, on the other hand, field screening results on the 6-9 foot sample indicate the presence of dieldrin, the boring will proceed and soil samples will

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be collected at 3 foot increments until either: 1) the field screening results indicate no detectable concentrations of dieldrin or, 2) the limit of the drilling equipment is reached. The basis for this approach is that dieldrin is only slightly soluble in water and, therefore, it may be presumed that surface-applied dieldrin (which, it is assumed, is the source of the contamination) will not have percolated to significant depths.It is anticipated that the results of this extended site assessment will provide a clear and unambiguous definition of the horizontal and lateral extent of the dieldrin contamination. These results will, also, provide a scientifically credible basis for making decisions as to any necessary additional phases to the CERCLA investigation.

Action Date: 3/23/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft PP. Main comments were to clarify that all groundwater is considered by the State of Alaska a potential drinking water source. Other comments were made regarding the NCP bias against untreated waste being disposed of off-site vs. leaving waste untreated in place. See site file for additional information.

Action Date: 3/15/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Proposed Plan received for review & comment. This Proposed Plan identifies Maintenance of the Cap & Institutional Controls (ICs) as the Preferred Alternative for SS090 & provides the rationale for this preference. The cap is a soil, high-density polyethylene (HDPE), & a geotextile fabric cover constructed in 2008 that minimizes the potential for receptor exposure to contaminants on the surface. Preliminary assessment & site inspection investigations were conducted from 2005 through 2013 to characterize the site & determine the need for further action. In 2008, an IRA was completed during construction of the adjacent barracks & parking area because dieldrin in soil posed potential risk to onsite workers & potential future residents from direct contact. The IRA consisted of consolidating soil with dieldrin above ADEC migration-to-GW cleanup level in an approximate 5- to 6??? high by 45??? wide circular mound, covering it with two layers of 20-mil HDPE & a geotextile fabric, & topping it with approximately 3??? of top soil, creating a raised bed. The raised bed was constructed on top of an area that has soil below the ground surface with concentrations of dieldrin above the ADEC direct contact cleanup level. Two other locations outside of the raised bed, where dieldrin was in soil at concentrations above the ADEC migration-to-GW cleanup level, were covered by the paved surface of the parking area.Interim land use restrictions ??? ICs were also implemented with the IRA to restrict soil excavation & transport of materials offsite. In 2013, a PSE 2 investigation was completed. Three GW monitoring wells were installed & samples collected & analyzed to determine whether pesticides had reached GW & to evaluate potential risks to human health & the environment. In 2014, eight bollards were installed along the perimeter of the raised bed to prevent damage to the capped raised bed. In 2015, the raised bed was covered with approximately 6 to 12??? of additional soil & re-seeded with native grasses for continued protection.While the selected

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remedy does not fully address the preference for treatment that permanently & significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element, none of the alternatives include treatment of soil, & the immediate or future need for active remediation at the site is not warranted for the following reasons: The site is located in a parking area near an intersection, & current land use is not expected to change in the foreseeable future. Dieldrin in soil is not migrating to GW.See site file for additional information.

Action Date: 2/27/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA provided comments on the SS090 UFP-QAPP.ES-1 1) Waste was left in place on this site with geotexile cap. Please explain how cleanup complete can be achieved without ICs. 2) No published EPA MCL was found for dieldrin. Endrin & chlordane both have an EPA MCL of 0.002 mg/L. What ARAR will the cleanup level be based on? (Note: Borings B-2, B-4, B-6, & AP5076 all exceed the ADEC Direct Soil Contact <40???zone cleanup level of 0.32 mg/kg & EPA???s industrial soil level of 0.11 mg/kg)Site Specific BackgroundPlease describe if this site belongs to an OU or if the previous actions were performed under a Time Critical or Non-Time Critical Removal Action.ES-2, ES-5, & Figure 24 wells are proposed on Figure 2, however only 3 wells are described in the narrative. Please clarify the proposed number & location of new GW monitoring wells.WS 11, p. 18Performance or Acceptance Criteria. In this section, the narrative states the ???screening levels will be 1/10th the ACEC B1 & Table C cleanup criteria, or if no cleanup criterion exists for a compound, the EPA RSLs. In general, analyses are sensitive enough for comparison to screening levels.??? In reviewing the draft U-QAPP Worksheet 15 ???Laboratory Comparison for DL, LODs, & LOQs to ADEC Cleanup levels & 1/10th Cleanup levels??? (6 categories), the following observations were made for dieldrin:Test America Table 15-1 for ADEC Table B1 (direct contact) = 3 exceedancesTable 15-3 for ADEC Table B1 (MGW) = 1 exceedanceTable 15-7 for ADEC Table C (GW levels) = 3 exceedancesApplied Sciences LabsTable 15-8 for ADEC Table B1 (direct contact) = 0 exceedancesTable 15-10 for ADEC Table B1 (MGW) = 1 exceedanceTable 15-14 for ADEC Table C (GW levels) = 0 exceedancesPlease clarify how lab results will be interpreted if analyses are performed by Test America, especially in relation to the GW cleanup levels. The capabilities of the two labs to analyze for the target analyte are not equivalent.In Table 10-1 - Except for sample AP-5075, the RLs for all the undetected Dieldrin in samples collected from 2005 to 2008 is greater than the ADEC Method 2 Clean-up level of 0.0076 mg/kg but less than the ADEC Under 40-inch zone direct contact soil clean-up level of 0.32 mg/kg.JBER will need to reassess the capability of their labs & ensure that the RLs will meet the specified screening levels.Worksheet 15Please clarify the PALs on this worksheet instead of only referencing the multiple Tables included in WS 15 of the U-QAPP. The ADEC Table C GW Cleanup Level is 0.053 ug/L & the 1/10th screening level is 0.0053 ug/L. Please clarify the PALs for contaminants of concern by media in this workplan.The narrative identifies the target analyte as pesticides, however, the target analyte for this site specific workplan is only dieldrin & not all other pesticides included in Method 8081. The analyte group would be identified as Pesticides.Please add reference

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

to Tables 15-8 to 15-14 (Applied Sciences Laboratory) in the draft U-QAPP as the SS090 workplan narrative only references Tables 15-3 to 15-7 (Test America).Table 16-1p. 24A site closeout report is premature following a site characterization study. The type of decision document will be determined following analysis & interpretation of GW results from multiple rounds of sampling.WS 17, p. 27The second paragraph states ???GW data will be compared with federal MCLs???, however WS 15 discusses ADEC Table C GW Cleanup Levels & 1/10th GW Cleanup Levels as PALs. Please clarify the PALs.SS090-MW01 to MW03 are discussed in the text, however Figure 2 includes a fourth monitoring well SS090-MW04. Please clarify in the text & on Figure 2 the locations of the proposed monitoring wells.The second paragraph under the Site Specific Sampling Plan section references the ADEC Monitoring Well guidance for well construction. SOP-14 in the U-QAPP is based on the ADEC guidance. Please describe if there are differences in the procedures of the ADEC guidance verses SOP-14 & why SOP-14 is not used in this site specific workplan.Please provide justification for not analyzing well boring soil samples by depth for dieldrin. WS 9Action item 1 describes the need for providing soil sample ??? nondetects for dieldrin on figure???. Figure 2 only shows the locations of samples B13-B16 without the results. Please include the ND results for B13-B16 on Figure 2 & a justification in the narrative for not sampling for dieldrin in soils at depth from the well boring cores.p.28 The first full paragraph on page 28 describes sample collection but omits the timing of the samples & frequency. Please provide a time reference of when samples will be taken & if this corresponds to periods of high or low aquifer levels or seasonal fluctuations observed in the aquifer.

Action Date: 2/22/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed & commented on the Draft UFP-QAPP work plan.General Comments for JBER-E & JBER-R sitesPlease provide latitude & longitude coordinates for the site location in decimal degree format with a precision of six decimal places (dd.dddddd). Executive Summary3rd ParagraphThe text should also mention that GW data will be compared to Table C GW cleanup level for dieldrin (0.000053 mg/L) in addition to EPA MCL. If the Table C cleanup level for dieldrin is equal to the MCL then state it as such. The more stringent cleanup level of the two criteria will be applicable to SS090. Please list the cleanup level for dieldrin in GW in the document. Note that some Table C GW cleanup values were developed using EPA???s MCLs while others use RBC. RBCs are based on toxicological data & risk to human health, per Equations 1 or 2 in the Cleanup Levels Guidance (2008). MCLs are federally determined levels that incorporate other factors including feasibility & cost. For some chemicals, the cleanup level in Table C exceeds the cumulative risk standard. Refer to ADEC???s Cleanup Levels Guidance (2008) for a list of these contaminants. These contaminants should be dealt with on a site specific basis (Section 3.1.4 of ADEC???s Risk Assessment Procedure Manual November 2011).Absent any potential GW contamination, the existing soil contamination exceeds the direct contact level & migration to GW cleanup level for dieldrin (0.32 mg/kg & 0.0076 mg/kg, respectively). These levels are based on excess carcinogenic risk of 1x 10-5. The presence of the geotextile cap underneath the flower bed eliminates

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

the contact pathway to human receptors as long as it remains in place. EPA???s RSLs for dieldrin are 0.03 mg/kg for residential land use & 0.11 mg/kg for industrial land use (United States Environmental Protection Agency Regions 3, 6, & 9. November 2012. Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm) At a minimum, ICs will be required by ADEC [per 18 AAC 75.325(i)]as long as the dieldrin contaminated soil above the direct contact level remains beneath the geotextile cap at the site, even if GW is not shown to be impacted by dieldrin. Page 12 Nature & Extent of ContaminationADEC requests JBER state ???The pesticide contamination likely did not reach the water table, but levels at the site are above migration-to-GW cleanup levels, as well as the direct contact cleanup levels, & EPA???s RSLs for dieldrin contamination for residential land use & industrial land use??? Dieldrin is above ADEC???s direct contact level of 0.32 mg/kg for dieldrin at 8 locations.See site file for additional information.

Action Date: 2/19/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 12/13/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft ROD. A comparison of Figure 2 and the statements in this section regarding the 2008 actions should be presented more clearly since the reader sees the figure with dieldrin much higher levels at depth than 0.32 mg/kg. Perhaps a cross section profile would help the reader understand what is above ground in the circular mound and what is at depth (below any geotextile fabric layers and the mounded soil). See Figure 5-1 (Raised Bed Cross Section) of the Interim Remedial Action Report for SS090 for guidance and possible reference in the text and inclusion in this document with the other figures. Update (as applicable) any additional soil/material which had been placed subsequent to the 2008 interim action. After the last sentence, state that the dieldrin soil direct contact cleanup level has since been replaced by the human health exposure pathway cleanup level of 0.44 mg/kg as of November 6, 2016 which will be used as the final cleanup level in this document.See site file for additional information.

Action Date: 11/30/2005
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Sampling and Analysis Plan received. The primary purpose of sampling at this site is to determine whether significant soilcontamination exists in the area to be excavated in the course of the planned constructionactivities,which might necessitate off-site transport and remediation of the excavated soil.This project is not intended to be a comprehensive environmental investigation of this site.The primary regulatory authority to be addressed by this sampling is ADEC guidance on off-site disposal of soils (ref. 6.3), which is based upon soil cleanup levels promulgated in 18 ACC 75.Soil samples for chemical analysis will be collected from the same borings positionedand drilled by CEPOA-EN-ES-SG for geotechnical data. The

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

current scope of drilling for thefoundation study includes thirty-six borings to 15 ft (4.6 m) and thirty-two borings to 30 ft (9.2 m) below-ground-surface (bgs). Figure 2 presents the locations of the soil borings. Each boring has been pre-staked and surveyed.All soil samples collected will be field screened. Typically, samples will be collected from the following approximate intervals:??? 0 -1 ft (0 - 0.3 m) bgs,??? 2.5 - 4 ft (0.8 - 1.2 m) bgs,??? 4.5 - 6 ft (1.4 -1.8 m) bgs,??? 9.5 - 11 ft (2.9 - 3.4 m) bgs,and so forth at 5 ft (1.5 m) intervals until the boring is completed.Selected samples will be submitted for laboratory chemical analyses, based on theobservations and professional judgment of the chemist performing the sampling. Samplecollection will be concentrated in those soil horizons most likely to be disturbed duringconstruction, i.e., within 10ft (3.1 m) of the surface within building footprints; within 2 ft (0.6 m) of the surface in areas to be paved.Analyses: GRO, BTEX, DRO, RRO, VOCs, PAHs, PCBs, Pesticides, RCRA Metals.

Action Date: 11/21/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft ROD received for review and comment. The selected remedy for SS090, Barracks Construction Dieldrin Spill Site, is Alternative 2 (Maintenance of the Cap and ICs). The selected remedy consists of maintenance of the cap and ICs, which restrict human exposure to dieldrin in soil at concentrations above the cleanup level* so that the potential exposure pathways (direct contact and ingestion) remain incomplete. The cap, constructed in 2008, consists of soil with low levels of dieldrin (below the cleanup level) that was consolidated into an approximately 5- to 6-foot-high by 45-foot-wide circular mound and covered with two layers of HDPE, layer of geotextile fabric, and topped with approximately 3 inches of top soil, creating a raised bed (cap). The cap was constructed on top of an area with dieldrin in soil at concentrations above the cleanup level. See site file for additional information.

Action Date: 11/1/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Tech memo received for review and comment. No significant issues were noted for any of the sites. Continuation of annual inspections is recommended for Sites AT052, SS013, and SS090.See site file for additional information.

Action Date: 10/5/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Interim Remedial Action Summary Report received for review & comment. The response action summarized in this IRA Summary Report was necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environments. The results of the risk evaluation indicate that the IRA was successful in mitigating/controlling direct contact risks.BASIS FOR RESPONSE COMPLETEUSAF has determined that the RAO was met & no further response actions are required based on the following information:??? The lateral & vertical extents of soil contamination have been defined.??? Soils with dieldrin concentrations above the ADEC direct contact CUL & EPA RSLs for

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

residential & industrial land uses are located beneath a cap (raised bed constructed of approximately 5 to 6 feet of soil, two layers of 20-mil HDPE, a geotextile fabric cap, & top soil), & current & potential future exposure pathways are incomplete.??? Potential risks to human health based on current site use (commercial/industrial land use scenario) are acceptable.??? The RAO has been achieved & LUCs will continue to limit the use &/or exposure to soil at the site until concentrations of dieldrin in soil allow for UU/UE.ONGOING ACTIVITIESLong-term management at SS090 will include completion of annual site inspections & inclusion in the Annual Long-term Management Report for CERCLA Sites. In compliance with the CERCLA process, the USAF a will propose a plan for a final remedial action. The plan will likely propose converting the interim remedial action discussed in this summary report into a final remedial action. The proposed plan will be made available for public review & comment. A selected alternative will subsequently be documented in a record of decision (ROD).

Action Date: 10/20/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft IRA summary report.Main comments were to update 18 AAC 75 regulation and EPA RSLs referenced in report.See site file for additional information.

Action Date: 1/31/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP draft work plan received for SS090 FTR243 dieldrin site.Definitive-quality GW data will be used to for comparison to screening levels. Results of the screening level comparisons will be used to determine whether corrective action is necessary. The data from the planned investigations will be generated by using rigorous analytical methods (e.g., EPA SW-8081A). The use of these data is not restricted unless there is a quality problem associated with them.The derivation of project screening levels is detailed in Worksheet 15. Screening levels are one-tenth of the ADEC Table B1 & Table C cleanup criteria or, if no cleanup criterion exists for a compound, the EPA Regional Screening Levels. In general, analyses are sensitive enough for comparison to screening levels. Refer to Worksheet 15 in the Draft JBER Basewide UFP-QAPP (USAF, 2012a) for analytical DQOs.Although the SS090 site is well characterized, there are no GW data to determine whether or not contamination has reached the water table. Therefore, GW wells will be installed to determine whether contamination has migrated to GW & make decisions about the need for & extent of corrective action to mitigate unacceptable risk.GW data are required for input into the risk model. GW sampling & analysis will follow ADEC requirements under 18 AAC 75 & are discussed with in Worksheet 11 of the Draft JBER Basewide UFP-QAPP (USAF, 2012a) & in Worksheet 17 & 18 of this Work Plan.The project objective is to collect GW samples to characterize risk to human health & the environment. GW data will be compared with federal maximum contaminant levels (MCLs) (EPA, 2012). If the maximum contaminant (i.e., dieldrin) concentration in GW exceeds the MCL, then further action will follow the Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) process. Implementation of a site-specific risk assessment would be conducted after EPA & ADEC

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN SPILL SIT (Continued) **S113929784**

review, comment, & subsequent approval of CSMs & a risk assessment Work Plan. Site-specific risk assessments will be conducted in accordance with EPA???s Risk Assessment Guidance for Superfund (RAGS).To meet the regulations, characterize risk, assess remedial options, & plan appropriate ICs &/or engineering controls (ECs), the site characterization needs to achieve the following objectives:??? Determine whether dieldrin has impacted GW as needed for input to the risk calculations/models & to assess remedial alternatives.??? Characterize hydrogeologic conditions (hydraulic conductivity, flow direction, hydraulic gradient, GW depth, & seasonal fluctuation) as needed for input to the risk calculations & to assess remedial alternatives.Three monitoring wells (SS090-MW01 through SS090-MW03) will be installed upgradient & downgradient of the source area at the site to (1) determine if dieldrin contamination has migrated to GW & (2) assess hydrogeologic conditions. Well construction methods will follow the procedures outlined in the current ADEC Monitoring Well Guidance document (ADEC, 2011). The monitoring wells will be installed to a depth of 10 feet beyond the GW table (approximately 120 feet). The monitoring wells will be constructed of Schedule 40 polyvinyl chloride (PVC) casing & will have a 15-foot section of screened casing across the water table (5 feet above GW to 10 feet below GW). The screened section of casing will have a 0.010-inch slotted screen with size 20-40 silica sand pack. The sand will extend from the bottom of the screen to approximately 2 feet above the top of the screened section. The annular seal above the sand pack will be composed of bentonite that will extend from the top of the sand to approximately 5 feet above the sand pack.

Action Date:	1/18/2018
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Draft Fourth Five Year Review received for review and comment. Main comment was to place a notice of environmental contamination with the Alaska Dept. of Natural Resources land records prior to the next five year review. See site file for additional information.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich SS090 Barracks Construction dieldrin
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	Not reported
Control Details Description1:	Not reported
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

K50 **JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY** **LUST** **S109261094**
WSW **5TH & D STS. NE CORNER** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.371 mi.
1959 ft. **Site 2 of 4 in cluster K**

Relative: LUST:
Lower
Actual: Facility Name: JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY
314 ft. Facility Status: Cleanup Complete
Record Key: 199221X022568
File ID: 2102.26.010
Oname: U.S. Air Force
Lat/Lon: 61.25953 -149.6893
Lust Event ID: 303
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

K51 **JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY** **SHWS** **S109255922**
WSW **5TH & D STS., NE CORNER, FORMERLY FORT RICHARDSON BEFORE 10/** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.372 mi.
1962 ft. **Site 3 of 4 in cluster K**

Relative: SHWS:
Lower
Actual: File Number: 2102.26.010
314 ft. Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259531
Longitude: -149.689317
Hazard ID: 23958
Problem: Last staff assigned was Howard. Army POC Mark Prieksat 384-3042USTA 2 Party Attach. I Petroleum Contaminated Stockpiles Located at Landfill. Existing stockpile (SP10) Bldg. 782 Gas Station 400 c.y. completion date: 10/30/93A corrective action report summarizing the treatment and/lor disposal of petroleum contaminated soil which was stockpiled at the Landfill in 1992 and 1993 and treated prior to October 30, 1993, will be submitted to ADEC no later than December 30, 1993.A corrective action report for soil treated in 1994 will be submitted to ADEC by not later than December 30, 1994

Actions:
Action Date: 8/13/1992
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 8/12/1992
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 2/11/1991
Action: Underground Storage Tank Site Characterization or Assessment
DEC Staff: * Not Assigned
Action Description: SA1R; A 5,000 gallon diesel fuel UST was removed in 1990 and an unknown amount of soil was excavated and stockpilecd. Soil samples collected from the excavation provide conflicting data on BTEX.

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY (Continued) **S109255922**

Residual contamination may exceed cleanup levels. No details provided in report.

Action Date: 11/16/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: Matrix closed. Soil contamination was below level A criteria.

52
SSW
1/4-1/2
0.374 mi.
1977 ft.

FTRS-007-R-01 RIFLE RANGE **UXO** **1018153409**
5312 KENNEY AVE **N/A**
ANCHORAGE, AK

Relative:
Lower

Actual:
308 ft.

UXO:
DoD Component: Air Force
Installation Name: JBER-RICHARDSON
Facility Address 2: Not reported
Site ID: SR007
Site Type: Small Arms Range
Latitude: 61.253800
Longitude: -149.681300

K53
WSW
1/4-1/2
0.381 mi.
2010 ft.

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY **SHWS** **S107029079**
5TH & D STS., NE CORNER FTRS-59 FAC ID 0-00788, FORMERLY FOR **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 4 of 4 in cluster K

Relative:
Lower

Actual:
312 ft.

SHWS:
File Number: 2102.26.010
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259167
Longitude: -149.689444
Hazard ID: 1490
Problem: Two 5,000 gallon USTs(gasoline and diesel) were removed from the ground at Building 782. Cleanup level not exceeded site closed out. FTRS-59 Bldg 782 UST 23 & 24. Site W018. POC for the Army Cristal Fosbrook 384-2173. Last staff assigned was Howard. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach. I Petroleum Contaminated Stockpiles Located at Landfill

Actions:
Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY (Continued) **S107029079**

would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/29/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.2592 N latitude -149.6895 W longitude

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date: 5/17/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the April 1994 Draft UST Release Investigations A, Seven Fuel Tank Locations Building 782, Fort Richardson, AlaskaThe Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received on, April 25, 1994, a copy of the above referenced report for building 782. Below are our comments regarding the document.2.4.1 Nearby drinking water Sources pages 4 and 5The text states there are three wells on Fort Richardson with one of the wells approximately 0.3 miles southeast of building 782. Please elaborate further on whether this well is a domestic well, institutional well or the unused well referenced in the text. The definition of what constitutes an institutional well needs to be stated here and the type of unused well being referenced, i.e. an unused drinking water or an unused fire suppression supply well, etc.2.4.2 Regional Hydrology page 5The text states the depths of three wells are 60 to 61. 7 feet below ground surface (bgs) and reported depths to water range from 35 to 58.5 feet bgs. Please elaborate as to which wells are being referred to in this section and list the specific depths to water being reported for each well.4.4.1 Distribution of Concentration of Hydrocarbon Compounds page 14The text states the hydrocarbon contamination migrated to a depth of 20 feet and spread along afeature at that depth, however the feature is not supported by data found in the bore logs in Appendix C. Please elaborate on the probable cause of the spreading hydrocarbon contamination at the 20 foot depth.4.4.3 Cleanup Levels page 16The text states the ranking was calculated assuming a depth to groundwater at the site is 100 feet or more. This is in contradiction with the preceding statement in section 2.4.2 where the depths to groundwater were from 38 to 58.5 feet bgs. Using 20 feet as maximum depth of contamination at the site and 58.5 feet for a depth to groundwater would increase the overall matrix score by 3 points from 32 to 35 (Level B).5.3 Recommended Action Page 27The text states that the Army could have the site reclassified to Level C by closing out the well near the athletic field and possibly the well located in the warehouse area. For ADEC to consider a change of the matrix score from Level B to Level C the Army must close out the three wells located within one mile of the site and invoke institutional controls on groundwater, i.e. no new drinking water wells developed in the area. After implementing these recommended actions, then ADEC will consider the site closed. Closing out of the site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY (Continued) **S107029079**

information indicates that there is previously undiscovered contamination or exposures that would cause an increased risk to human health or the environment, then future investigation and/or remedial actions may be required by ADEC.Figure 1The site vicinity map indicates UST sites and five nearby water wells. Please indicate on which wells are drinking water wells, institutional wells, or unused wells.

Action Date: 2/9/1994
Action: Notice of Violation
DEC Staff: Janice Adair
Action Description: Compliance advisory signed by Janice Adair (Regional Administrator) sent to Army in reference to Fort Richardson UST compliance agreement for Tank 26 at Building 786. This advisory is being sent to notify the Army of its failure to comply, in a timely manner, with the Underground Storage Tank (UST) Compliance Agreement (agreement) Upgrading of USTs (Para. 25) and Free Product Recovery and Soil Remediation (Para. 40). In an effort to keep the working relationship that the Army and the department have established, the department would like to move forward with the agreement's intent and goals, which is to come into compliance with the UST regulations. A review of our records did not produce any information indicating the Army has complied with closure or upgrade requirements, outlined in Attachment D, for the following tanks and expected dates: UST 26, Bldg 786 Driver's Training 9/30/93, USTs 40 & 41, Bldg 979 POL Gas Station, 9/30/93, UST 57, Bldg 39600, Site Summit, 9/30/93, UST 92, Bldg 732 Resrv. Motor Pool 9/30/93. Attachment I Petroleum Contaminated Soil Stockpiles- The Army has not submitted a final corrective action report for each site as required by 18 AAC 78.340. Soil Pile (SP) and expected date of completion was 10/30/1993: SP 1 Bldg 8102 Arctic Valley, SP 3B Bldg. 796 Vehicle Maintenance, SP 4 Bldg. 908S 1117th Sig. Batt., SP 5 Bldg. 908N 1117th Sig. Batt., SP 6 Bldg 702 Gas Pump Bldg., SP 7 Flying Club, SP 8 Bldg 733, SP 9 Bldg 798 Motor Pool, SP 10 Bldg 782 Gas Station, SP 11 Fuel Depot, SP 12 Bldg 47622 Bryant Airfield, SP 13, and SP 15 Bldg 55804 Ammo Area A.

Action Date: 2/23/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter to Army RE: December 8, 1993 Work Plan UST Release Investigation A Seven Fuel Tank Locations Contract No. DACA 85-93-D-008, Dames and Moore. Staff received the document on January 28, 1994. It contains the plans for release investigation work at: Bldg. 712, 762, 782, 8102, 27004, 47622, and 47633. ADEC, DPW and the contractor have previously met at our office and discussed the draft work plan proposals for this investigation. The document appears to have addressed ADEC's concerns. Being that the field work has already been conducted, the department will not provide review and approval of the work plan, but will review the draft release investigation report which is to be submitted within 100 days of completion of field work.

Action Date: 2/11/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A 5,000 gallon diesel fuel UST was removed in 1990 and an unknown amount of soil was excavated and stockpiled. Soil samples collected

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY (Continued) **S107029079**

from the excavation provide conflicting data on BTEX. Residual contamination may exceed cleanup levels. No details provided in report.

Action Date: 11/16/1994
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the FINAL August 12, 1994 UST Release Investigations A, Seven Fuel Tank Locations Building 782, Fort Richardson, AlaskaThe Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received on, September 13, 1994, a copy of the above referenced report. Based on the currentinformation presented in the document ADEC concurs that level C cleanup criteria is appropriate for the site and has not been exceeded. Therefore, ADEC will consider the site closed out requiring no further remediation or investigation at this time.Matrix closed. Soil contamination was below level C criteria (1,000 mg/kg DRO, 500 mg/kg GRO, 50 mg/kg BTEX). Area around USTs 23 and 24 has been asphalted over thus eliminating potential pathways for inadvertent exposure through inhalation, ingestion or dermal contact. Further the asphalt at the site is expected to impede potential leaching of water through any residual contaminated soils.

Action Date: 1/1/1992
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Not reported

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 782 USTs 23 & 24 USTA 2 Party
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

L54 **JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA** **SHWS S109256134**
WNW **5TH & DAVIS HWY., N. OF; CIRCLE DR. & WAREHOUSE ST, FORMERLY** **LUST N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.381 mi.
2011 ft. **Site 1 of 2 in cluster L**

Relative: SHWS:
Lower
Actual: File Number: 2102.26.019
327 ft. Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.268380
Longitude: -149.690490
Hazard ID: 23951
Problem: Last staff assigned was Howard. Mark Prieksat is POC for Fort Richardson 384-3042. A 50 gallon overfill was reported in December of

JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA 2 PARTY (Continued) **S109256134**

1989. On June 25, 1992 the Dept. was notified that tank 43 failed a tightness test. Site assessment planned for 1992. (This information taken from site 90210017003 which has since been deleted from the database). Former manager Halverson.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/2/1993
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility
Action Date:	7/2/1992
Action:	Update or Other Action
DEC Staff:	* Not Assigned
Action Description:	NOR; Notice of release letter sent.
Action Date:	6/26/1992
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	LCAU; :LCAU Date changed DB conversion
Action Date:	6/25/1992
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	3/13/1997
Action:	Update or Other Action
DEC Staff:	* Not Assigned
Action Description:	UPD; UPD added by Shannon & Wilson on 3/13/97, based on Army Risk Data Report dated 11/8/96. Pathways: Potential exists for leaching to shallow aquifer. DRO 1720 ppm, GRO 60 ppm. Receptors: Contamination confined to single hot spot; unlikely to be disturbed except by site workers.
Action Date:	11/13/1996
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	11/12/1993
Action:	Update or Other Action
DEC Staff:	Janice Adair
Action Description:	State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair Regional Administrator-Southcentral Office) and U.S. Army. The purpose of the agreement is to bring Fort

JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA 2 PARTY (Continued) **S109256134**

Richardson into compliance with the Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding Alaska Department of Military and Veterans Affairs and Army National Guard USTs). All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.Site Assessment or Svstem Tightness Test29. The Army shall conduct a site assessment* or a system tightness test, as required by AS 46.03.380(b) and 18 AAC 78.01S(i)(3), on all USTs located at Ft. Richardson, or permanently close the USTs in accordance with 40 CFR 280 and 18 AAC 78. If site assessments or system tests have been conducted, the Army shall submit proof of compliance by the deadlines set forth in the USTMP. Site Assessments or System Tightness Tests shall be conducted under the schedules in 18 AAC 78.015(i)(3) or, in order to come into compliance, as scheduled in the USTMP. All tightness testing work will be conducted by a certified UST worker as required by 18 AAC 78.400. Site Assessment work will be conducted pursuant to 18 AAC 78 and an ADEC-approved Quality Assurance Program Plan (QAPP). With respect to UST recordkeeping requirements, the Army shall compile all required records by the date set forth in the USTMP and shall thereafter maintain and update those records as required by 18 AAC 78 and 40 CFR 280.Release Investigation Reports31. The Army shall submit to ADEC a Release Investigation* report for each UST site having a documented release* of petroleum products or hazardous substances. These reports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b), 18 AAC 78.240(c) and the following: 1) a detailed written or, if applicable, visual description of all work performed and summary of all pertinent data prepared by the Army and its consultants, 2) monitoring well construction data and3) soil boring logs; 4) site maps detailing existing improvements and (if known) 5) the location of former fuel dispensing equipment, 6) water table elevation maps, 7) petroleum-product level and thickness (isoplot) maps, 8) organic-contaminant concentration maps, 9) aquifer interpretations, 10) other potential source areas within 1/4 mile, 11) data deliverables as outlined in 18 AAC 78, 12) interpretations of field observations and analytical data, 13) a completed Site Assessment/Release Investigation Summary Form, and 14) recommendations for any follow up work. 32. If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the ADEC concluded that additional assessment is required.111. Site shall mean a distinct area of contamination or potential contamination.112. Site assessment shall mean the investigation of suspected contamination resulting from an unpermitted release of oil or hazardous substance as further defined in 18 AAC 78.090 (Site characterization and assessment). 110. Release shall have the meaning in AS 46.03.826 [(9) release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed

JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA 2 PARTY (Continued) **S109256134**

receptacles containing any hazardous substance.]

Action Date:	10/12/1992
Action:	Update or Other Action
DEC Staff:	* Not Assigned
Action Description:	UPD; Site number 90210017003 has been deleted from the database. The information contained therein was identical as far as location, building number, etc. Other details relevent to that spill number are contained in the comment section of this site.

LUST:

Facility Name:	JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199221X017703
File ID:	2102.26.019
Oname:	U.S. Air Force
Lat/Lon:	61.26838 -149.6904
Lust Event ID:	296
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	Not reported

55
NW
1/4-1/2
0.382 mi.
2018 ft.

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 **SHWS** **S110144190**
N. OF MAIN CANTONMENT & RUFF RD. FTRS-52, FORMERLY FORT RICH **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
338 ft.

SHWS:

File Number:	2102.38.004.10
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.275497
Longitude:	-149.689692
Hazard ID:	2793
Problem:	Soils are located in fenced landfill - no leachate. Contaminants include DRO (5,370 mg/kg), GRO (12,000 mg/kg). Site closed out under a RCRA subtitle D Solid Waste regulations. No EPA Reg. III RBCs (assuming residential land use) were exceeded. No further remedial action will be taken under CERCLA. Site FTRS-52. Landfill Fire Training Area. Fire training Pits 1 and 2. FTP 2 (RUFF ROAD FTA) is located on a gravel borrow area near the northern edge of the N-S Bryant Field runway. FTP 1 is located on a covered and closed landfill near Noone Road at the northern edge of the main cantonment area.EPA ID: AK6214522157 Site W015, 1990 RFA SWMU 98 Fort Richardson-Proposed NPL Listing Date 6/23/1993 FEDERAL REGISTER NOTICE of Final NPL Listing Date 5/31/1994

Actions:

Action Date:	9/8/1986
Action:	Site Characterization Report Approved
DEC Staff:	Louis Howard
Action Description:	Hazardous waste study 37-26-0725-87 by U.S. Army Environmental Hygiene Agency. Report completed 9/26/86. Unknown when ADEC received report. In 1984, Fort Richardson was cited with several EPA and ADEC

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

violations concerning improper storage of hazardous waste, unlabeled hazardous waste containers, and waste spills. In May 1985, the surface soil in fire training pit 2 had high cadmium, lead, and zinc. Used petroleum products from the motor pools were burned at the fire training pits. These materials were stored on site in 55 gallon drums prior to use in fire training drills. Approximately 1,500 to 2,300 gallons/year of wastes were burned at each fire training pit. The depth to groundwater on most of Fort Richardson ranges from 20 to 40 feet. Fire training pit 1, located at the active landfill, and fire training pit 2, located east of the runway and southwest of the National Guard post, were the pits discussed in the report. Lead was the only potential health concern identified at fire training pit 2.

Action Date: 9/6/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Workplan for OUD preliminary source evaluation received. Fire training pit is poorly defined. The exact location is not known because clean soil from UST excavations and other construction activities has been stockpiled in this area. The location will be determined from the stained area indicated in an air photo. The size and location of the pit will be determined from the air photo and its location determined via survey prior to field activities. If pit is inaccessible to a drill rig, the stockpiled soil may be smoothed out or moved.

Action Date: 9/28/2000
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: As part of the landfill closure plan, groundwater sampling has been conducted in wells located around the perimeter of the source area since 1989. Monthly inspection of the landfill caps integrity is required and an annual report for groundwater monitoring and cap integrity is provided to the State of Alaska. The groundwater monitoring program is expected to continue for thirty years under the landfill closure plan. No further remedial action necessary under CERCLA or Contaminated Sites Program. Under the Solid Waste Program the site will continue to have long-term monitoring of the groundwater and institutional controls will remain in place to ensure that the site remains an industrial land use area. Land use planning documents and the U.S. Army Environmental and land planning database delineates this area as a restricted area off limits to any digging or construction.

Action Date: 9/28/2000
Action: Record of Decision
DEC Staff: Louis Howard
Action Description: OUD ROD signed memorializing decision to transfer site to the solid waste program for compliance monitoring. The source area was transferred out of CERCLA to the Solid Waste Program at the end of 1995 since it is part of the Old Fort Richardson Landfill. This source area was subsequently closed under RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. A soil cap was installed in 1997 as a part of a presumptive remedy for the Fort Richardson landfill, which includes this source area. This action creates an incomplete pathway for contact with any contaminants at this site. As part of the closure

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

plan, groundwater sampling is required to ensure that no contaminants are leaching into the groundwater above cleanup levels and is expected to continue for 30 years. Sampling has been conducted in wells located around the perimeter of the source area since 1989. No contaminants have been detected in the groundwater in either the upgradient and downgradient monitoring wells installed from 160-204 feet below ground surface.

Action Date: 9/28/2000
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: No further remedial action required for this site. This source area was subsequently closed under RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. Monthly inspection of the landfill caps integrity is required and an annual report for groundwater monitoring and inspection results are provided to the State of Alaska???s Solid Waste Program. This data and other site information will be reviewed as a part of the five-year review to ensure that the remedy chosen is protective of human health and the environment. Under the Solid Waste Program the site will continue to have long-term monitoring of the groundwater and institutional controls in place to ensure that the site remains an industrial land use area. Land use planning documents and database delineates this area as a restricted area off limits to any digging or construction.

Action Date: 9/25/1989
Action: Report or Workplan Review - Other
DEC Staff: Jennifer Roberts
Action Description: ADEC letter to ARMY Colonel Edwin R. Ruff, Director of Engineering and Housing, HQ, 6th I.D. (Light), RE: Second Draft IRP Joint Resources Project: Fort Richardson, Fort Wainwright, Fort Greely, Alaska. The Anchorage-Western District Office has been reviewing sections of the Woodward-Clyde Consultants second draft. The District has confined our review to the Anchorage Fuel Terminal (see 2102.38.021 Defense Fuel Support Point-Anchorage) and the Fort Richardson Fire Training Pits (see file number 2102.38.004.10 Landfill Fire Training Pit Area), as these areas are under our regulatory jurisdiction. The Roosevelt Road Transmitter Site (see file number 2102.38.001.01 Roosevelt Road Transmitter OU-A) review has been referred to Max Schwenne, ADEC SCRO and U.S. E.P.A. The Fort Wainwright and Fort Greely sites have been referred to ADEc Northern Distric Office. In general this report is poorly written and uncohesive. It is very difficult to locate information and data. It is frustrating to do a technical review of the draft due to the poor quality of the report. The following comments address the report writing and format:1) The report is extremely disjointed and is not cohesive. Frequently, the report makes references to information that is not included in the report or must be tracked down in other sections of the report.2) There are references to graphs, tables, charts, and figures throughout the report. None of these visual aids are located close to the written information that explains their function. It is quite difficult to retrace the reference to the visual aid when all the charts, tables, graphs, and figures are at the end of the section and not included within the narrative. 3) The report refers to other sources of information for data and then does not include these sources within the report or appendices. An example

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

is Figure 4-3 Location of Borings. This figure shows numerous U.S. Army Corps of Engineers borings, but the report presents none of the information gained from these borings. It is vital that complete information be included in the report so that a comprehensive technical review can be done. 4) The general layout of the report is very unorganized and confusing. In general there is a lack of organization in the layout and even the organization within the sections is poor. The department requests that the Army provide it with an improved technical report for our review (and comment).

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/31/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.2746 N latitude -149.6905 W longitude

Action Date: 8/25/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff approved the Draft Technical Memorandum ??? Annual Inspection and Maintenance of Sites AT052, DP051, SS013, and SS090 on JBER-Richardson.

Action Date: 7/7/1993
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the June 1993 draft Site Investigation Project Report for the Fire Training Pits. Executive SummaryThe statement on page ES-l fifth paragraph that groundwater is found at over 100 feet deep conflicts with the statement found on page 3-3, second paragraph, which states that depth to groundwater ranges from 38 to 140 feet (inferred from two wells located 1.5 mi. from RFTP-2). BH-3 had groundwater detected in it at 34.5 feet, but it was more than likely a perched aquifer since there were no other bore-holes that contained groundwater even to depths of 66.5 feet. Inferring the depth to the main water table may not be appropriate given the closest two wellsare located 1.5 miles away. Throughout the document there was no mention of the source of 2, 3, 7, 8-Tetradichlorodibenzo-p-dioxin or how it was generated at RFTP-2. Please elaborate as to where the source of dioxin came from at RFTP-2. 4.4.3 Analytical Methods and ProceduresTable 4-3 on page 4-11 lists EPA 3550/8290 as the method for analyzing fordioxin/furan, while on page 5-8 section 5.2.1.5 states that dioxin/furan

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

wasanalyzed using method 8280 or method 8290. Please explain the exclusion of8280 in table 4-3 and why two separate methods are used for dioxin/furananalyses.5. Results and Significance of Findings5.1 .l Petroleum, Oil and Lubricants pages 5-l and 5-2Utilizing the ADEC matrix cleanup level A may not be the most appropriate for the site as stated in the text. If the Army were to have 1 to 3 monitoring wells installed at RFTP-2 the wells would: (1) determine the true depth to groundwater, (2) establish a matrix score that may allow a less stringent cleanup level based on the actual depth to the main water table and its proximity to the deepest known level of contamination, and (3) using a minimum 3 wells be able to start a monitoring program for tracking any migration of contaminants off site based on the site specific hydro-geologic conditions.5.2.1.5 Polychlorinated Dibenzo-p-Dioxins and Polychlorinated DibenzofuransThe text states that none of the samples analyzed produced a calculated dioxin Toxic Equivalency Factor (TEF) value above the action level of 1.O ug/kg TEF. The values ranged from 0.000009 to 0.00043 ug/kg TEF and implies that no action is necessary. However, the levels of dioxin detected at RFTP-2 exceeds the EPA Region 10 RBC of 4 X 10-6 (actual values range from 18 X 1O-6 to 37 X 1O-6) with no explanation of exceeding RBCs in 6.2.5 Conclusion or in the Executive Summary at the beginning of the document. Please elaborate as to why the dioxins at RFTP-2 were excluded from remedial options and the rationale behind the decision.7.5.1 Recommendation of Remedial OptionsThe text states that vacuum extraction/bio-venting is the recommended remedial option for POL contamination present at the site. ADEC requests that the Army submit remedial action plans for review and approval before implementing any remedial action and explain what target cleanup levels will be used to address the POL and dioxin contamination present at the RFTP-2.Appendix D Chemical Quality Assurance Reports9.(d) Lessons Learned/Problems Encountered The text states that the project and QA laboratories were requested to analyze dioxin/furan analyses by non-compatible methods (project lab-8280 and QA lab used 8290). Please explain why separate methods were used for analyses instead of both labs utilizing the same method for dioxin/furan.

Action Date: 7/26/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Technical Memorandum ??? Annual Inspection and Maintenance of Sites AT052, DP051, SS013, and SS090 received for review and comment. A site inspection for perfluorinated compounds (PFCs) is being conducted in 2016. If no further action is recommended for PFCs based on that investigation, then a technical memorandum will be prepared to summarize the status of DP051 and to administratively close the site.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 7/17/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA received the Draft Site Inspection Report for Aqueous Film Forming Foam Areas, Joint Base Elmendorf-Richardson, Alaska, May 2017 for review the week of June 2, however Appendix B2 (App B2) laboratory data was not included. EPA received App B2 for review the week of June 20. EPA preliminary comments were sent to the Air Force on July 17, 2017.EPA Office of Research and Development staff, as well as EPA Region 5 Laboratory chemists, reviewed App B2. EPA has asked the Air Force for clarification regarding what level of report and data review was done by the government prior to submittal of the report to EPA and have not received a clear response. EPA???s initial review has identified a number of data quality issues and that the government data review should be completed and submitted to EPA before we are asked to finalize our comments. The comments submitted reflect only those requiring clarification on the narrative or figures and are not inclusive of review of the laboratory data, and therefore cannot substantiate any conclusions drawn on the presence/absence of PFAS at the 26 AOCs.EPA review of the laboratory data packages has raised a number of concerns with deviations from workplan approved standard operating procedures, laboratory methods, and data validation.EPA requests the Air Force clarify the level of governmental data review conducted on the JBER Site Inspection laboratory packages, and provide a copy of the Air Force data review to EPA. Additional EPA comments on the laboratory data are pending receipt of the Air Force data review. See site file for additional information.

Action Date: 7/16/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Geotechnical Report for Groundwater monitoring received. FR-3 May 1991 Method 8015 Modified detected Oil at 5.6 mg/L. Blank was contaminated with oil too. Sample 9118FRL01WA detected lead at 36 ug/L.FR-1 May 1991 Method 8015 Modified detected Oil at 5.5 mg/L. Blank was contaminated with oil too. Lead was detected in sample 9118FRL102WA at 26 ug/L (MCL is 15 ug/L). Sample 9118FRL02WA detected lead at 29 ug/L. ADF&G E November 1991 Lead at 52 ug/L. FR-1 November 1991 Lead at 18 ug/L, FR-2 Lead at 19 ug/L, FR-3 Lead at 25 ug/LFR-3 November 1991 Lead at 43 ug/L

Action Date: 6/28/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Geotechnical Report for Groundwater Monitoring Network for the central complex of Fort Richardson.Fuel Identification and Quantification (Modified EPA Method 8015). The data are given in

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

Table II. Although none of the specified compounds in modified method 8015 were detected, chromatograms of samples from wells PR-1, FII-2, and F???R-3 taken in September 1990 indicate the presence of heavy hydrocarbons. Precise quantification is impossible because the observed detected amount of lead was 47 ug/L. found in the September sample from well ADFG 9. The Hay-June 1990 sample from Sump A contained 0.005 ppm toluene. This amount of toluene is not significant. It is at the analyte detection limit and no toluene vas found in the September 1990 sample. Toluene vas detected in samples from both Well-2 and Well-3 in September 1990. Three different samples from the September 1990 sampling of Well-2 were tested; only one was determined to contain toluene (23 ug/L). The other two Well-2 samples exhibited a level of toluene lower than the detection limit of 5 ug/L. The September rasp14 from Well-3 contained toluene at 73 ug/L. The MCL for toluene in rater is 5 ug/L. The May-June 1990 samples collected from Well-2and Well-3 showed no toluene present above detection limits.Well-1 May 1990 Lead at 18 ug/L (MCL is 15 ug/L). FR-3 Lead at 28 ug/L June 1990. ADF&G 9 Sept. 1990 Lead at 47 ug/L. Well-2 Sept. 1990 Lead at 16 ug/L. Duplicate FR-3 Sept. 1990 Lead at 16 ug/L. Duplicate FR-2 Lead at 15 ug/L.

Action Date: 6/13/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the draft SI for JBER-E and JBER-R sites which included this site. It appears there are documented releases of PFOS and/or PFOA at these areas which require additional investigation through a remedial investigation/feasibility study under CERCLA or as required by 18 AAC 75.335 Site Characterization. The 1991 Elmendorf Federal Facility Agreement Part II Definitions. Paragraph 2.1 states: ???(y) Site??? shall mean the areal extent of contamination and shall include sources of contamination subject to this Agreement at the Elmendorf (Elmendorf AFB), which occupies approximately thirteen thousand one hundred and thirty (13,130) acres, bordered by the Municipality of Anchorage,- Alaska, to the south. The Site includes ANY OFF-BASE area(s) contaminated by the MIGRATION of hazardous substances, pollutants, or contaminants FROM Elmendorf AFB;??? See site file for additional information.

Action Date: 6/13/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73769 name: Landfill/FTA

Action Date: 6/1/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Site inspection (SI) at aqueous film forming foam (AFFF) areas on JBER-E and JBER-R waa received for review and comment. The purpose of the SI was to determine the presence or absence of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) in the environment. These compounds are a class of synthetic fluorinated chemicals used in industrial and consumer products, including defense-related applications. This class of compounds is also referred to as per- and polyfluorinated alkyl substances (PFAS).One soil sample from ground surface to 15 feet bgs was collected. PFBS

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

was not detected in soil. PFOA and PFOS were detected in soil at concentrations below the EPA RBSLs and ADEC cleanup levels. One groundwater sample was collected from 189.5 to 199.5 feet bgs in new monitoring well AT052-1. PFBS was detected at concentrations below the RSL. Neither PFOA nor PFOS were detected in groundwaterSee site file for additional information.

Action Date: 5/1/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Comments on the OUD draft preliminary source evaluation (PSE) 2 Document 9000-036-420 dated April 1995. Staff commented on the fact that burning of pressure treated wood and chlorinated organics generates dioxins and furans. Additional investigation is needed at this source area.

Action Date: 4/9/1992
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: EPA Memorandum April 9, 1992 Reply to the ATTN of ES-098. Subject Toxicity of Fuels. From Carol Sweeney, Toxicologist Health and Environmental Assessment Section. To Wayne Pierre Federal Facilities Superfuend Branch (HW-124). A response has been provided to the frequently-asked question of whether a reference dose or other toxicity information can be provided for fuel mixtures so that these mixtures can be addressed quantitatively in Superfund risk assessments. The memo from ECAO Cincinnati is attached (last attachment). They have developed reference doses for gasoline, JP-5/kerosene, and JP-4, and a cancer potency factor for gasoline. The memo emphasizes that these are provisional numbers and that considerable uncertainty is involved in this quantitative assessment, because of data limitations, and because inhalation studies were used to calculate oral reference doses.I typed up a summary table showing the numbers (first attachment) and calculated some risk-based concentrations (second attachment). On the risk-based concentration table, I alsoincluded ordnance compounds, because I hadn't made a table of those before that I can remember. The risk-based concentrations were calculated the same way as table II-1 and II-2 of the Region10 Supplemental guidance; for soil, the same limitations apply, that the numbers presented do not consider pathways other than soil ingestion.Toxicity Reference Vaules for Fuel Mixtures EPA Region 10 4/9/1992 Non-cancer effects-Gasoline (unleaded) RfD (mg/kg-day) Oral: 2.0E-1, Uncertainty Factor-Oral:1000, Level of Confidence-Oral: Low. Toxicity Data Source-Oral RfD: Memo 3/92. Carcinogenicity-Cancer Potency/(mg/kg/day): Oral 1.7E-3, Unit Risk (/ug/m3) 4.8E-7, Cancer Weight Of Evidence-C, Toxicity Data Source-Oral SF and Inhal. SF: Memo 3/1992.Kerosene/JP-5 RfD2.0E-2, UF Oral: 10,000, LOC Oral: low, TDS Oral RfD: Memo 3/92JP-4 RfD 8.0E-2, UF Oral: 10,000, LOC Oral: low, TDS Oral RfD: memo 3/92. Screening Values for Water RBCs based on Ingestion, ResidentialGasoline-Risk = 10-6 (ug/L) 50, 10-4=5000 HI=1 (ug/L) 7000JP-5 Kerosene Risk 10-6 10-4=NA HI = 1 (ug/L) 700JP-4 Risk 10-6 10-4 = NA, HI = 1 (ug/L) = 3,000Screening Values for Soils-RBCs Based on Soil Ingestion ResidentialGasoline-Risk = 10-6 (mg/kg) 400, 10-4 (mg/kg) 40,000, HQ = 1 (mg/kg) 50,000JP-5 Kerosene Risk 10-6 10-4 NA, HQ =1 5,000 JP-4 Risk 10-6 10-4 NA, HQ = 20,000USEPA Office of Research and Development, Environmental Criteria and Assessment Office Cincinnati, OH Subj: Oral Reference Doses and Oral

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

Slope Factors for JP-4, JP-5; similar to Kerosene (CAS no. 8008-20-6), Diesel Fuel (CAS No. 68334-30-5), and Gasoline (CAS No. 8006-61-9) (AVGAS) [McChord AFB (Wash Rack/Treatment)/Tacoma, WA]. From Joan S. Dollarhide Associate Director, Superfund Health Risk Techncial Support Center, Chemical Mixtures Assessment Branch TO Carol Sweeney USEPA Region X. This memorandum is in response to your request for oral systemic and carcinogenic toxicity values for JP-4, JP-5, diesel fuel, and gasoline (AVGAS) found to contaminate soil andgroundwater at McChord AFB (Wash Rack/Treatment), Tacoma, WA. We have attempted to derive RfDs and slope factors for the above fuel mixtures. We have derived provisional RfDs forgasoline, JP-4, JP-5 and diesel fuel; provisional cancer weight-of-evidence classifications of C for gasoline and D for JP-4, JP- 5 and diesel fuel; and a provisional slope factor (adapted from an interim Agency value) for gasolineBased on the available evidence, unleaded gasoline can be assigned to U.S. EPA (1986) weight-of-evidence Group C: possible human carcinogen. An earlier U.S. EPA document assigned unleadedgasoline to Group B2 as a probable human carcinogen (u.s. EPA, 1987a), but that document predates the U.S. EPA (1991d) conclusion that the male rat kidney tumors produced by gasolineare not predictive for humans, and therefore should not contribute to the weight-of-evidence or dose-response assessment of carcinogenicity. IARC concluded that marine diesel fuel is possibly carcinogenic to humans (Group 2B), but light diesel fuels and jet fuels are not classifiable as to their carcinogenicity in humans (Group 3).

Action Date: 4/28/2015
Action: CERCLA PA
DEC Staff: Louis Howard
Action Description: Final Preliminary Assessment received. Under authority of CERCLA and the Superfund Amendments and Reauthorization Act of 1986, CH2M HILL conducted a PA visit at Joint Base Elmendorf-Richardson (JBER) during the week of December 15, 2014, with a follow-up visit on January 12 and 13, 2015, to secure additional information. Based on background research and visits to JBER, a total of four FTAs, seven fire stations, seven hangars, five crash locations, four areas where AFFF spray testing has occurred, and three additional ???miscellaneous??? locations have been identified as being active during the timeframe when AFFF has been used by the USAF for fire suppression. AT052 Landfill FTA was active from the 1940s to 1983. Records and interviews did not confirm that AFFF was used during fire training; however, not enough information was available to confirm that AFFF was never applied. It is likely that impacted media could occur.Because the operational history and potential for release of AFFF during the years prior to the current Assistant Fire Chief is unclear, it is assumed that the potential for an AFFF release to the environment is present.Recommendation: initiate a site inspection as an investigation to collect and analyze waste and environmental samples to support an evaluation.

Action Date: 4/11/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft PFC Site Inspections work plan for JBER-E and JBER-R.Main comments were regarding obtaining prior approval from ADEC and EPA project managers before making changes to the approved QAPP and that the EPA RSSLs are less stringent than the

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human health soil cleanup levels and migration to ground cleanup levels ADEC will be promulgating this winter (2016). It was noted that WS 10 is especially vague: Based on the above, the best available screening criteria for PFOA and PFOS releases are the EPA PHAs for groundwater and RSSLs for soil. Because ADEC has proposed lower concentration limits that are in the publiccomment process, the ADEC levels should also be considered.It states that ADEC levels should also be considered, however in WS 11, it states the concentrations of PFOA and PFOS in soil and groundwater will be compared to project screening levels based on the most conservative risk based EPA or ADEC values.For determining presence or absence of PFOS and PFOA using solely risk based screening levels is not acceptable to ADEC. If the migration to groundwater cleanup level is adopted by ADEC and it exceeds for PFOS or PFOA, a release is confirmed and it is deemed to be contaminated by ADEC. 18 AAC 75.990 Definitions. (23} contaminated soil means soil containing a concentration of a hazardous substance that exceeds the applicable cleanup level determined under the site cleanup rules. If AFCEC chooses to proceed with risk based values (as it is apparent upon review of Table 10-2 Steps 2, 4, & 5), then ADEC reserves the right to require further investigation/cleanup under 18 AAC 75 for all areas of concern/source areas where AFC EC determined no addition action was necessary at an area of concern/ source area, but the PFC levels detected exceed migration to groundwater cleanup levels for PFCs.See site file for additional information.

Action Date: 3/29/1999
Action: Proposed Plan
DEC Staff: Louis Howard
Action Description: Preferred alternative for contaminated groundwater at buildings 35-752, 796 and 45-590 is monitored natural attenuation combined with natural attenuation. Soil and sediment PCB contamination preferred alternative at Building 35-752 is phytoremediation and if not effective after two seasons-thermal desorption will be implemented. Additionally, windows and doors of Building 35-752 will be sealed with plywood and 8 foot security fence to prohibit access to PCB contaminated dust inside the building. Cooling pond and trench will be filled in and the source of water rerouted to sanitary sewer. COCs in GW include benzene, trichloroethene, iron, manganese, aluminum.

Action Date: 3/1/2000
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Hart Crowser Research Results of Chemical Materiel at PACAF Bases Installations in Alaska (Contract No. DACA85-95-D-0010 Deliv. Order No. 30 A-8534: Although no disposal records have been found showing that these agents or kits were intentionally landfilled, the CAIS kits may be found in pre-1970 landfills. One should be prepared for the possible occurrence of CAIS discovery when 3 excavating landfill of that era. The personnel performing the excavation should be familiarized with the kits, their hazards, and appropriate protection against them. Empty cylinders or containers formerly containing H also may be found in pre-1970 military landfills.

Action Date: 2/22/2008
Action: CERCLA ROD Periodic Review
DEC Staff: Jennifer Roberts

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Action Description: Second Five Year Review signed by ADEC. OUD SOURCE AREAS WITH NO FURTHER ACTION DECISIONS IN OUD ROD-The NFA decision was recommended for source areas if: no visible sign of contamination was observed during the source area inspection; a removal action eliminated existing and potential risks to human health and theenvironment; or environmental sampling results showed that contamination, if present, was at levels below the protective human health-based levels for unrestricted use. The NFA decisions for seven of the sites identified in the ROD were intended to document that the risk to human health and the environment associated with contamination from past activities at Fort Richardson was not present at these sites. Two of these source areas, the landfill firetraining area and the grease pits, are being monitored in accordance with the requirements ofthe Fort Richardson Landfill Closure Plan (see Section 7.4). The NFA decision under CERCLA was made in the OUD ROD for the following source areas: Building 45-590 ??? Auto Hobby Shop, Building 726 - Laundry Facility, Circle Road Drum Site, Dust Palliative Locations (four separate areas),Grease Pits, Landfill Fire Training Area, Storm water Outfall to Ship Creek.OUD SOURCE AREAS SUBJECT TO RCRA CLOSURE REQUIREMENTS-An additional goal of the FFA was to integrate the Army???s CERCLA response obligations and RCRA Corrective Action requirements resulting from the EPA???s and Army???s 1991 FFCA. As stipulated in the OUD ROD, the following six source areas are subject to RCRA Closure in accordance with the FFCA: Building 700/718, Building 704, Building 955, Building 35-752, Building 45-590, Circle Road Drum site. The former landfill fire training source area and the grease pits source area were recommendedfor NFA under CERCLA with unrestricted use and have been closed in accordance with RCRASubtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18AAC 60.As part of the closure plan, groundwater sampling has been conducted in wells located aroundthe perimeter of the landfill since 1989. The depth to groundwater under the landfill is 180 feet. An annual report for groundwater monitoring and cap integrity is provided to the State of Alaska. To date, no contamination has been detected in either the down gradient or up gradient wells.This monitoring program is expected to continue for thirty years under the landfill closure plan. Documents detailing the analytical results for long-term monitoring at the landfill are located in the Administrative Record. The Army???s evaluation indicates that ICs for the landfill area remain protective. Institutional controls established for these source areas are shown on Figure 3-1. No new RCRA rules have been promulgated specific to post-closure procedures for the former landfill fire training source area or the grease pits source area.

Action Date: 2/20/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Jennifer Roberts signed the five year review document for the Post. The objectives of the Five-Year Review are to answer the following questions:???Are the remedies functioning as intended by the decision document????Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy still valid????Has any other information come to light that could call into question the protectiveness of the remedy?The former landfill fire training source area and the grease pits source area were recommended for NFA under CERCLA with unrestricted use and have

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been closed in accordance with RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. As part of the closure plan, groundwater sampling has been conducted in wells located around the perimeter of the landfill since 1989. The depth to groundwater under the landfill is 180 feet. An annual report for groundwater monitoring and cap integrity is provided to the State of Alaska. To date, no contamination has been detected in either the down gradient or up gradient wells. This monitoring program is expected to continue for thirty years under the landfill closure plan. Documents detailing the analytical results for long-term monitoring at the landfill are located in the Administrative Record.The Army???s evaluation indicates that ICs for the landfill area remain protective. Institutional controls established for these source areas are shown on Figure 7-2. No new RCRA rules have been promulgated specific to post-closure procedures for the former landfill fire training source area or the grease pits source area.

Action Date: 2/20/2003
Action: CERCLA ROD Periodic Review
DEC Staff: Jennifer Roberts
Action Description: ADEC signs off on first review. ADEC???s concurrence with the findings of this five year review is based on the information presented in the accompanying Five-Year review Report, First Five-Year Review Report for Fort Richardson, Alaska. This statutory review is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) since all of the RODs for this site were signed after the effective date of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and some of the remedial actions result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure.The Fort Richardson NPL site is comprised of five OUs, OUA, OUB, OUC, OUD, and OUE. Records of Decision (RODs) have been written and signed for four of these OUs, OUA through OUD. The Five-Year Review found that the remedies for all Fort Richardson OUs are expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risk are being controlled. The OUE ROD will describe selected remedies for two source areas currently undergoing investigation. In the interim, institutional controls are in place at these sites that prevent exposure to contaminated soil and/or groundwater.OUD Source Areas Requiring No Further Action (NFA)-The NFA decision was recommended for source areas if: no visible sign of contamination was observed during the source area inspection; a removal action eliminated existing and potential risks to human health and the environment; or environmental sampling results showed that contamination, if present, is at levels below the protective human health-based levels for unrestricted use. The NFA decisions for seven of the sites identified in the ROD are intended to document that the risk to human health and the environment associated with contamination from past activities at Fort Richardson is not present at these sites. Two of these source areas, the landfill fire training area and the grease pits, are being monitored in accordance with the requirements of the Fort Richardson Landfill Closure Plan (see Section 7.4). Institutional controls established for these source areas are shown on Figure 7-2. The NFA decision under CERCLA was made in the OUD ROD for the following

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source areas: Building 726 Laundry Facility, Storm water Outfall to Ship Creek, Dust Palliative Locations (four separate areas), Landfill Fire Training Area, Grease Pits, Building 45-590, Circle Road Drum Site. OUD Source Areas Subject to RCRA Closure Requirements-An additional goal of the FFA was to integrate the Army???s CERCLA response obligations and RCRA Corrective Action requirements resulting from the EPA???s and Army???s 1991 Federal Facilities Compliance Agreement. As stipulated in the OUD ROD, six source areas are subject to RCRA Closure in accordance with the FFCA. Those six sites are: Circle Road Drum site, Building 700/718, Building 704, Building 955, Building 35-752, and Building 45-590.The former landfill fire training source area and the grease pits source area were recommended for NFA under CERCLA with unrestricted use and have been closed in accordance with RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. As part of the closure plan, groundwater sampling has been conducted in wells located around the perimeter of the landfill since 1989. The depth to groundwater under the landfill is 180 feet. An annual report for groundwater monitoring and cap integrity is provided to the State of Alaska. To date, no contamination has been detected in either the down gradient or up gradient wells. This monitoring program is expected to continue for thirty years under the landfill closure plan. Documents detailing the analytical results for long-term monitoring at the landfill are located in the Administrative Record.The Army???s evaluation indicates that ICs for the landfill area remain protective. Institutional controls established for these source areas are shown on Figure 7-2. No new RCRA rules have been promulgated specific to post-closure procedures for the former landfill fire training source area or the grease pits source area.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: DRO, GRO and lead contamination..

Action Date: 12/4/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Ecology and Environment preliminary investigation was conducted primarily to investigate the unconfirmed FTPs. The fire training pit located on the Fort Richardson Landfill was eliminated from this project because it is being addressed in a separate IRP project specific to the landfill. Recommended that collection of surface and subsurface samples be done to determine the vertical and lateral extent of contamination. The surface soil sample collected from a stained area, contained tetrachloroethene (PCE) 485 ug/kg, bis(2-ethylhexyl)phthalate 4100 ug/kg, diesel 20000 mg/kg, lead 543 mg/kg. Subsurface samples contained significant levels of acetone 283 ug/kg and TCE 46 ug/kg.

Action Date: 12/29/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Woodward-Clyde site assessment for fire training pit 1 (FTP-1) and fire training pit 2 (FTP-2). Fires were maintained in the unlined pits by saturating the soils with water and then discharging fuel

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into the pits and igniting them. The pits were put into operation during the initial establishment of the posts and have been used until recently. In 1988, Woodward-Clyde conducted a soil gas survey at the pits. FTP1 is located at a closed landfill near Noone Road. It is reported that FTP1 was filled in with contaminated soils. Originally FTP1 was about 50 feet in diameter and surrounded by a one foot high berm. Three borings were drilled and 12 subsurface soil samples were taken at FTP1. Borings did not exceed 6 feet because landfill debris was encountered. Petroleum hydrocarbon constituents of concern tended to decrease with depth. Fossil Creek is over one mile from FTP1. Based on the results of the soil gas survey, FTP1 does not pose an immediate threat to human health. However, the database is incomplete in terms of the groundwater quality, gradient and hydraulic conductivity. The relationship of FTP-1 to the landfill on which it is located should be delineated. Relative high levels of methane were detected in the soil gas survey along with the fuel products used for fire training exercises. Migration of the residual fuel products into the landfill has not been adequately evaluated. FTP2 is located east of Bryant Field and was actively used for fire training until 1985. Three borings were drilled to 20 feet and 20 surface and subsurface samples were obtained. FTP2 is located 2 miles south of Fossil Creek. Groundwater was not encountered in the borings. Subsurface gas survey probes went as deep as 90 feet. TPH readings indicated residual fuel products at three locations. Contamination decreased radially from the pit area. Based on the qualitative risk screening, FTP-2 at Fort Richardson is designated a Category 2 site requiring additional IRP investigation. The data base is incomplete in terms of groundwater quality, gradient, and hydraulic conductivitiy. At the time of the closure, the area was reportedly cleaned and covered over. However, a significant amount of burned debris, including burned out barrels and cans, was noted during the 1988 WCC investigation. The entire area should be cleaned of debris, the top several feet of surface soil at the pit removed to prevent the tracking of potential contaminants off site and the area covered with clean material.

Action Date: 12/2/1997
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Site ranked by staff based on new information.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon

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under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/3/1994
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Federal Facility Agreement project managers meeting. Landfill Fire Training Area: The former fire training area 1 is located west of Roosevelt Rd. and north of the borrow pit. Thefire training area was used between 1985 and 1988, however a 1983 aerial photo clearly

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showsthe 50 ft diameter frre training area with drums located adjacent to the access road and a tanker trailer to the southeast adjacent to the access road.In 1989 a soil gas survey was conducted in the area which determined the following soil gasconcentrations:benzene - 820 ppmtoluene - 910 ppmxylenes - 480 ppmWoodward Clyde Consultants (1993) investigated the site and noted that in 1986 the AEHAreported unlabeled drums at the site. AEHA drilled three borings to six feet where landfill debris was encountered. Analysies were performed for toxic metals, explosives, acid extractableorganics, BNAs and pesticides.The following compounds were detected:2 - methylnaphthalene Bis(2-ethylexyl)phthalateBTEXUpdate on sites for Operable Unit D received. Ten shallow samples have been collected from the area. Preliminary results have not been received. Based on preliminary results, three 20 foot soil borings will be located in the fire training area. Majority of the samples had a strong petroleum odor. Field PID readings were high (1 at 2,500 units).

Action Date: 11/23/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent letter to Kevin Gardner re: Draft Proposed Plan OU D. DEC requests clarifying the first sentence regarding whether the former landfill or the sanitary cell was closed before 1996. A suggestion on rephrasing sentence as follows: The former landfill fire training area was constructed in a closed section of the Fort Richardson landfill. Delete text situated over the Fort Richardson Landfill since it is redundant to state given the previous sentence. If no groundwater impacts are from fire training activities, then it should be stated soon after the description of soil contaminantion. DEC requests the following revision for the text on the soil cap: In 1997, a soil cap was installed...fire training area. Therefore, the fire training area has been recommended for no further action, since the cap prevents further exposure.

Action Date: 11/21/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Per AFCEC email: A memo from the USACE summarizing issues found in their review should be in hand on the 4th of December.

Action Date: 11/2/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft tech memo for annual inspection and maintenance at AT052, SS013 and SS090. Main comments were to clarify that ADEC has assigned a cleanup complete with institutional controls for the site and to achieve a cleanup complete determination as a landfill, the landfill would have to be completely removed and confirmation sample results were below applicable cleanup levels. There is no change in status at this time and AFEC may administratively close the site but it will remain CC w/ICs in the CS Database. See site file for additional information.

Action Date: 11/2/1994
Action: Update or Other Action
DEC Staff: Louis Howard

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Action Description: Technical memorandum for OU D. ENSR staked out 3 pits. October 26, Travis Barber identified a second area formerly used as a Fire Training Area. This area is clearly identifiable and could be sampled as a fire training area.Memorandum from ENSR to Jim Levine US Army CORPS. Some new information has been identified for two of the Operable Unit D sites (the grease pits and the Fire Training Area). A focused investigation is taking place at a third site (Building 955). The new information, or in the case of Building 955, historical information, is summarized below.Grease Pits ENSR???s original scope of work identified one human waste (sewage disposal) pit and two cooking grease disposal pits. The two grease pits were to be investigated because of drums observed during a visual site inspection. The pits were located with help from Mr. Dennis Hubbard (Building 704) of Ft Richardson???s Department of Public Works (DPW). On October 26 I was staking out the locations of the one human waste pit and two grease pits,preparing for field sampling. After staking the locations in the now snow-covered ground Icontacted personnel at Building 704 to confirm the pit locations. On October 27 Travis Barber(Building 704) and I visited the grease pit area. Travis said that there never was a specific pit excavated for old cooking greases. Grease was apparently dumped at random throughout thelandfill. However, there were ???several??? human waste pits in the area (seven?, more?). It is notknown in which pits the drums were seen.About one-half of the human waste pits can be identified with a fair degree of reliability. I donot know of written records or visual signs that would accurately locate the other pits. Amagnetometer or other geophysical survey could be used to locate buried metal objects (drums?). Exploration trenches could be advanced with a backhoe or excavator. Recommended ApproachPrior to sampling a magnetometer or other geophysical survey is recommended to identify tothe extent possible buried metal objects. Buried metal objects would likely be located in aformer pit. ENSR recommends that initial pit investigation be performed with a backhoe. The use of abackhoe should allow for greater ???feel??? than a drill rig; therefore being able to work aroundburied debris (drums?) while minimizing the potential for further releases at the site.For the pits with ???known??? locations, the backhoe could trench down, confirm the location wasa former pit, and collect a sample from about 5 to 6 feet bgs. For the trenches with onlyapproximate locations known, the backhoe could be used to excavate exploratory trenches,locate the pits, and then collect samples.At least three samples should be collected from each pit, at about 5 to 6 feet below groundsurface (bgs). According to present information, most of the pits were constructed with abulldozer to about 6 feet bgs. At least one pit was constructed with a backhoe and is reportedto be deeper than 6 feet bgs. Based on the results of the initial sampling, additional samplesshould be collected from soil borings. The soil borings would be advanced as currentlyplanned, using a hollow-stem auger to retrieve soil samples to depths up to about 20 feet bgs.Excavated soils would be replaced back into the trenches.Fire Training AreaDuring Travis Barber???s visit to the grease pits/human waste pits he identified a second areaformerly used as a Fire Training Area. This area is clearly identifiable and could be sampledin a similar manner to the other Fire Training Area; 10 samples from 6 inches bgs and (basedon these preliminary analytical results) 3-20 foot soil borings in the former Fire Training Areawith l-20 foot soil boring outside the former Fire Training Area.Building 955Based on my report to Jim Levine that ENSR

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was investigating only one former sludge bin atBuilding 955, Jim requested I review our information. This is the summary of our currentinformation.ENSR???s investigation at this facility has been focused on the area of a former sludge binidentified on an aerial photograph from 1974. At least three sludge bins have been used,including the new building constructed for sludge handling purposes.Some sampling and remediation work has been performed in this area. If you need ENSR toevaluate the adequacy of previous efforts for PSE2 purposes then I will need informationconcerning the remediation and sampling work that was performed this summer, including:. Scope of work:. Site history that developed the scope of work;. Sampling program; and Analytical results

Action Date: 11/1/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Tech memo received for review and comment. The site was closed under the Resource Conservation and Recovery Act as part of the Landfill. AT052 is located within the Landfill, and as part of the Landfill post-closure care, LUCs are in place for the landfill to prevent access or damage to landfill cover. The current status of AT052 within the ADEC contaminated sites program database, Hazard ID 2793, is cleanup complete with ICs. A site inspection for perfluorinated compounds (PFCs) was conducted in 2016. If no further action is recommended for PFCs based on that investigation, then a technical memorandum will be prepared to summarize the status of AT052 and to administratively close the site.See site file for additional information.

Action Date: 10/6/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Ecology and Environment visited Fire Training Pit (FTP)1 and FTP2. FTP1 appeared to be covered with soil. FTP2 showed a distinct shallow fire pit and empty drums and other debris on the site. FTP2 is located about 50 feet from a moderately traveled road. The current data suggests that there are two original fire training pits at Fort Richardson, with a lack of information about pre-1970 pits.

Action Date: 10/15/1996
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: (Old R:Base Action Code = PSE - Preliminary Source Evaluation). PSE 2 report states that 10 shallow soil samples were taken and 4 borings to 24'. Maximum detected DRO was up to 5,370 mg/kg and GR up to 12,000 mg/kg. No EPA Region III RBCs were exceeded using the most stringent residential land use scenario. RCRA landfill closure under subtitle D of the Solid Waste Regulations currently underway.

Action Date: 1/9/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site transferred from CERCLA to Solid Waste program due to information gathered from the preliminary source evaluation efforts showing no further action is needed under CERCLA.

Action Date: 1/8/2004

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

Action: Site Number Identifier Changed
DEC Staff: No Longer Assigned
Action Description: Changed Workplan from X1 to X9 to reflect metals contamination.

Action Date: 1/14/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: As a part of a presumptive remedy for the landfill at the Post which includes the Old landfill fire training site, a cap of soil was completed in the summer of 1997 as a part of the RCRA subtitle D of solid waste landfill regulations. Groundwater sampling has been conducted since 1989 and no contaminants of concern have been identified. Monitoring to continue for thirty years and ICs to be maintained on the cap.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich AFFF Area 02 OUD Landfill/FTA AT052
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: USARAK-PW provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization.
Contaminant CDR: Land use planning documents and the U.S. Army Environmental and land planning database delineates this area as a restricted area off limits to any digging or construction. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and groundwater in effect at the Post.
Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich AFFF Area 02 OUD Landfill/FTA AT052
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Groundwater Monitoring
Contaminant CTD: USARAK-PW provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization.
Contaminant CDR: The groundwater monitoring program is expected to continue for thirty years under the landfill closure plan. Annual report for groundwater monitoring submitted to Solid Waste Program.
Comments: Not reported

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 (Continued) **S110144190**

Inst Control:
Hazard ID: 2793
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 9/28/2000
File Number: 2102.38.004.10

L56 **EARECKSON AIR STATION ST43** **SHWS** **S104894041**
WNW **USTS 605-1 THROUGH -3** **N/A**
1/4-1/2 **AMCHITKA, AK 99546**
0.395 mi.
2084 ft. **Site 2 of 2 in cluster L**

Relative:
Lower

Actual:
325 ft.

SHWS:
File Number: 2649.38.001, 2649.26.006
Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov
Facility Status: Cleanup Complete
Latitude: 52.728531
Longitude: 174.096331
Hazard ID: 40
Problem: USTs 605-1, 605-2, and 605-3. Diesel fuel potentially disposed, dates of operation from 1970s to present. NFAD approved in 1995. USTs transferred to ST10 and ST43 and closed out under IRP. Eareckson AS is situated on Shemya Island, approximately 1,500 miles southwest of Anchorage, Alaska at the westernmost tip of the Aleutian Islands. Shemya Island is part of the Near Islands group of the Aleutian Archipelago. Shemya Island is owned by the U.S. Government and is under the jurisdiction of the United States Fish and Wildlife Service (USFWS) as part of the Alaska Maritime National Wildlife Refuge. The U.S. Army first developed facilities on Shemya Island in 1943 to support operations against the Japanese occupation forces on the nearby islands of Attu, Agattu, and Kiska. In 1954, the site was deactivated, and was turned over to the Civil Aeronautics Authority in 1955. In 1958, the Air Force returned to Shemya Island to support various Air Force and Army strategic intelligence gathering activities. It has remained active in this capacity to the present. In 1995, the station was downsized and reverted to caretaker status and a private operation and maintenance contractor took control of the facility under contract to the Air Force.Site was administratively closed and is being addressed under ST10. Longitude is east of Greenwich. RCRA EPA IDs AK9570028705 Hazardous waste activity: generator 2, storer and burns hazardous waste fuel in burner. AK7570000151 Cleanup. Hazardous waste activity: generator 1 and transporter. Also Huffman Construction Co. of Alaska RCRA EPA IDAKD982654238 Hazardous Waste Activity: generator 2 at Shemya Air Force Base. Point of contact: Larry Opperman, Project Manager, 611th CES/CEV 10471 20th Street Suite 338, Elmendorf AFB, AK 99506-2270. Telephone (907) 552-7893. Last ADEC staff assigned is G. Pikul.

Actions:
Action Date: 9/9/1988
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Installation Restoration Program, Stage I Quality Assurance Project Plan, Shemya Air Force Base, Alaska.

Action Date: 9/30/1994
Action: Notice of Violation

EARECKSON AIR STATION ST43 (Continued) **S104894041**

DEC Staff: Ray Burger
Action Description: Notice of Violation letter to 673rd ABG Air Force (Colonel Johnny Jarnigan, Commanding Officer) from ADEC (Janice Adair, Regional Administrator) regarding the April 1994 RCRA Compliance Evaluation Inspection.

Action Date: 9/25/1987
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Shemya Field Trip Notes, September 15-19, 1987. Prepared by CH2M Hill. Not reported

Action Date: 9/2/1988
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Pollution Incident Report.

Action Date: 9/15/1989
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Preliminary Assessment / Site Investigation report completed.

Action Date: 9/1/1984
Action: Preliminary Assessment Approved
DEC Staff: No Longer Assigned
Action Description: Installation Restoration Program, Phase I Records Search, 5073rd Air Base Group, Shemya Air Force Base, Alaska (dated September 1984) prepared by JRB Associates.

Action Date: 8/29/1988
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Comprehensive Plan, Shemya Air Force Base. Prepared by TRA/FARR and Dowl Engineers.

Action Date: 8/28/1989
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Communication Facility, POL Contamination Investigations at Shemya Air Force Base, Alaska. Memorandum by Thomas Delwyn (COE) summarizing an investigation conducted in May 1989 to obtain data on the extent of POL contamination at the site of the new communication facility and to obtain design information for Worker Safety and Dewatering during construction.

Action Date: 8/27/1991
Action: Update or Other Action
DEC Staff: Dan Hartung
Action Description: Shemya Soils and Groundwater Database.

Action Date: 8/15/1995
Action: Site Characterization Report Approved
DEC Staff: Ray Burger
Action Description: Final Remedial Investigation / Feasibility Study Report, Volume I and II, Eareckson Air Station, Alaska (Formerly Shemya Air Force Base Alaska).

EARECKSON AIR STATION ST43 (Continued) **S104894041**

Action Date:	8/15/1988
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	Environmental Sampling Data Sheet.
Action Date:	8/1/1995
Action:	Update or Other Action
DEC Staff:	Ray Burger
Action Description:	Eareckson AS, Shemya Island, Alaska Fact Sheet Numbe 2 Public Involvement in the Decision Making Process.
Action Date:	7/6/1989
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	POL Contamination Investigations at Shemya Air Force Base, Alaska, 25 April through 3 June 1989. Memorandum by Thomas Delwyn (COE).
Action Date:	7/31/1992
Action:	Notice of Violation
DEC Staff:	Ray Burger
Action Description:	Compliance Advisory letter to Alaska District Army (Colonel John Pierce) by ADEC (Ronald Klein, Contaminated Sites Program Supervisor) regarding Application of Underground Storage Tanks (UST) regulations to removal and installation of USTs at Shemya AFB. The Air Force response letter is dated September 18, 1992.
Action Date:	7/29/1988
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	Installation Restoration Program, Stage I Workplan, Shemya Air Force Base, Alaska. Prepared by CH2M Hill.
Action Date:	7/26/1991
Action:	Update or Other Action
DEC Staff:	Dan Hartung
Action Description:	Notice of Violation / Request for Corrective Action letter to 5099th CEOS Air Force (Captain Kenneth Brown, Chief of Environmental Contract and Planning Section) from ADEC (Ron Klein, Manager of Regional Contaminated Sites) regarding numerous sites and the status of site assessments and remedial actions. The Air Force response letter is dated August 29, 1991. ADEC letter dated September 23, 1991 serves as a formal notification that the terms of the NOV were satisfied.
Action Date:	7/20/1989
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	ADAL Aircraft Equipment Shop, POL Contamination Investigations at Shemya AFB, AK.
Action Date:	6/25/1991
Action:	Update or Other Action
DEC Staff:	Dan Hartung
Action Description:	Site Summaries for Shemya Air Force Base, Alaska Installation Restoration Program.
Action Date:	6/23/1992

EARECKSON AIR STATION ST43 (Continued) **S104894041**

Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: EPA has reviewed a preliminary assessment submitted for Shemya Air Force Base.

Action Date: 6/23/1992
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: (Old R:Base Action Code = SI - Site Investigation). EPA has reviewed the Field Investigation Plan submitted for Shemya Air Force Base.

Action Date: 6/15/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Field Survey Report and Computer Database for Underground Storage Tanks at Shemya Air Force Base, Shemya Island, Alaska. Prepared by Ecology and Environment.

Action Date: 6/15/1989
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: 1988 U.S. Army COE discovery of additional POL Contamination.

Action Date: 6/15/1984
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: (Undated) Shemya ACE Projects, 1984 to date. Internal Report. Prepared by 5099th CEOS.

Action Date: 6/13/1990
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Notice of Noncompliance letter to 5073 ABG/CC Air Force by EPA (Charles Findley, Director of Hazardous Waste Division) regarding RCRA violations; RCRA Docket Number 1090-04-02-3008. The attachment included a Federal Facilities Compliance Agreement with a Notice of Noncompliance, a Compliance Schedule, and a Notice of Necessity for Conference. The Air Force response letter (signed by Colonel Charles Crabb, Jr., Commander) is dated April 1991, and includes attachments.

Action Date: 6/12/1990
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Federal Facility Compliance Agreement between the Air Force (signed by Charles Crabb, Jr., 5073d ABG/CC) and EPA (signed by Charles Findley, Director of Hazardous Waste Division) on March 15, 1991 regarding noncompliance with RCRA. RCRA Docket Number 1090-04-02-3008. Not reported

Action Date: 6/1/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Shemya Air Force Base, Alaska General Stockpiling Plan for Contaminated Soil.

Action Date: 6/1/1986
Action: Update or Other Action

EARECKSON AIR STATION ST43 (Continued) **S104894041**

DEC Staff: No Longer Assigned
Action Description: Phase II - Task I Presurvey Report, Shemya Air Force Base and King Salmon Air Force Station.

Action Date: 5/20/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Status of Shemya Air Force Base in Relation to Proposal for the National Priorities List.

Action Date: 5/1/1985
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Corps of Engineers Boring Logs, Shemya AFB, Alaska, AP 1105 - AP 1463, May 1985 - November 1987.

Action Date: 4/15/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Revised 1994 Well Abandonment Summary Report. Prepared by Jacobs Engineering Group.

Action Date: 3/3/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Underground Storage Tank (UST) Removals and Site Assessments 1994, Eareckson AS, Alaska. (final dated February 1995, received March 1995) Prepared by 611 CES.

Action Date: 3/29/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Chemical Data Report, Hazardous Waste Management Facility and Hazardous Material Storage Facility, Shemya AFB, AK.

Action Date: 3/1/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Field Survey Report and Computer Database for Underground Storage Tanks at Shemya Air Force Base, Shemya Island, Alaska, prepared by 11th CES.

Action Date: 2/8/1989
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Water System, Phase 1B, Surface Water Quality of Several Lakes, Shemya AFB, Alaska Technical memorandum prepared by Thomas Delwyn summarizing a surface water quality investigation conducted at Shemya in October 1988.

Action Date: 2/20/1996
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Memorandum for the record: Possible Mercury Site at Eareckson AS.

Action Date: 2/15/1985
Action: Update or Other Action

EARECKSON AIR STATION ST43 (Continued) **S104894041**

DEC Staff: No Longer Assigned
Action Description: Management Action Plan, Eareckson Air Station, Alaska (formerly Shemya AFB, Alaska). Prepared by Jacobs Engineering Group.

Action Date: 2/1/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Community Relations Photo Notebook; Remedial Investigations, Feasibility Studies and Remedial Actions.

Action Date: 2/1/1994
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Shemya Air Force Base, Alaska 1992 Installation Restoration Program Field Investigation Report, prepared by CH2M Hill; report finalized in February 1993.

Action Date: 12/30/1985
Action: Interim Removal Action Approved
DEC Staff: No Longer Assigned
Action Description: (Undated) Alaska Cleanup Effort, Shemya History 1975 - 1985. Internal Report. Prepared by 5099th CEOS.

Action Date: 12/2/1986
Action: Notice of Violation
DEC Staff: No Longer Assigned
Action Description: Notice of Violation letter submitted to Air Force by EPA (Charles Findley, Director of Hazardous Waste Division). A shipment of salvage materials violated hazardous waste laws and regulations promulgated under RCRA.

Action Date: 12/15/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Letter to ADEC from Major Herr (11th Civil Engineering Operations Squadron) regarding Underground Storage Tank Site List and transfer of sites.

Action Date: 12/1/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Management Action Plan, Eareckson Air Station, Alaska (formerly Shemya AFB, Alaska).

Action Date: 12/1/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Eareckson Air Force Station (formerly Shemya AFB, Alaska) 1993 Installation Restoration Program Basewide and Limited Source Investigation Workplan. Prepared by Jacobs Engineering Group.

Action Date: 11/9/1992
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Review of Data for Delineation of Contaminated Soil at Buildings 605 and 616. Memorandum from Patrick Coullahan, 11th Air Control Wing/DE, transmitting information about interim contaminated soil cleanup

EARECKSON AIR STATION ST43 (Continued) **S104894041**

activities to ADEC.

Action Date: 11/22/1985
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: CH2M Hill trip report dated 1985.

Action Date: 11/1/1990
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Volume III, Concept Approved Draft of the Coastal Management Plan.

Action Date: 11/1/1982
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Recoverable, Reclaimable and Waste Petroleum Product Management Plan 19-14.

Action Date: 10/5/1989
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Notice of Noncompliance letter to Air Force Shemya Contractors by EPA (Gil Haselberger, Chief of Toxic Substances Section) regarding a June 1989 inspection and violations with TSCA.

Action Date: 10/5/1988
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: (Old R:Base Action Code = RAPR - Remedial Action Plan Review (CS)). CH2M Hill submits final work plans, QA plans and health and safety plans for Stage I IRP

Action Date: 10/4/1991
Action: Update or Other Action
DEC Staff: Dan Hartung
Action Description: Installation Restoration Program (IRP) Field Investigation Plan, Shemya Air Force Base, Alaska (2 volumes).

Action Date: 10/26/1990
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Memorandum from Environmental Contaminants Coordinator, USFSW, to Supervisor, Fisheries Management Services regarding fish from Shemya Lakes.

Action Date: 10/25/1999
Action: Site Added to Database
DEC Staff: Gretchen Pikul
Action Description: Diesel fuel.

Action Date: 10/23/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Notice of Violation letter to USAF (Colonel Samuel Johnson III) from ADEC (Michael Conway, Industrial Operations Section Chief) regarding the June 1995 hazardous waste inspection.

EARECKSON AIR STATION ST43 (Continued) **S104894041**

Action Date:	10/21/2013
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	See Eareckson Air Station ST10, which addresses this site.

Action Date:	10/21/2013
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	See Eareckson Air Station ST10, which addresses this site.

Action Date:	10/17/1988
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	Trip Report, Shemya Air Force Base, Alaska. Memorandum by Clare Jaeger (COE) summarizing the contamination discovered during soil and water sampling on October 6, 1988.

Action Date:	10/1/1992
Action:	Interim Removal Action Approved
DEC Staff:	Ray Burger
Action Description:	Field and Analytical Report for Interim Remedial Action to Remove Petroleum Oil Lubricant (POL) Impacted Soil at Buildings 605 and 616, Eareckson AFB, Alaska (dated October 1992 to June 1993). Prepared by 11th CEOS.

Action Date:	10/1/1988
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	Evaluation of Lake at Shemya Air Force Base, Alaska. Technical memorandum prepared by Robert Binovi summarizing an evaluation of water samples collected from lakes at Shemya Island.

Action Date:	10/1/1988
Action:	Update or Other Action
DEC Staff:	No Longer Assigned
Action Description:	Corps of Engineers Boring Logs, Shemya Air Force Base, Alaska, AP1464 - AP1765, October 1988 - April 1991.

Action Date:	1/31/1995
Action:	Update or Other Action
DEC Staff:	Ray Burger
Action Description:	Memorandum from 611 CES/CEOR to 611 CES/CEVR regarding Asphaltic Tar Soil Samples, Eareckson AS, Alaska.

Action Date:	1/17/1996
Action:	Record of Decision
DEC Staff:	Ray Burger
Action Description:	Final Decision Document Report, Volume I.

Action Date:	1/17/1996
Action:	Site Closure Approved
DEC Staff:	Ray Burger
Action Description:	Final Decision Document Report, Volume I. USTs have ongoing management by ADEC Storage Tank Program.

Action Date:	1/13/1993
Action:	Update or Other Action

EARECKSON AIR STATION ST43 (Continued) **S104894041**

DEC Staff: Ray Burger
Action Description: Chemical Data Report, Shemya Seawall/Erosion Protection, Shemya Air Force Base, Alaska. Memorandum prepared by Thomas Delwyn documenting a sampling effort to investigate potential soil contamination in areas to be excavated at Eareckson AS.

Action Date: 1/1/1995
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Natural Resource Plan, Eareckson AS, Shemya Island, Alaska, draft.

Action Date: 1/1/1993
Action: Update or Other Action
DEC Staff: Ray Burger
Action Description: Trip Report: Winter Wildlife and Oil Contamination Surveys, Shemya I., Alaska, 4-8 January 1993.

Action Date: 1/1/1976
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Corps of Engineers Boring Logs, Shemya AFB, Alaska, DH 885 - DH 1105, January 1976 - May 85.

Action Date: 1/1/1969
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Corps of Engineers Boring Logs, Shemya AFB, Alaska, AP 526 - AP884, January 1969 - December 82.

Action Date: 1/1/1964
Action: Update or Other Action
DEC Staff: No Longer Assigned
Action Description: Alaskan Air Command Master Plan base map with update notes of January 1, 1966 and January 1, 1970, and hand-drawn edits reportedly from 1971.

Contaminants:
Staff: Jessica Morris, 9072693077 Jessica.Morris@alaska.gov

Contaminate Name1: Eareckson Air Station ST43
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

57 WSW 1/4-1/2 0.399 mi. 2107 ft. | **JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY**
5TH ST. & DAVIS HWY., SE CORNER, FORMERLY FORT RICHARDSON BE
FORT RICHARDSON (JBER), AK 99505 | **SHWS LUST** | **S109255889 N/A**

Relative: Lower

Actual: 318 ft.

SHWS:

File Number:	2102.26.012
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.262806
Longitude:	-149.690518
Hazard ID:	23635
Problem:	Mark Prieksat POC for the Army 384-3042 . Last staff assigned was Howard.

Actions:

Action Date:	8/13/1992
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	LCAU; :LCAU Date changed DB conversion
Action Date:	8/12/1992
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	5/16/1994
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	CLOS; No further action required.
Action Date:	2/11/1991
Action:	Release Investigation
DEC Staff:	* Not Assigned
Action Description:	RELR; Fall of 1990 two 300 gallon used oil tanks were removed and approximately 200 cubic yards of petroleum impacted soil was excavated and stockpiled. Lab results indicate that residual contamination remains. Report lacks detail on what was done, limits of excavation, sample collection procedures and locations. Not clear if samples were properly analyzed for metals, chlorinated compounds and PCBs.

LUST:

Facility Name:	JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199221X022569
File ID:	2102.26.012
Oname:	U.S. Air Force
Lat/Lon:	61.26280 -149.6905
Lust Event ID:	306
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	WGS84

M58
WSW
1/4-1/2
0.411 mi.
2171 ft.

JBER-FT. RICH BLDG 778 UST 22 USTA 2 PARTY — **SHWS** — **S110144132**
D STREET & FIFTH STREET, FORMERLY FORT RICHARDSON BEFORE 10/ — **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 1 of 3 in cluster M

Relative:
Lower

Actual:
312 ft.

SHWS:

File Number:	2102.26.049
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.259200
Longitude:	-149.690400
Hazard ID:	4462
Problem:	Underground storage tank (UST) number 22 was removed and replaced in July 94. Soil contaminants at the site include diesel range organics (DRO), gasoline range organics (GRO), total petroleum hydrocarbons (TPH), and benzene, toluene, ethyl benzene and xylene (BTEX). UST 22 was a 1,000-gallon heating oil tank, listed in the UST datbase under Facility ID 788. RCRA SWMU 31 Oil/Water Separator near bldg. 778USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	8/8/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Site Assessment Report for Bldg. 778 Fort Richardson, AKThe Alaska Department o(Environmental Conservation-Defense Facilities Oversight group(ADEC) has received, on July 25, 1994, a copy of the above referenced report. Below areour comments regarding the site assessment of UST 22.5.3 Conclusion and Recommendations page 11The text states the site is recommended for closure. Pending site screening results obtainedfrom Oil Spill Consultants' work at this site, ADEC concurs with the recommendation. Thesite closure will be considered final contingent on the additional sampling that will confirmthe presence or absence of soil coritamination above level C criteria.

Action Date:	8/26/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Army's sent a decision document to memorialize the no further remedial action planned at Bldg. 778 UST 22. This decision document describes the rationale for No Further Remedial Action Planned at Building 778, Fort Richardson, Alaska. This remedial action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.Building 778, located on D Street is the motorpool for the Law Enforcement Command, U.S. Army, Alaska. Underground storage tank (UST) number 22 was removed and replaced in July 94, as required by the Fort Richardson-State of Alaska, Department of Environmental Conservation, UST Compliance Agreement. Soil contaminants at the site include Diesel Range Organics (DRO), Gasoline Range Organics (GRO), Total Petroleum Hydrocarbons (TPH), and Benzene, Toluene, Ethyl benzene and Xylene (BTEX). These compounds were found at up to 4.4 parts per million, 11 ppm, 22 ppm and 1 ppm respectively, to depths of up to 15 feet below ground surface (bgs). The UST located at the building has received

JBER-FT. RICH BLDG 778 UST 22 USTA 2 PARTY (Continued) **S110144132**

closure from the Alaska Department of Environmental Conservation (ADEC).Contamination at this site is below the ADEC level A cleanup standards, as specified in 18 AAC 75, of 100 ppm DRO, 50 ppm GRO, 2000 ppm TPH and 10 ppm BTEX. Further, exposure is not probable based upon accessibility to the area of the USTs, and is within acceptable risk levels to both the ADEC and the Environmental Protection Agency.

Action Date: 8/19/1994
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: ADEC sent letter to Army re: Results from Additional Soil PID Screening and Analyses. Staff received a fax of the document on August 19, 1994. The analytical results for Bldgs. 750E, 750W, 778, 784, 812, 980, 45726, and 55295 showed levels well below the most stringent cleanup criteria (A). Based on the data presented by the Army, ADEC considers the UST sites closed out. However, closing out these sites does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that causes an increased risk to human health or the environment, then future investigation and/or remedial actions will be required. Level C criteria is applicable to Bldg. 980 UST 42.

Action Date: 10/4/2007
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: Site added to the database.

Action Date: 10/4/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Not reported
Action Description: Intitial Ranking Complete for Source Area: 75449 (Autogenerated Action)

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 778 UST 22 USTA 2 Party
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

N59 **JBER-FT. RICH AT035 MEB COMPLEX UST** **SHWS** **S113929800**
WSW **E SIDE OF 5TH STREET, BETWEEN D STREET AND DAVIS HIGHWAY, FO** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.415 mi.
2190 ft. **Site 1 of 2 in cluster N**

Relative:
Lower

Actual:
315 ft.

SHWS:

File Number:	2101.38.062
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.260833
Longitude:	-149.690833
Hazard ID:	26038
Problem:	This UST was located on U.S. Army property. Historical photographs from 1957 show several buildings (Quonset huts) in the vicinity of the UST location. By 1965 most of these buildings had been demolished. An abandoned foundation was also encountered during the 2011 excavation activities approximately 10 feet from the UST, indicating the UST likely contained fuel to supply an oil-fired heater when it was in use. The UST was partially exposed during excavation activities for the COF Building foundation. The UST sustained no damage from the excavator and contained only traces of fuel. Soil sampling conducted in 2011 and 2012 detected DRO contamination above cleanup levels.

Actions:

Action Date:	6/25/2015
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff commented on the UST Draft site characterization report. Main comments were regarding inclusion of a completed eco-scoping form which was not in the initial submission and use of the Method Three calculator for the purposes of closure. See site file for additional information.

Action Date:	5/6/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 79444 name: UST Not reported

Action Date:	4/2/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	AT035 MEB COF UST soil removal action report received. Additional soil was removed on 26 January 2012 from the contaminated area at the southernend of the UST excavation after ground heaters were used to thaw the frozen soil. Removalactivities were limited by the proximity of the newly constructed building foundation. Resultsfrom samples collected on 27 January 2012, after the removal action was completed, indicatethat DRO contamination remains in the areas where further excavation could potentiallydamage the COF Building foundation.On 26 January 2012, a total of 87.58 tons of DRO-contaminated soil was excavated from thesouthern end of the excavation and hauled to Alaska Soil Recycling in Anchorage, Alaska, forthermal treatment. Soil was removed based on analytical results from the October 2011sampling effort and PID field screening conducted during the removal action. Althoughcontamination remained along the western wall, excavation could not progress any closer tothe building foundation without potentially damaging the building. Piping in the southern endof the

JBER-FT. RICH AT035 MEB COMPLEX UST (Continued) **S113929800**

eastern wall was uncovered during the course of excavation and left in place; the pipingappeared to be conduit rather than fuel line.Analytical samples were collected from locations with the highest field screening results on 27 January 2012. No samples were collected from areas that were determined to be clean during the October 2011 sampling event. Field screening readings were recorded and analytical samples were collected as follows:??? Twelve field screening samples (FLOOR10 through FLOOR21) and three analytical samples from approximately 233 square feet of the excavation floor. ??? Six field screening samples (WALL07 through WALL12) and three analytical samples from 29 linear feet of the excavation walls. The northeastern wall was not sampled due to proximity to the building foundation.??? One field screening sample (PIPE1) and one analytical sample near the pipe.DRO results: 395 mg/kg (FLOOR 18) to 650 mg/kg (FLOOR09). Groundwater was not encountered during the UST removal process and no groundwater samples were collected. Groundwater in the area occurs at a depth of approximately 70 feet bgs. Migration of contaminants was not investigated during this site assessment; however, based on visual observations and the levels of DRO contamination identified at the site, it is unlikely that contamination has migrated to groundwater.The UST excavation was backfilled 18 April 2012. Classified soil was obtained from theElmendorf pit, which has been approved by the USACE. The excavation was backfilled in1-foot lifts and compacted by a vibrator compactor. A total of 200 cubic yards of soil wasplaced and compacted to match the grade of the site. Compaction testing was conducted byNorthern Geotechnical Engineers to verify that 95-percent compaction was obtained. Theproctor test was conducted by Buzdor Engineering.The UST encountered southeast of the COF Building foundation during permitted construction activities was successfully removed and recycled in October 2011. In addition, 87.59 tons (approximately 50 cubic yards) of contaminated soil was removed and thermally treated in January 2012. Contamination is still present at the site, as indicated by analytical samples collected during the removal. Contaminated soil could not be further excavated without potential damage to the COF Building foundation. The presence of the building also prevented collection of further samples; therefore, the current extent of contamination is unknown. The site is recommended to be added to the ADEC Contaminated Sites Program and the JBER contaminated sites database. Additional site characterization and removal actions may be necessary if the COF Building is removed.

Action Date: 3/12/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff determined cleanup complete is appropriate for the site. Based on a review of the environmental records, ADEC has determined that the site known as the Davis Highway UST (TU009) has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for the site in the Contaminated Sites DatabaseSee site file for additional information.

Action Date: 11/6/2011

JBER-FT. RICH AT035 MEB COMPLEX UST (Continued) **S113929800**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Spill discovered on November 6, 12:00 and spill report sent November 6, 2011 16:00 by fax M. Prieksat. FTR269C construction site. Previously undeveloped area north of intersection of D and5th Streets on JBER-Richardson. This is a known contaminated site. Joint Base Elmendorf-Richardson (Richardson side of installation. Diesel. unknown quantity spilled or contained or recovered. Former heating oil tank that was likley more than 40 years old.Former heating oil tank and bldg foundation were discovered during construction activities at the site. Initial field screening did not indicate presence of contamiantion. Soil samples collected after tank removal indicate presence of weathered diesel (heating oil). Anticipate excavation of 25 cubic yards of soil to remove the extent of contamination. Soil will either be stockpiled on JBER per 18 AAC 78 or hauled directly to ASR. Excavation could be limited due to location next to building foundation.Tank was removed, cleaned, and disposed. Soil will either be stockpiled on JBER per 18 AAC 78 or hauled directly to ASR. Excavation could be limited due to location next to building foundation. Treatment will probably occur in April-May 2012.Historical release from former heating oil tank. Based on analytical data the contamination is weathered diesel fuel (about 1200 mg/kg). The amount of fuel released is unknown as is the date of release. Anticipate that about 25 cubic yards of soil will be excavated and stockpiled pending complete analytical testing. Stockpile will meet requirements of 18 AAC 78 andsoil stored pending availability of treatment facility and funding to treat the soil.

Action Date: 10/28/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Jacobs conducted an initial inspection on 24 October 2011. No evidence of contamination wasidentified in the soil surrounding the UST, and the UST appeared to be intact, although theupper piping had been removed at an undetermined date, indicating that the UST had likelybeen decommissioned in place. The UST was partially filled with a mixture of soil, water, andsludge.Active utilities were not located near the UST; however, the UST was located close to thefoundation of the new COF Building.On 28 October 2011, the field crew excavated soil from the top and sides of the UST,removed the UST from the excavation with a strap attached to the excavator bucket, andplaced the UST near the excavation for cleaning. No significant staining or odor was observedwithin the excavation.After removal, a 3-foot by 3-foot hole was cut into each end of the UST using a pneumaticnibbler tool. The UST was then cleaned out using shovels and sorbent pads. Followingcleaning, the UST was transported to Schnitzer Steel in Anchorage, Alaska, for recycling.Four field screening locations returned PID readings greater than the field screening action level of 20 parts per million. Due to these PID readings, DRO contamination was considered possible, and the COF construction contractor, Watterson, was instructed to refrain from backfilling the excavation. The excavation was not frozen at the time of the October effort; however, the excavation exposed soil below the surrounding grade to freezing temperatures.Analytical samples were collected from locations with the highest PID field screening resultsas follows:??? Nine field screening samples (FLOOR01 through FLOOR09) and two analytical samplesfrom approximately 48 square feet of the excavation

JBER-FT. RICH AT035 MEB COMPLEX UST (Continued) **S113929800**

floor area.??? Six field screening samples (WALL01 through WALL06) and three analytical samplesfrom approximately 55 linear feet of the excavation walls.??? Five field screening samples (WASTE1 through WASTE5) and one analytical samplefrom approximately 45 gallons of waste soil, water, and sludge removed from the USTDRO results: 395 mg/kg (FLOOR018) to 1,210 mg/kg (FLOOR3 duplicate sample) and TANK 11FTR269UST-W01-SO at 6,610 mg/kg.

Action Date: 1/13/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from JBER-Richardson M. Prieksat to ADEC L. HowardAttached is a request to transport soil from the FTR269C site where we discovered an empty heating oil tank during construction - see attached SPILL REPORT. Tank was probably 40+ years old and was discovered when driving survey stakes to mark the building foundation. Several holes had been cut into the top of the tank and it was partially filled with soil. Initial field screening did not indicate that contamination was present but we did detect contamination in the analytical samples collected from underneath the tank. Samples were analyzed for GRO/DRO/RRO/PAH/BTEX with only DRO exceeding cleanup levels. Four of the six analytical samples collected from the excavation exceeded the ADEC migration to groundwater cleanup level for DRO ranging from 445 to 1,210 mg/kg. All other analytes were below cleanup levels. Attached is a crosstab table from SGS showing only the hits. Analytes not shown in the table were not detected (BTEX and PAHs). The 6,610 mg/kg DRO result isfrom the soil removed from the tank and containerized. I would like to have Jacobs attempt to remove the contaminated soil and haul to ASR. Not sure if we can remove all the contamination because the tank was located within about 10 feet of the new building foundation. The entire FTR269C site will be investigated under the PBC contract and we will drill borings and sample the tank site under that contract.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich AT035 MEB Complex UST
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich AT035 MEB Complex UST
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res

JBER-FT. RICH AT035 MEB COMPLEX UST (Continued) **S113929800**

Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

N60 **JBER-FT. RICH AT035 MEB COMPLEX COF** **SHWS** **S112224714**
WSW **~350 FT SW OF WAREHOUSE ST & OTTER LAKE LOOP RD INTERSECTION** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.415 mi.
2190 ft. **Site 2 of 2 in cluster N**

Relative:
Lower

Actual:
315 ft.

SHWS:
File Number: 2102.38.062
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.260833
Longitude: -149.690833
Hazard ID: 25870
Problem: In January 2010, elevated field screening results were measured during excavation activities for the MEB Complex Phase 1 Fueling Point Facility (FTR269A). DRO was found in soil above cleanup levels at depth. Fall 2010: DRO TCE PCBs found above cleanup levels at depth in soil. Nature and extent of soil contamination unknown at this time.
Not reported

Actions:
Action Date: 9/16/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Supplemental work plan received for review to address the groundwater sampling, institutional controls (IC) inspection, and landfill cap inspection activities associated with the 2016 Long Term Monitoring (LTM) at the Joint Base Elmendorf-Richardson (JBER), Sites PL081, CG551, ST408, CG530, SO510, SS522, SO507, SS418, TS003, CG543, CG529, TU107, ST048, CG509, SO508, SO549, AT035, AT029, SS019, and DP009. As a requirement of the 2016 Environmental Long Term Monitoring contract, the following work shall be performed at JBER Site AT035:? Perform IC inspection

Action Date: 8/9/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed the responses to its comments on the AT035 RI/FS Mgt. Plan and approves the responses for incorporation into the final version pending resolution of EPA comments.

Action Date: 8/27/2012
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79321 name: Spills

Action Date: 8/24/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the responses to ADEC's comments on the draft RI/FS Management Plan (a primary document as stated in paragraph 20.5 Part XX Consultation with U.S. EPA and ADEC- Fort Richardson FFA 1994).

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

The responses to comments are approved and the redline version of the document is approved and may be finalized, pending resolution of any EPA comments or concerns on the document and RTCs.

Action Date: 8/24/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the Draft Supplemental Work Plan for JBER-E and JBER-R sites [PL081 N. Jet Pipeline, CG551 Bldg. 4314, ST408 Bldg. 9569, CG530 ST526, SO510 Bldg. 9480, SS522 Hardstand 39, SO507, Bldg. 9669, SS418, ST532, TS003 Skeet Range, CG543 Bldg. 18877, CG529 ST529, ST048 Bldg. 11-490, CG509 Bldg. 4347, SO508 ST508, SO549 Bldg. 4913, AT035 MEB Complex, AT029 Ruff Road FTA, SS019 Bldg. 755, DP009 Bldg. 986 POL Lab, LF002, LF002 OU6 Disposal Site, CG536 ST510, CG539 Bldg. 15380, CG702 Bldg. 31562, SO544 Bldg. 10334, SO547 Bldg. 4913, CG704 Southern Plume, CG527 ST538, SO501 ST427, TU064 Bldg. 740, SS013 MP Barracks, SS014, SS041 Roosevelt Road Transmitter Site, TU107, ST048] which include this one. ADEC concurs with the scope of work for the current work outlined in this section. Note: this site has a RI/FS management plan (draft-final stage) to investigate the nature and extent of contamination in soil, groundwater and vapor intrusion pathway,.

Action Date: 8/24/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP for PA/SIs at Sites SA034, SA033, AT035, & AT032 as well as Site Characterization/Cleanup at Sites TA008, TU948, TU110, TU111, TU112, TU949, & SS001 Dated August 23, 2012 received.SA034 ??? TBD 2, Powerline Drum Site TU949 Building 770 UST Site (CC-FTRS-05) SS001 - Building 796 (Battery Shop) (FTRS-01) SA033 ??? TBD 3, Otter Lake Road Drum Site TA008 ???Biathlon Range Fuel Release (CC-FTRS-08) TU948 ???Building 57-428 UST Site (CC-FTRS-09) TU110 ???Building 47-431 Tanks E1 & E2 (CC-FTRS-10) TU111 ??? CC-FTRS-11, Tank E5 TU112 ??? CC-FTRS-12, Tank E7 AT035 ??? TBD 4 MEB Complex, COF (FTR269) AT032 ??? TBD 1, Airborne Training Facility (FTR255).Soil sampling & analytical approach:??? Soil samples will be collected at 5-foot intervals from ground surface to 25 feet bgs, & at 10-foot intervals from 25 feet bgs to the water table (approximately 120 feet bgs) from two boreholes.??? If, based on photoionization detector (PID) field screening & visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, then two samples will be collected beyond the last evidence of contamination, & the boring will be terminated.??? Continuous logging of soil type & stratigraphy, moisture or GW, visual observations of staining or liquid-phase petroleum, photoionization detector (PID) readings, & other observations.??? All soil samples in the DRO study area (approximately 13, excluding quality control [QC]) will be analyzed for gasoline-range organics (GRO); DRO; residual-range organics (RRO); & volatile organic carbons (VOCs), excluding the chlorinated compounds.??? A subset of soil samples in the DRO study area (as described in Worksheet 17 of this appendix) will be collected for additional analyses to facilitate HRC calculations. These analyses include polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbon (VPH), extractable petroleum hydrocarbon (EPH), fraction of organic carbon (foc), bulk density, grain size distribution, specific gravity, & moisture content.??? All soil samples in the TCE

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

study area (approximately 11, excluding QC) will be analyzed for volatile organic compounds (VOCs).GW sampling & analytical approach:??? In the DRO study area, a HydroPunch GW sample will be collected from one boring (if the boring is advanced to the water table [see Worksheet 17]) & analyzed for GRO, DRO, RRO, VOCs (excluding the chlorinated compounds), PAHs, VPH, EPH, & total organic carbon (TOC).??? In the TCE study area, a monitoring well will be installed, & one GW sample will be collected & analyzed for VOCs & DRO.See site file for additional information.

Action Date: 7/31/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A pre-construction environmental survey performed in 2008 determined that there was no known contamination at the site (U.S. Army, 2009).

Action Date: 6/9/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the TCRA and investigation report.). ADEC concurs with the recommendations to conduct a remedial investigation of the PCB, TCE contaminated soil as well as to verify that no additional contamination exists at the site. ADEC, EPA and the Air Force have signed (March 2014) a memorandum to add the AT035 ??? MEB Complex COF to the JBER-R Federal Facility Agreement (FFA) as a new site subject to the stipulations in the FFA. ADEC has no additional comments on the document, pending incorporation of any EPA comments, the document may be finalized.

Action Date: 6/6/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: FFA agreement schedule of deliverables for primary/secondary documents shows the draft Management Plan is due to ADEC and EPA in Apr 2017.

Action Date: 6/30/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In June 2010, a preliminary source evaluation was performed that included drilling 10 soil borings (COF01 through COF10) to a depth of 15 feet bgs and collecting subsurface soil samples. Soil borings were advanced using direct-push technology. Soil samples were collected from the depth of the highest PID readings and analyzed for GRO, DRO, RRO, VOCs, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and Resource Conservation and Recovery Act (RCRA) metals (Jacobs, 2010).Within the COF building area (Building 788), DRO and trichloroethene (TCE) were detected atconcentrations up to 1,570 mg/kg and 1.51 mg/kg, respectively. In the new COF parking area,TCE and polychlorinated biphenyls (PCBs) were in soil at concentrations up to 0.745 mg/kg and23.3 mg/kg, respectively.See site file for additional information.

Action Date: 6/19/2017
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the RI/FS Mgt. Plan. Main comments were

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

regarding discrete soil samples vs. composite soil samples - especially for volatile organics and GRO/DRO analysis unless using incremental sampling methodology and that the maximum detected concentration in groundwater shall be used as the exposure point concentration not the 95 UCL. Finally, soil data is not recommended for vapor intrusion pathway because of the uncertainty in estimating soil gas partitioning. Only the Fort Richardson Background Data Analysis Report may be used to determine background concentrations for metals and not the Elmendorf study. See site file for additional information.

Action Date: 6/13/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the AT035 MEB Complex Company Operations Facility on June 10, 2013. ADEC has reviewed the final document and has no further comments on it. The document is approved.

Action Date: 6/1/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Since the removal action was unsuccessful in completely removing the PCB-contaminated soil in excess of 1 mg/kg, the established removal action cleanup level, a follow-on investigation was conducted between December 2011 and June 2012 that included sampling soil at 2 feet bgs for PCBs and TCE from eight test pits (samples TP01 through TP08), advancing 13 soil borings and sampling soil from 0 to 2.5 feet bgs and 2.5 to 5 feet bgs (samples PARK07 through PARK19) for TCE and PCBs, collecting two concrete samples for analysis of PCBs, and collecting 15 surface soil samples (SW01 through SW15) for analysis of PCBs and TCE. PCB-contaminated soil with concentrations in excess of 1 mg/kg was found to remain at several locations surrounding former Building 789. PCB concentrations in soil ranged as high as 158 mg/kg (TP04) within 30 feet of the former building and to a depth of 5 feet bgs. PCB-contaminated concrete was also identified. The extent of PCB-contaminated soil remains undefined.TCE was also detected in soil at concentrations up to 1.28 mg/kg. The source of the TCEcontamination in soil could not be positively identified nor was the extent of contamination fully delineated. Based on the distribution of the TCE contamination (Figure 10-3), the source of the TCE contamination appears separate from the source of the PCB contamination, althoughcontamination is co-located at some of the sample locations.

Action Date: 6/1/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: USACE Memorandum through CEPOA-EN-GES CEPOA-EN-GES-CIH For CEPOA-PM-M (Chouinard): Report of Chemical Findings & Employee Exposure Monitoring, FTR271B (PN72270) MEB-Phase II TEM Fac. JBER (11-023). Summary of Field Activities: Soil samples were collected from twenty-one borings during the foundation study performed from the 28th of February 2011 to 17 March 2011 at the FTR271A project site. All borings were screened using a photoionization detector (PID). USACE chemist Teresa Lee (CEPOA-EN-GES-CIH) & geotechnical engineers Inocencio Roman & Pam Lovasz (CEPOA-EN-ES-GM) performed the field screening activities. All soil samples were collected from borings

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

drilled by USACE drill equipment operators Lyle Cain & Christopher Bean using hollow stem augers & split spoon samplers. Soil samples were collected from a decontaminated split-spoon sampler after the auger had been advanced to designated sample depth. Samples were screened with a photo-ionization detector (PID) as specified in the Sampling & Exposure Analysis Plan. Readings above background were not observed at any test boring locations evaluated by CEPOA-EN-GES-CIH. USACE chemist Teresa Lee performed all sampling activities. All samples were collected as described in the Sampling & Analysis Plan.The results indicate that analyte concentrations were not detected at levels which are above 18 AAC 75 Method 2 Under 40 Inch criteria for soils in the borings that were sampled for project site FTR271C, with the exception of arsenic & chromium. Arsenic was present in TB-10 (AP-5669 at 7.2 mg/Kg), TB-11 (AP-5670 at 7.4 mg/Kg), & TB-16 (AP-5675 at 6.8 mg/Kg & a duplicate at 5.2 mg/Kg). Chromium was present in TB-10 (AP-5669 at 36 mg/Kg), TB-11 (AP-5670 at 41 mg/Kg), & TB-16 (AP-5675 at 29 mg/Kg & a duplicate at 25 mg/Kg). Arsenic & chromium are above ADEC criteria but are within background levels for the installation (ref. 1.d). In addition, the cleanup level for chromium is based on the presence of the more toxic hexavalent chromium. Site history does not indicate the presence of the more toxic hexavalent chromium species. A separate analysis was run for hexavalent chromium & no exceedances were noted.This project was not intended to be a comprehensive environmental investigation of the site, & changes in the condition of the site may occur with time due to natural processes or human activities. The findings presented in this report are based on the soil boring data gathered at the time of the investigation.Conclusions: The results indicate that analyte concentrations were not detected at levels which are above 18AAC75 Method 2 Under 40 Inch criteria for soils in the borings that were sampled for project site FTR271 C, with the exception of arsenic & chromium. Arsenic was present in TB-10 (AP-5669 at 7.2 mg/Kg), TB-11 (AP-5670 at 7.4 mg/Kg), & TB-16 (AP-5675 at 6.8 mg/Kg & a duplicate at 5.2 mg/Kg). Chromium was present in TB-10 (AP-5669 at 36 mg/Kg), TB-11 (AP-5670 at 41 mg/Kg), & TB-16 (AP-5675 at 29 mg/Kg & a duplicate at 25 mg/Kg). Arsenic & chromium are above ADEC criteria but are within background levels for the installation (ref. 1.d). In addition, the clean up level for chromium is based on the presence of the more toxic hexavalent chromium. Site history does riot indicate the presence of the more toxic hexavalent chromium species & results for hexavalent chromium analysis were below state cleanup limits. However, due to the current & historic use of the land, hazards associated with possible petroleum, lubricants, & oils exist at this site location. Employees should continue to use proper work practices for dust control & consistently use PPE to limit the effects of chemical exposure.Recommendations: Due to current & historic use of the site, further environmental site investigation is recommended. Based on the employee chemical exposure data, continue utilizing established work practices & established safety protocols. Should site conditions or processes change, additional evaluations should be performed.SignedTeresa LeeChemist

Action Date: 5/9/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: RI/FS Management Plan received for review and comment. The overarching project objective is to complete a RI/FS at AT035 to

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

provide the project teamwith the information necessary to determine whether remedial action is necessary to protecthuman health and the environment. The RI will be conducted to (1) delineate the nature andextent of contaminants (primarily PCBs) in soil, (2) delineate the nature and extent ofcontaminants (primarily carbon tetrachloride and chloroform) in groundwater, (3) assess whetherVOCs in soil and groundwater are or potentially can impact indoor air through the VI pathway,and (4) evaluate whether soil/groundwater/indoor air contamination presents unacceptable risksto human health and the environment.See site file for additional information.

Action Date: 5/3/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site determined to be non-qualifying based on review of 4/12/12 Report of Chemical Findings, Brigade Complex Phase 1, Vehicle Fueling Facility (FTR269A). Soil samples were collected and analyzed for GRO, DRO, RRO, PAHs, VOCs, and PCBs. Analytical results, with the exception of arsenic and chromium (which were determined to be within background), were below DEC cleanup levels.

Action Date: 5/28/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Contaminated Soil Removal Report dated May 2013 received for review & comment. The work described in this Removal Report was conducted under the 2011 FTR269 MEB Complex Company Operations Facility Work Plan Addendum (U.S. Army Corps of Engineers [USACE], Alaska District 2011) & the 2010 Fort Richardson Post Wide Work Plan (USACE 2010) for the USACE under contract number W911-KB-06-D-0006, Task Order 19. The work consisted of removal & treatment or disposal of nearly 3,800 cubic yards (cy) (5,700 tons) of soil contaminated with diesel-range organics (DRO) at Site AT035 ??? Maneuver Enhancement Brigade (MEB) Company Operations Facility (COF) building. At the time of the removal action, construction of the COF building (FTR269) had not yet begun; this removal action was contracted in order for construction of the building to proceed without encountering contaminated soil. The removal action sought to remove all DRO-contaminated soil with concentrations greater than the ADEC Method Two migration to GW cleanup level for the under 40-inch zone of 250 milligram per kilogram (mg/kg) (ADEC 2012) that would be encountered during the COF building construction activities. This consisted of the soil within the proposed building footprint to a depth of 9 feet below the existing grade. Soil with DRO concentrations exceeding 250 mg/kg at 9 feet below ground surface (bgs) & greater was left in place. Soil at that depth would not be encountered during building construction. In addition to the DRO contamination trichloroethylene (TCE) contaminated soil with concentrations greater than the ADEC Method Two migration to GW cleanup level of 0.02 mg/kg was identified in the gravel parking area to the north of the proposed excavation area. Although TCE contamination was not expected to be encountered within the proposed excavation area, all samples were also submitted for TCE analysis. Soil with TCE concentrations greater than the ADEC cleanup level was only encountered in one floor sample (EF107) collected in the northern portion of the excavation nearest to the previously identified TCE contamination.Floor samples characterized the extent

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

of contamination remaining at the site. Of 43 primary analytical samples, 23 exceeded the DRO cleanup level of 250 mg/kg with concentrations ranging from 260 to 9,230 mg/kg. In addition, one sample location (EF107) contained trichloroethylene (TCE) at 0.0326 mg/kg, exceeding the ADEC migration to GW cleanup level of 0.02 mg/kg.TCE contamination has been encountered as high as 1.51 mg/kg at a depth of 14 feet bgs in soil boring COF13, which exceeds the Method Two Outdoor Inhalation cleanup level of 0.57 mg/kg.The COF building is located within 30 feet of petroleum contamination & within 100 feet of TCE contamination. Although utilities do run through this area (storm drain & water for fire hydrants), these are not connected to the building. Soil boring COF13 (TCE at 1.51 mg/kg) is approximately 90 feet north of the COF building.See site file for additional information.

Action Date: 5/2/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: MEB COF Parking Area PCB TCRA & Investigation Report received. At the conclusion of the field activities, 38.7 tons of PCB-contaminated TSCA hazardous soil & 1,009.6 tons of PCB-contaminated TSCA nonhazardous soil were excavated & disposed of. PCB- & TCE-contaminated soil still exists greater than the ADEC Method Two cleanup levels of 1 mg/kg & 0.020 mg/kg, respectively. PCB-contaminated soil remains beneath the installed sidewalk & in the grassy areas surrounding the former Building 789; specifically the west, south, & east sides. The estimated extent of PCB contamination is based on the sample results from the excavation area, test pits, soil borings, & surface samples, as well as observations made during excavation activities. PCB contamination appears to be limited to the top 3 to 4??? of soil. In addition, PCB-contaminated concrete was identified in the exterior footer of the building at one sample location. The extent of PCB contamination in concrete has not been determined at this time. TCE-contaminated soil remains in the former gravel parking area, & under & immediately adjacent to former Building 789 (Figure 5-2). The lateral & vertical extent of the TCE-contaminated soil has not been fully delineated. The footers & slab from former Building 789 remain onsite, although the aboveground portions of the building were demolished & removed from the site. The majority of the remaining PCB-contaminated soil & building footers/slab are currently surrounded by a fence. Some soil contamination identified near the installed sidewalk is located outside of the fenced area. Although the removal of all PCB-contamination greater than 1 mg/kg was not completed, the risk to human health was mitigated by modifying the construction plans. This modification allowed the contaminated soil & concrete to remain in place during construction activities, thereby eliminating the potential for worker exposure.It is recommended that JBER conduct a remedial investigation of the PCB- & TCE-contaminated soil, as well as verify that no additional contamination (petroleum, oil, & lubricants; pesticides; etc.) are present at the site. This investigation should include the portion of the AT035 site located on the east side of Fifth Street in the vicinity of the COF building (Building 788) where petroleum, oil, & lubricant- & TCE-contaminated soil was also detected during the 2010 PSE. Removal of additional contaminated soil & concrete may be necessary to meet human health risk goals & will be addressed by the investigation. Additionally,

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continued investigation of the TCE contamination is recommended to further refine the extent & to determine if GW contamination has occurred. Investigation & potential removal activities at this site will be coordinated with the appropriate regulatory authorities. This site has been added to JBER???s geodatabase & the ADEC contaminated sites database, & institutional controls have been added to the site to prevent the inadvertent excavation of contaminated soil. Institutional controls currently include excavation clearance requests & should also include placing a Notice of Land Use Controls in JBER???s General Plan & Land Use Controls Management Plan

Action Date: 5/2/2012
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 5/1/2012
Action: Spill Transferred from Prevention Preparedness and Response Program
DEC Staff: Mitzi Read
Action Description: Spill transferred by PERP staff Michele Sherwood. Spill no. 11239928603; spill date = 10/13/11; substance = unknown; quantity = unknown.

Action Date: 4/8/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the Draft AT035 MEB complex PA/SI report. Executive SummaryThe text states??? TCE was detected in soil north of the COF building site. The highest TCE concentration (1.51 mg/kg) was detected at a depth of 14 feet bgs. The source of the TCE contamination is unknown. Given the widespread low concentrations in soil, a possible source is historical use of a dust control compound that was contaminated with TCE.???ADEC disagrees that the source of the TCE was the historic use as dust control since it was detected at fourteen feet below the ground surface & JBER has not made the case that the TCE was not spilled or released historically at the site. The highest level of TCE at the site was not collocated with DRO contamination in the same boring to support the dust suppressant theory. TCE would not likely be used as a dust suppressant by itself & generally be comingled with used oil at the time of application. Additionally, the migration to GW cleanup level for TCE is 0.020 mg/kg which is 75 times lower than the TCE detected at 1.51 mg/kg. Finally, 1.51 mg/kg concentration is 2.6 times higher than the Outdoor Inhalation cleanup level for Under 40-inch Zone. 4.3 & 4.4 General commentThe text refers the reader to Appendix D for the laboratory reports. The appendix does not contain the complete laboratory data reports. Please submit the missing information to be included in Appendix D. Summary tables will not be accepted in lieu of the laboratory data reports. Per the ADEC Technical Memorandum (March 2009) Environmental Laboratory Data & Quality Assurance Requirements: The complete analytical lab report(s) SHALL be included as part of ALL submittals to ADEC for which environmental samples have been collected, analyzed & reported. 5th ParagraphThe text states: ???TCE was detected above the SL of 0.02 mg/kg in all five soil samples collected from MW01 between 2.5 & 25 feet bgs. Concentrations in these five soil samples ranged from 0.859 mg/kg at 15 to 20 feet bgs to 0.42 mg/kg at 20 to 25 feet bgs.??? See site

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file for additional information.

Action Date:	4/22/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the Draft AT035 ??? Maneuver Enhancement Brigade Complex, Company Operations Facility UST and Soil Removal Action Report.IntroductionThe text states: ???Fieldwork and sampling were performed in accordance with the Draft Field Sampling Guidance (Alaska Department of Environmental Conservation [ADEC] 2010), Fort Richardson Post Wide Work Plan (U.S. Army Corps of Engineers [USACE] 2010), and FTR269C COF Building Site Underground Storage Tank Removal Work Plan Addendum (USACE 2011).Future work plans, scoping documents, technical memoranda for work on JBER-Richardson should reference (to the extent possible) the Final Base-wide Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP) for the United States Air Force Joint Elmendorf-Richardson, Alaska, March 2013. Significant organizational or project goal changes must be documented in a QAPP Amendment or Addendum requiring the approval of US EPA and ADEC prior to implementation.To the extent possible, the Basewide UFP-QAPP shall be used for JBER-Elmendorf work plan development as well for petroleum and CERCLA sites9.0Conclusions and RecommendationsADEC reviewed and approved, subject to this and other institutional controls, the cleanup as protective of human health, safety, welfare, and the environment at AT035 UST site. No further cleanup is necessary at this site. ADEC has determined, in accordance with 18 AAC 75.325 ??? 390 site cleanup rules, that cleanup has been performed to the maximum extent practicable even though residual diesel range organics contaminated soil exists on-site. Further cleanup was determined to be impracticable because the remaining contaminated soil is beneath the COF Building foundation. ADEC will, as part of its approval, modify proposed cleanup techniques or require additional cleanup techniques for the site (following regulations applicable at that time) as ADEC determines to be necessary to protect human health, safety, and welfare, and the environment.Pursuant to 18 AAC 75.325(i)(1) and (2), notification and ADEC approval is required prior to moving soil that is, or has been, subject to the cleanup rules found at 18 AAC 75.325-.370. At this site, in the future, if soil is disturbed or removed from the site it must be characterized and managed following regulations applicable at that time.

Action Date:	4/15/2015
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	The Alaska Department of Environmental Conservation (ADEC) has received the Draft PSE 2 Site Evaluation for AT035, JBER-Richardson dated April 2015 for review and comment on February 5, 2015. The document may be finalized, pending any comments from EPA. ADEC concurs the recommendations to conduct a remedial investigation to (1) delineate the nature and extent of VOCs in soil, groundwater, and soil gas/indoor air, and PCB contamination remaining in soil and concrete and (2) assess the associated risks from these contaminants and remaining DRO-contaminated soil. The remedial investigation shall be developed and implemented in accordance with CERCLA and the 1994 Fort Richardson Federal Facility Agreement.

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Action Date: 4/14/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft PSE 2 site evaluation received for review & comment. Deviations from the Work Plan-Because of elevated PID readings in boring AT035-SB06, soil samples from the upper 25??? of that boring were also analyzed for DRO & RRO.A sample of perched GW from a thin lens was collected from the drill casing using a bailer during installation of AT035-SB10/MW02. This sample was submitted for analysis of VOCs; however, the sample arrived at the lab at a temperature above holding criteria. The lab proceeded to analyze the sample, but the results were later either qualified (if an analyte was detected) or rejected.Conclusions-Carbon tetrachloride, chloroform, hexachlorobutadiene, methylene chloride, TCE, PCBs, & DRO are present in soil above project screening levels. [NOTE: Most hexachlorobutadiene used commercially in the United States is imported from Germany. It is mainly used to make rubber compounds. It is also used as a solvent, and to make lubricants, in gyroscopes, as a heat transfer liquid, and as a hydraulic fluid.]The extent of TCE-contaminated soil north of Building 788 is defined. The vertical extent of DRO-contaminated soil beneath Building 788 is undefined. The lateral extent of TCE-contaminated soil at the new parking lot is undefined; however, the vertical extent is defined. Carbon tetrachloride, chloroform, methylene chloride & hexachlorobutadiene in soil north of Building 788 & within the new parking lot exhibit no discernible patterns or relationships either horizontally or vertically.At the new parking lot, the lateral & vertical extent of PCB-contaminated soil is undefined. Carbon tetrachloride was detected in GW above the project screening level. However, based on available historical data from monitoring wells at adjacent sites, the carbon tetrachloride appears to be originating from an unknown, upgradient source.Potentially complete current exposure pathways include incidental ingestion, dermal contact, outdoor inhalation, & indoor air. GW ingestion is considered potentially complete for future exposure scenarios.Recommendations-Conduct a remedial investigation to (1) delineate the nature & extent of VOCs in soil, GW, & soil gas/indoor air, & PCB contamination remaining in soil & concrete & (2) assess the associated risks from these contaminants & remaining DRO-contaminated soil.See site file for additional information.

Action Date: 4/11/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA (Sandra Halstead) provided comments on the draft PA/SI for AT035 MEB Complex. Sec. 2-2p. 2-2The last paragraph in this section discusses the process to be developed if non-petroleum hydrocarbons are found at levels exceeding screening levels. The narrative describes the development of site specific risk assessments and CSMs, and suggests the data from the PA/SI will be used as the input to the risk assessment. The risk assessment would be developed in conjunction with a Remedial Investigation and not based on the very limited sampling done under a PA/SI. Additionally, groundwater screening levels are based on EPA MCLs, and in the absence of a MCL for a compound, EPA RSL tap water values should be used. Please clarify if EPA tap water RSLs will be used if a MCL value does not exist.p. ES-1, p. 2-3, p. 5-3 The narrative proposes a possible source of TCE at depths to 14 fbgs is due to dust control. Given that

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two sample location borings (COF13 and AT035-MW01) are within 25 ft of each other on a northern transect both exhibit TCE exceedances in soils at depth (up to 25 fbgs), it is highly unlikely dust control is a source. It is agreed the northern extent has not been delineated, and futher investigation is warranted Sec. 3.6p. 3-4One MS/MSD sample is used, however there are two different preservatives used for analysis SW8260 for MeOH and SW8260-low level with sodium bisulfate. Please clarify which preservative was included in the Matrix Spike/ Matrix Spike Duplicate.Field Notes11.9.12p. 32-35and 11.14.12 p. 45-48Appears to be some difficulty in drilling/establishing AT035-MW01 well casing due to ???sand heaves??? at ~75 ft depth and pump/purge difficulties. The presence of heaving sands suggests the aquifer was under pressure, and samples obtained shortly after well development in this hydrologic situation are likely to not be representative of stable aquifer conditions. As this is the only groundwater monitoring well, and only one groundwater sample was taken, it is premature to determine no TCE contamination exists in GW. Future investigations may involve additional well development.Appendix Dp. 6and Table 4-1Overall Assessment, 1. It is suggested Method SW8260B are available for samples with rejected SW8260B-Low level results. EPA will not accept SW8260 samples preserved in MeOH due to analysis difficulties in meeting CERCLA screening levels and cleanup standards. Please clarify the source of the data provided in Table 4-1. This may be best provided with an additional column referencing the method used or a footnote to the sample result.

Action Date: 3/4/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Department of the Air Force Memo for distribution, AFCEC/OLAF Subj: Incorporation of AT035 - MEB Complex COF into the JBER-Richardson FFA.Site-specific information has identified trichloroethene (TCE) in soil at A T035 - Maneuver Enhancement Brigade (MEB) Complex, Company Operations Facility (COF) located on Joint Base Elmendorf-Richardson (JBER)-Richardson (JBER-R), the former Fort Richardson Army Post, Alaska. A T035 includes the COF building site and COF parking area, which were recently constructed on Fifth Street north of D Street.Based on the presence of a CERCLA-regulated contaminant in soil, A T035 - MEB Complex COF will be incorporated into the JBER-R Federal Facility Agreement (FF A) as a new site subject to the stipulations listed in the FF A. Attached for your review and acceptance is the proposed document schedule for A T035 - MEB Complex COF.ATOJS - MEBCo mp1ex COFDo cumen t Sc bed u le :Document Type, Document, Date Due for Agency ReviewPrimary Draft PSE 2 Report 31 Dec 2014Draft Remedial Investigation/Feasibility Study (RI/FS)Primary Management Plan 30 Sep 2015Primary Draft RI/FS, including Baseline Risk Assessment 30 Jun 2017Secondary Proposed Plan 30 Sep 2017Primary Draft Record of Decision 31 Dec 2017Upon approval, this document schedule will be attached to the current FFA (effective 5 Dec 1994). The document schedule may be updated or modified to include additional primary or secondary documents as necessary to meet FF A requirements. Changes will require approval of FF A Project Managers.Signature below indicates concurrence with incorporation of A T035 - MEB Complex OF into the JBER-R FF A and the document schedule provided above:Gary Fink FFA Project Mgr JBER-R, Alaska USAFSandra Halstead, FFA Project Mgr JBER-R Alaska USEPALouis Howard,

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FFA Project Mgr JBER-R Alaska ADEC

Action Date: 3/30/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: FTR269 MEB Complex Phase ICOF Building SiteDRO contamination greater than the ADEC cleanup level of 250 milligrams per kilogram (mg/kg) was only identified in three soil borings, located in the center portion of the site, & was generally not found near the surface. In the area of soil boring COF02, the DRO contamination is closer to the surface than other areas of the site with DRO concentrations of 1,570 mg/kg & 1,530 mg/kg at 6 & 8 feet bgs, respectively. In soil boring COF03, DRO was not encountered until a depth of 15 feet bgs at 711 mg/kg & in boring TB-11 (AP-5536) DRO was identified from 17.5 to 19.5 feet bgs at 4,000 mg/kg (USACE 2010b). Soil boring AP-5536 was completed by the USACE in March 2010 as part of worker exposure monitoring.TCE contamination greater than the ADEC cleanup level of 0.02 mg/kg was identified in five soil borings located in the NW portion of the site, in the gravel parking area between the motor pool area & Building 792. This contamination was identified at various depths from 3 feet bgs in boring COF13 to 14 feet bgs in borings COF13, COF14, & COF16. The highest concentration (1.51 mg/kg) was identified in boring COF13 at a depth of 14 feet bgs.COF Parking Lot SiteTCE contamination greater than the ADEC cleanup level of 0.02 mg/kg was identified in all six of the soil borings advanced at the site. The depth of the TCE contamination ranged from 2 feet bgs to 14 feet bgs with concentrations between 0.0487 mg/kg & 0.745 mg/kg. All six soil borings were located in or immediately adjacent to the gravel parking lot west of Building 789.PCB aroclor 1260 contamination greater than the ADEC cleanup level of 1.0 mg/kg was identified in soil borings PARK04 & PARK06. The highest concentration (23.3 mg/kg) was located in boring PARK04 at a depth of 2 feet bgs. Contamination was also found (4.61 mg/kg) in boring PARK06 at a depth of 2 feet bgs. PCB aroclor 1260 was also identified in borings PARK02, PARK03, & PARK05 but at concentrations less than the ADEC cleanup level. The areas with PCB aroclor 1260 concentrations greater than the ADEC cleanup level are in close proximity to an overhead power line. Given the shallow depth that the PCBs were encountered, this contamination may be related to surface spills associated with overhead lines & the nearby building.Existing Fuel Point SiteOf the five soil borings, only boring EFP01 contained contaminant concentrations exceeding the ADEC cleanup levels. This soil boring was located in the western portion of the site within the asphalt covered area. At a depth of 2 feet bgs, 1,2,3-trichloropropane was identified above the cleanup level of 0.00053 mg/kg at a concentration of 0.0521 mg/kg. At a depth of 11 feet bgs, benzene was identified slightly above the cleanup level of 0.025 mg/kg at a concentration of 0.042 mg/kg. Only arsenic & chromium exceeded the ADEC cleanup levels in the other four soil borings, consistent with typical background levels.New Fuel Point SiteArsenic, chromium, & methylene chloride were detected in concentrations exceeding the ADEC Method Two migration to groundwater cleanup levels (ADEC 2008). Arsenic & chromium concentrations reflect the native background concentrations typically found on JBER (USAF 1993). The methylene chloride concentrations identified are related to laboratory contamination; similar concentrations were identified in the associated trip blank sample. No other analytes were detected at the

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site above ADEC cleanup levels.See site file for additional information.

Action Date: 3/30/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: PSE I received. Preliminary Source Evaluation was conducted under the FTR269 Maneuver Enhancement Brigade (MEB) Complex Site Investigation Work Plan (U.S. Army Corps of Engineers [USACE], Alaska District 2010). The work consisted of soil borings & sample collection at four of the five project sites that make up Phase I of the MEB Complex. These sites include the Existing Fuel Point, proposed New Fuel Point, proposed Company Operations Facility (COF) Building site, & the proposed COF Parking site. The proposed Barracks site was determined to be free of environmental concerns based on the Pre-construction Environmental Survey (PES) (U.S. Army 2009) & was therefore not investigated. COF Bldg. SiteDRO contamination was identified in three soil borings, located in the center portion of the site, & was generally not found near the surface. In the area of soil boring COF02, the DRO contamination is closer to the surface than other areas of the site with DRO concentrations of 1,570 mg/kg & 1,530 mg/kg at 6 & 8 feet bgs, respectively. In soil boring COF03, DRO contamination was not encountered until a depth of 15 feet bgs at 711 mg/kg & in boring TB-11 (AP-5536) DRO contamination was identified from 17.5 to 19.5 feet bgs at 4,000 mg/kg (USACE 2010b). Soil boring AP-5536 was completed by the USACE in March 2010 as part of worker exposure monitoring. TCE contamination was identified in five soil borings located in the northwest portion of the site, in the gravel parking area between the motor pool area & Building 792. This contamination was identified at various depths from 3 feet bgs in boring COF13 to 14 feet bgs in borings COF13, COF14, & COF16. The highest concentration (1.51 mg/kg) was identified in boring COF13 at a depth of 14 feet bgsCOF Fac. Pkng lot siteTCE, PCB aroclor 1260, arsenic, & chromium were found in concentrations exceeding the ADEC Method Two migration to GW cleanup levels (ADEC 2008). Arsenic & chromium concentrations reflect the native background concentrations typically found on JBER (USAF 1993).TCE contamination greater than the ADEC cleanup level of 0.02 mg/kg was identified in all six of the soil borings advanced at the site. The depth of the TCE contamination ranged from 2 feet bgs to 14 feet bgs with concentrations between 0.0487 mg/kg & 0.745 mg/kg. All six soil borings were located in or immediately adjacent to the gravel parking lot west of Building 789.PCB aroclor 1260 contamination was identified in soil borings PARK04 & PARK06. The highest concentration (23.3 mg/kg) was located in boring PARK04 at a depth of 2 feet bgs. Contamination was also found (4.61 mg/kg) in boring PARK06 at a depth of 2 feet bgs. PCB aroclor 1260 was also identified in borings PARK02, PARK03, & PARK05 but at concentrations less than the ADEC cleanup level. The areas with PCB aroclor 1260 concentrations greater than the ADEC cleanup level are in close proximity to an overhead power line. Given the shallow depth that the PCBs were encountered, this contamination may be related to surface spills associated with overhead lines & the nearby building.See site file for additional information.

Action Date: 3/22/2017
Action: Update or Other Action
DEC Staff: Louis Howard

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Action Description: 2016 Draft Report for Remedial Action Operation and Land Use/Institutional Control at JBER received for review and comment. The USAF AT035 Preliminary Source Evaluation 2 Report (2015) indicates that additional dataneed to be collected at AT035 to evaluate and characterize the vertical and horizontal extent ofTCE contamination (PCB-contaminated soil was not addressed as part of the source evaluation), to evaluate groundwater quality, and to determine if the site poses acceptable risk which may result in a recommendation of a no further action decision, or if the site poses an unacceptable risk which may result in a recommendation for a remedial investigation or an interim remedial action.The inspection of Site AT035 revealed that a building has been constructed over the formerUST site and at the parking area there is a fenced off area where a fuel odor was observed. Themonitoring wells that were located at this site were observed to be in good condition. A largepile of construction material and debris was observed on the site and no erosion was observedalong the access roads. Photographs 1 through 4 in Photograph Log A13 present the generalcondition of Site AT035.See site file for additional information.

Action Date: 3/15/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Approximately 3,800 cubic yards of DRO-contaminated soil was excavated in March and April 2011 from beneath the existing footprint of Building 788 in order for the construction of Building 788 to proceed without encountering contaminated soil. Soil was excavated to a maximum of 9 feet bgs. DRO contamination was detected in samples from the excavation floor up to concentrations 9,230 mg/kg, and remains at the site. In addition, TCE was detected in one floor sample location (EF107) at a concentration of 0.0326 mg/kg and remains in soil. The footprint of COF Building 788 prevents further excavation and investigation of contaminated soil.

Action Date: 3/12/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: PA/SI report draft received for review and comment. DRO, RRO, and GRO were detected in soil samples from boring SB01 at concentrations up to 44.1, 160, and 0.448 mg/kg, respectively, which are below ADEC Method Two migration-to-groundwater cleanup levels. Benzene, toluene, and xylenes were sporadically detected in soil samples at concentrations just above detection limits, but well below cleanup levels.TCE was detected in soil samples from boring MW01 at concentrations above the cleanup level,ranging from 0.859 mg/kg at 15 to 20 feet bgs to 0.42 mg/kg at 20 to 25 feet bgs. Below 25 feetbgs, TCE was not detected at concentrations above the detection limit.TCE and RRO were not detected in the groundwater sample. DRO was detected in the groundwater sample at a concentration of 0.046 milligram per liter, which is below the cleanup level.The following conclusions can be made about AT035:The lateral extent of DRO-contaminated soil at AT035???s 2010 excavation has been adequatelydelineated to the project SLs.Soil contaminated with DRO at concentrations above the SLs has NOT been defined within theexcavation footprint.Groundwater does not appear be impacted by DRO contamination at this site. Analysis of thegroundwater sample confirms that DRO concentrations are well below the project SLs.The lateral extent of low-level

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TCE-contaminated soil remains UNDEFINED to the NORTH only,but the vertical extent of contamination appears to be limited to the upper 25 feet of soil.TCE was detected above the SL at a depth of 25 feet bgs and was below the detection limit inthe soil samples collected below.TCE does not appear to have impacted groundwater. Analytical results for VOCs in groundwater were below the detection limit.While petroleum-contaminated soil at AT035 has been adequately characterized laterally, noadditional vertical sampling will be possible because of the construction of the COF building.Therefore, no further investigation is required, or possible. Because remaining DROconcentrations in the subsurface soil are above ADEC Method Two cleanup levels, a risk-basedassessment is recommended to be conducted to evaluate what future remedial actions for thepetroleum-contaminated soil may be necessary.Low-level TCE-contaminated soil at AT035 extends approximately 120 feet north of the COFbuilding and is vertically limited to a depth of approximately 25 feet bgs. The extensive area of low-level contamination implies that a point source release is not the cause of this contamination.Because TCE concentrations remaining in the subsurface soil are above ADEC Method Twocleanup levels, a risk-based assessment is recommended to evaluate what future remedial actionsmay be necessary for the TCE-contaminated soil. No additional data are deemed necessary tocomplete this assessment; therefore, no further investigations are required.

Action Date: 2/5/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the draft Focused SI Work Plan for review and comment.This site-specific Work Plan follows the Uniform Federal Policy-Quality Assurance Project Plan(UFP-QAPP) format, and the work will be performed under the Joint Base Elmendorf-Richardson, Basewide Uniform Federal Policy-Quality Assurance Project Plan (BasewideUFP-QAPP) (USAF, 2013a). The purpose of this Work Plan is to further characterize the natureand extent of trichloroethene (TCE) contamination at AT035, evaluate potential risks to humanhealth and the environment within the proper regulatory framework, and determine whetherfurther action is necessary to advance the site toward site closure. The risk evaluation will beperformed within the framework of the ADEC site cleanup process (Title 18 AlaskaAdministrative Code Chapter 75 [18 AAC 75] Sections 325 to 390, and 18 AAC 78 Section 600)(ADEC, 2012a; ADEC, 2012b).Part 1 ??? A field portable gas chromatograph (GC) with a photoionization detector (PID)(FROG-4000??? by Defiant Technologies, Inc [User???s Manual provided in Appendix B]) willbe used to screen subsurface soil gas for TCE within the area north of the COF and the COFparking lot in a grid-type pattern. Temporary vapor probes will be installed to a depthbetween 5 and 7 feet bgs. Each vapor probe will be purged and a soil gas sample will becollected and analyzed for a TCE concentration using the GC/PID.Part 2 ??? Information obtained from the Part 1 investigation will be evaluated to determinewhether point sources of TCE can be identified in the subsurface soil within the area north ofthe COF and the COF parking lot. A drill rig will be used to collect soil samples to assessvertical TCE concentrations in soil at targeted locations indicated by soil gas results fromPart 1. The soil samples will be screened using the GC/PID. Based on soil screening results,three samples with the highest TCE screening concentrations and one soil

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sample with a TCEconcentration below the GC/PID???s detection limit from each investigation area will besubmitted for laboratory analysis of TCE to verify the accuracy of the soil screening method.

Action Date: 2/12/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft PA/SI report. Focused SI ??? Part IInitial Grid Sampling for TCEThe text states: ???Leak detection of the soil gas points will not be conducted as specified in SOP-05c, as these points are only being used to verify the presence/absence of TCE contaminated soil.???Please state in the text whether or not the areas where the initial grid sampling for TCE will be conducted is paved with asphalt or bare ground.NOTE: these specific comments for SOP 5-c are applicable on JBER-E & JBER-R when collecting soil gas samples in accordance with the SOP.SOP-5c Collection of Soil Gas Samples from Temporary &Permanent Probes Using Canisters2.5.2 Soil PermeabilityProbes should be installed at least five feet below ground surface (AT035 proposes five to seven feet-deeper is better) to inhibit ambient air intrusion. ADEC recommends probes will need to be installed right above the source area to evaluate ???worst case scenario???. ADEC recommends probes also contain a cement or bentonite seal at surface & have a permeable layer (e.g. silica sand) placed in the base of the hole to encourage air movement. Well annulus should also be sealed with bentonite or other impermeable mixture. 3.0 Materials3.4The text states: ???The enclosure may be provided by the driller or can be constructed from polyvinyl chloride (PVC) pipe. The helium detector can be rented from an equipment rental company.??? Sample manifold tubing should be Teflon&174; & replaced after each sample to ensure no cross contamination occurs. 5.2 System Purge & Helium Leak Check5.2.3The text states: ???It is not necessary to verify that the helium concentration is 100, as this may damage the detector.???The levels of helium in the leak check enclosure should be relatively stable & at least ten percent helium. Measurement of helium in container should occur right before leak test & the levels need to be determined by detector. 5.2.8The text states: ???5.2.8 Connect the helium detector to the enclosure exhaust to confirm that helium is present in the enclosure during purging. It is optional to measure the helium concentration within the enclosure (see Step 5.2.12).??? It will not be optional to measure the presence or absence of helium in the enclosure. Please clarify how it will be possible for JBER to confirm less than 10 in the sample without knowing this information.5.2.12The text states: ???Either: 1) calculate what 1 percent of the helium concentration was in the enclosure from the measured concentration in Step 7.2.6; or 2) use a limit of 0.1 percent (1,000 ppmv) which allows for a 10-times safety margin.???It is unclear where step 7.2.6 is within the SOP. It is possible that JBER meant step 5.2.3. Please clarify.5.2.14Add text: ???If soil oxygen data is collected using a handheld meter, the meter will be calibrated on a daily basis & laboratory confirmation samples will be collected at about 10 of the soil gas sampling locations.??? Executive Summary The text states: ??????during Part 1, two soil borings will be advanced & sampled to a total depth of 45 feet bgs at lateral locations exhibiting the highest soil gas concentrations for TCE identified during Part 1. Based on soil screening results, three samples with the highest TCE screening concentrations & one soil sample with a TCE concentration below the GC/PID???s detection limit

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

from each investigation area will be submitted for laboratory analysis of TCE to verify the accuracy of the soil screening method.???See site file for additional information.

Action Date: 11/7/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter report received for CY2016 [January 1, 2016 - December 31, 2016] Annual Land Use Control (LUC) and Institutional Control (IC) Monitoring at Joint Base Elmendorf-Richardson (JBER). This letter serves as the annual monitoring report on the status of LUCs/ICs in place on JBER-Elmendorf (JBER-E) and JBER-Richardson (JBER-R). The Air Force ensures compliance with LU Cs by conducting periodic monitoring and site inspections. Formal LUC/IC inspections occur annually on JBER during late spring through early fall and are typically conducted by contract. A total of 55 sites were formally inspected. Random site inspections are also conducted throughout the year by JBER Restoration staff.Discrepancies: AT35NWZ missing, parking lot in place smells of diesel at former site. AT035-MWl missing. AP4592, not observed.See site file for additional information.

Action Date: 11/15/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In November 2011, a time-critical removal action resulted in the excavation and disposal ofapproximately 700 cubic yards of PCB-contaminated soil from an area near former Building 789 which is adjacent to the new COF parking area.

Action Date: 10/14/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In October 2011, a 1,100-gallon UST located several feet outside the southeast corner of the new COF building (Building 788) (Figure 10-3) was excavated. That tank likely contained diesel fuel to supply an oil fired heater associated with a nearby former building. The total depth of the excavation reached 8 feet bgs. However, removal activities were limited by the proximity to the newly constructed COF building foundations. Confirmation sample results indicate that DRO remains in soil at concentrations up to 650 mg/kg along the west side of the excavation, where excavation was not possible without potential damages to the COF building foundation.

Action Date: 1/29/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Soil samples were collected by the U.S Army Engineer District (USAED) in January 2010 as part of the worker exposure monitoring survey (USAED, 2010). Soil boring AP-5536 (TB-11) had a DRO concentration of 4,000 mg/kg at 17.5 to 19.5 feet bgs. Several other soil borings had elevated PID readings, indicating that additional soil contamination may be present.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

JBER-FT. RICH AT035 MEB COMPLEX COF (Continued) **S112224714**

Contaminate Name1: JBER-Ft. Rich AT035 MEB Complex COF
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: Not reported
Control Details Description1: Not reported
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

M61 **JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY** **LUST** **S109261055**
WSW **D & 5TH STS. SW CORNER** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.423 mi.
2231 ft. **Site 2 of 3 in cluster M**

Relative: **Lower**
Actual: **310 ft.**

LUST:
Facility Name: JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY DUPLICATE
Facility Status: Cleanup Complete
Record Key: 199221X022561
File ID: 2102.26.008
Oname: U.S. Air Force
Lat/Lon: 61.25851 -149.6321
Lust Event ID: 304
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

M62 **JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY** **SHWS** **S110144149**
WSW **D & 5TH STS., SW CORNER , FORMERLY FORT RICHARDSON BEFORE 10** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.423 mi.
2231 ft. **Site 3 of 3 in cluster M**

Relative: **Lower**
Actual: **310 ft.**

SHWS:
File Number: 2102.26.008
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.258516
Longitude: -149.632122
Hazard ID: 23962
Problem: This site is the location of the former Motor Pool. DUPLICATE SITE TO BE DELETED and MERGED with CS DB 199221X022561.

Actions:
Action Date: 8/13/1992
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 8/12/1992
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY DUPLICATE (Continued) **S110144149**

Action Date:	7/8/1992
Action:	Release Investigation
DEC Staff:	* Not Assigned
Action Description:	RELR; 10 cubic yards of petroleum contaminated soil were excavated and stockpiled during the removal of a waste oil tank in 1989. One soil sample was collected and analyzed from the excavation (only TPH analysis was run). ACOE installed 3 soil borings and 1 monitoring well in 1990. Soil samples were collected from the borings and analyzed by EPA 8020 and modified 8015(not clear how method 8015 was modified- no lab report, QA/QC, SOPs, or narrative submitted). Groundwater table was found to be 19 to 21' below ground surface. 0.65 ug/L benzene found in groundwater but no info on validity of sample. Did not analyze for TPH, chlorinated compounds or PCBs.
Action Date:	2/5/1995
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met: Tank21A & B- This is a used oil UST with an ILS-350 interstitialmonitor/overfill alarm system. The tank's spill control system consists of acatchement basin/floor drain system attached to an oil water separator. The tank isfilled through manually pouring oil into either one of the floor drains or into a oilsink. The system is non-pressurized, and gravity fed.
Action Date:	2/5/1993
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	DUPLICATE MERGE and DELETE this site when actions imported into CS DB RECKEY 199221X022561 Fort Rich Bldg. 770 USTs 21A & 21B CLOS; Based on review of all information submitted for the site, no further investigation or cleanup is requested. Fite closed.
Action Date:	1/28/1993
Action:	Release Investigation
DEC Staff:	* Not Assigned
Action Description:	RELR; Release investigation results indicate that overexcavation following the tank removal resulted in meeting acceptable cleanup levels.

63
NW
1/4-1/2
0.445 mi.
2351 ft.

JBER-FT. RICH OUD GREASE PITS/LANDFILL **SHWS** **S110144175**
OLD FT. RICH. LANDFILL FTRS-51, FORMERLY FORT RICHARDSON BEF **ENG CONTROLS** **N/A**
FORT RICHARDSON (JBER), AK 99505 **INST CONTROL**

Relative:
Higher

Actual:
341 ft.

SHWS:

File Number:	2102.38.004.11
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.275269
Longitude:	-149.691975

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

Hazard ID: 430
Problem: This source area is inside the former Fort Richardson landfill north of main cantonment area north of Circle Drive and warehouse/open storage area and southwest of the Landfill Former Fire Training Area. There were at least ten pits reportedly used. Site approved for no further remedial action planned decision for soils and groundwater to go to long term monitoring. FTRS-51 Grease Pits 1 & 2 NE1/4 Section 30, SW1/4 Section 28. Landfill has been inactive since December 1987. Grease Pit 1: Site R072, 1990 RFA SWMU 92, FRA Landfill (East Side) approx. 1000' SW of FF Pit2. Grease Pit 2: Site R073, 1990 RFA SWMU 83, FRA Landfill (East Side) approx. 1000' SW of FF Pit2.EPA ID: AK6214522157 Fort Richardson-Proposed NPL Listing Date 6/23/1993FEDERAL REGISTER NOTICE of Final NPL Listing Date 5/31/1994

Actions:

Action Date: 9/30/1990
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 9/30/1988
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Past use of the former pits has not been???well documented: A May 1988 US Army Environmental Hygiene Agency (AEHA) (*NOTE:Effective 1 August 1994, AEHA became US Army Center for Health Promotion and Preventive Medicine (USACHPPM)) inspection noted 55 g drums and liquid grease floating on the surface of the base of the trench. According to facility personnel, past waste disposal to the trenches may have included oil/water separator bottoms, fuel tank water and other materials.Note to File: AEHA's lineage can be traced back over 50 years to the Army Industrial Hygiene Laboratory. That organization was established at the beginning of World War II and was under the direct jurisdiction of The Army Surgeon General. It was originally located at the Johns Hopkins School of Hygiene and Public Health, with a staff of three and an annual budget not to exceed three thousand dollars. Its mission was to conduct occupational health surveys of Army-operated industrial plants, arsenals, and depots. These surveys were aimed at identifying and eliminating occupational health hazards within the Department of Defense's industrial production base and proved to be of great benefit to the nation's war effort. It was known both nationally and internationally as the U.S. Army Environmental Hygiene Agency or USAEHA. Its mission was expanded to support the worldwide preventive medicine programs of the Army, DOD, and other Federal agencies through consultations and supportive services, investigations, and training.

Action Date: 9/28/2000
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: As part of the landfill closure plan, groundwater sampling has been conducted in wells located around the perimeter of the source area since 1989. Monthly inspection of the landfill caps integrity is required and an annual report for groundwater monitoring and cap integrity is provided to the State of Alaska. The groundwater monitoring program is expected to continue for thirty years under the landfill closure plan. Site to remain an industrial use area and institutional controls are in place to enforce this land use.

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

Action Date: 9/28/2000
Action: Record of Decision
DEC Staff: Louis Howard
Action Description: OUD ROD signed memorializing decision to transfer site to the solid waste program for compliance monitoring. The source area was transferred out of CERCLA to the Solid Waste Program at the end of 1995 since it is part of the Old Fort Richardson Landfill. This source area was subsequently closed under RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. A soil cap was installed in 1997 as a part of a presumptive remedy for the Fort Richardson landfill, which includes this source area. This action creates an incomplete pathway for contact with any contaminants at this site. As part of the closure plan, groundwater sampling is required to ensure that no contaminants are leaching into the groundwater above cleanup levels and is expected to continue for 30 years. Sampling has been conducted in wells located around the perimeter of the source area since 1989. Groundwater monitoring wells installed and dept to water is from 160-204 feet below ground surface.

Action Date: 9/28/2000
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: No further remedial action necessary under CERCLA or Contaminated Sites Program. Under the Solid Waste Program, the site will continue to have long-term groundwater monitoring and institutional controls to ensure it remains an industrial land use area. Land use planning documents and database delineates this area as a restricted area off limits to any digging or construction. This site will be reviewed as a part of the five-year review to ensure that the remedy chosen is protective of human health and the environment.The site status No Further Remedial Action Planned has been changed to Conditional Closure. A Conditional Closure is a determination by the Department that residual contamination remaining at a site, based on a specific landuse, does not pose a significant risk to human health and the environment. Conditions for closure under this designation may include a notice that residual contamination must be managed in accordance with applicable regulations (i.e., it should not be dug up and moved off-site without prior DEC approval) or that land use controls or other measures are in place to limit exposure to residual contamination that could pose a risk in the future. In general, conditional closures are granted by the Department when it is not practicable to remove contamination or cost effective to treat contamination using active methods.

Action Date: 9/26/1990
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: INTERIM GUIDANCE FOR SURFACE AND GROUNDWATER CLEANUP LEVELS SEPTEMBER 26, 1990Interim cleanup guidance for contaminated surface and groundwater remediation is necessary to ensure that consistent cleanup levels are being applied by district and regional program staff. The following guidelines should be implemented under 18 AAC 75.140 which specifies that a discharge must be cleaned up to the satisfaction of the Regional Supervisor or his designee. Final cleanup levels shall be determined by the Regional Supervisor or his designee based on site-specific conditions. Staff should be aware

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

that if a facility is regulated under RCRA, that RCRA corrective action and cleanup standards should enter into development of final site cleanup levels.Groundwater should be cleaned up to levels not exceeding the more stringent of the final State or Federal Maximum Contaminant levels (MCLs) for Organic and Inorganic Chemicals. If final MCLs have not been adopted for a contaminant, then groundwater should be cleaned up to levels not exceeding proposed Federal MCLs. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned, up to non-detectable levels as measured by EPA Method 418.1.Final State MCLs are specified in 18 AAC 80.050 and final Federal MCLs are specified in 40 CFR 141 and 142. Proposed Federal MCLs are specified in the May 22, 1989, Federal Register Vol. 54, No. 97, pages 22155 - 22157 and the July 25, 1990, Federal Register Vol. 55, No. 143, pages 30408 - 30448. Appendix I provides a summary listing of State and Federal Final and Proposed MCLs for selected organic and inorganic contaminants.For organic and in organic contaminants that have not been assigned a final or proposed MCL, cleanup levels should be based on criteria cited in EPA's Water Quality Criteria. 1986 using a health risk factor of 10-6. EPA's water quality criteria identify concentrations of elements and compounds which have toxic effects on aquatic organisms or toxic and carcinogenic effects on humans. If groundwater is being used as a drinking water source and alternative water supplies or point of use water treatment cannot be provided, then final or proposed secondary maximum contaminant levels (SMCLs) may be used as cleanup target levels. SMCLs are based on aesthetic properties such as taste and odor, whereas MCLs are based on human health risks. For compounds such as xylenes, the SMCL maybe several hundred times lower than the MCL.Surface waters used for drinking water should also be cleaned up to levels not exceeding the final or proposed MCLs for organic and inorganic chemicals, as specified above. Under the authority of 18 AAC 70.020, surface waters important to the growth and propagation of aquatic life should be cleaned up to the listed criteria which includes EPA's Water Quality Criteria. 1986. These criteria identify concentrations of specific elements or compounds which have toxic effects on aquatic organisms. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned up to non-detectable levels as measured by EPA Method 418.1.Alternative Cleanup Levels (ACLs) may be adopted for a site if a risk assessment approved by the department is performed and cleanup to levels identified above is technically infeasible. Risk assessments will not by themselves establish ACLs. Determination of cleanup levels is a risk management decision that the department must make based on results of a quantitative risk assessment and other pertinent information.The responsible party (RP) may prepare at its own expense a risk assessment which shall include an assessment of both human health and environmental risks. Specific components of the risk assessment should include an exposure assessment, toxicity assessment, risk characterization, and justification of ACLs. A general description of these risk assessment components is provided in Appendix II.General technical requirements for risk assessments should be based on EPA risk assessment guidance for superfund sites. A site specific risk assessment procedure must be prepared by the RP and submitted to the department for review and approval prior to conducting a risk assessment. The RP, at the department's discretion, must agree to reimburse the department for expenses incurred by the department if it chooses to contract for a risk assessment review.

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.
Action Date:	8/31/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2746 N latitude -149.694 W longitude
Action Date:	8/22/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Staff commented on the draft OU D PSE 2 workplans received on August 3, 1994. Staff noted that there are not any naturally occurring concentrations of: PCBs, VOCs, pesticides, herbicides, GRO, DRO, TRPH, SVOCs. Usually naturally occurring constituents are limited to inorganics such as lead. Staff noted that Elmendorf Air Force Base has done a basewide background sampling investigation for metals and the Army's effort should mirror theirs for ease of comparison.
Action Date:	7/5/2016
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	The Alaska Department of Environmental Conservation (ADEC) has reviewed the Draft Technical Memorandum: Summary of Site Status ??? DP051 ??? Grease Pits (CS DB HazID 430). ADEC concurs with the memorandum regarding administratively closing the site under CERCLA. Signing of the 2000 Record of Decision for Operable Unit D (OUD) memorialized the decision to transfer DP051 out of CERCLA to the Solid Waste Program since it is part of the Old Fort Richardson Landfill. No further remedial action under CERCLA is required. DP051 was closed under RCRA Subtitle D of Solid Waste Landfill Regulations and State of Alaska Solid Waste Regulation 18 AAC 60. A soil cap was installed in 1997 as a part of a presumptive remedy for the Fort Richardson landfill, which included DP051. This action created an incomplete pathway for contact with any contaminants at DP051. As part of the post-closure care, landfill monitoring (groundwater, landfill gas, and visual) and land use controls by AFCEC???s Compliance Program continues to be required under 18 AAC 60 for DP051 until at least 2025.
Action Date:	7/26/2016
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Technical Memorandum ??? Annual Inspection and Maintenance of Sites AT052, DP051, SS013, and SS090 received for review and comment. A

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

technical memorandum is being prepared to summarize the status of DP051 and to administratively close the site; therefore, future inspections for the site are not recommended.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 7/12/1988
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site inspection on July 12, 1988 by Carl Gysler. Several waste disposal pits in Fort Richardson Landfill are used for grease trap pumpings and human waste. The human waste trench was opened for use for BRIM FROST 1987 and used since that time. It is unmarked, about two thirds full and has been used for disposal of plastic antifreeze drums. Two other pits, one to the south of the human waste trench was being used for grease from the grease traps on Post. The other pit has water in the bottom and several drums of the plastic antifreeze type, no markings were observed. This pit is currently being used for dumping grease. The pit to the south of the human waste trench is the one where the remains of the tank removed from behind the laundry would have been placed (Building 726 UST). The tank contained an unknown amount of perchloroethylene (aka tetrachloroethylene (PCE)) which was disposed of in the pit in the late summer of 1987. NOTE TO FILE: Tetrachlorethylene, also known as perchloroethylene or PCE, is widely known as a dry-cleaning solvent, but was also used in cleaning and degreasing (particularly when a stable, high-boiling point solvent was needed), in various textile production processes, and in the production of fluorinated compounds such as CFC-113. PCE was first synthesized in 1821 by Michael Faraday. Significant industrial uses in the US are not known prior to the early 1920s, when Dow Chemical began production of commercial quantities. PCE was introduced to the dry-cleaning industry during the 1930s, and became widely accepted due to its low toxicity relative to carbon tetrachloride, and its low flammability and less persistent odor relative to petroleum solvents. By 1950, PCE use in dry-cleaning led carbon tetrachloride by a factor of 3-to-1.PCE production in the US more than tripled in the 1960s. However, improvements in the dry-cleaning process began to significantly decrease the demand for PCE. In 1959, one drum of PCE could clean 500 pounds of clothing; by 1975, the number increased to 8,000; and by 1993, it reached 16,000. PCE production decreased by a factor of eight from 1980 to 1990. Despite the decline, and the effect of environmental regulations and

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

toxicity studies, PCE is still used by 80 to 90 percent of today's dry cleaners. Equipment used today recovers 95 to 99 percent of the PCE used in dry-cleaning. It is used in some adhesives, aerosols, paints, and coatings. The pit that was open when Carl G. was last there, located to the northeast of the human waste trench and in front of the eastern open pit, is now closed. Gene Haroldson (O&M Shop 83X) told Carl that a new pit is opened once a year, the old one closed, and that there were a number of old pits in the area. The dumping of the perchloroethylene was the reason that the southern pit remains open.

Action Date: 6/24/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff commented on the draft final PSE2 evaluation for OUD dated June 1996. Table 4-l Analytes Lacking Current RBCs from EPA Region III (1996) page 4-4: EPA has come out with an updated list of RBCs effective June 20, 1996 which include listings for analytespreviously listed as lacking a risk-based concentiation (RBC). For semi-volatile organic compounds: if acenaphthylene is equivalent to acenaphthene, then correct this discrepancy. Lf Di-n-butyl Phthalate listed in the table is the equivalent of Di-butyl Phthalate then it must be corrected. The new RBCs does includelevels for iron and a soil screening level tiansfer level from soil to groundwater for thallium. Please correct the text and table to reflect this. Finally, while there are no specific RBCs for the specific PCBs listed in table4 - 1 there is a general category for PCBs listed and it may be appropriate to compare levels detected to the RBC.5.9-4 Figure Frame page 5.9-25: No figure was found showing the conceptual site model for the grease pits, please include one.

Action Date: 5/1/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff commented on the OUD draft PSE-2 document received on April 28, 1995. General comments were to request a table summarizing the soil, groundwater and sediment sample results compared to known benchmarks (Risk-based concentrations or hazard indices). Staff requested elaboration on what would be addressed under any additional investigation being recommended for the sites since the extent or scope cannot be evaluated with specifics.

Action Date: 4/5/2010
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 71409 name: Grease Pits/Landifll

Action Date: 4/29/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent letter to Kevin Gardner RE: Draft approach document risk assessment. Text states the chemicals will be compared to EPA Region 9 PRGs to further identify those chemicals that warrant inclusion in the baseline HHRA. DEC is concerned that the PRGs in some cases will not adequately address those chemicals which may have been included in a baseline risk assessment using RBCs from EPA Region III. For

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

example, the following chemicals have been found to have a higher soil screening level for protection of groundwater than those levels found in EPA Region III RBCs: Trichloroethylene, 1,2-Dichloroethane, 1,1,1-Trichloroethane, and benzo(b)fluoranthene. If the Army wishes to use Region 9 PRGs it must use a dilution attenuation factor of 1 for protection of groundwater. This is based on the data gathered from the Poleline Road Disposal Area which shows little or no dilution or attenuation from natural processes. If this approach is not one the Army wishes to use, then it may be more appropriate to use the latest EPA Region III RBCs for screening purposes since the State's draft 18 AAC 75 regulations and risk assessment guidance are based on these RBCs.

Action Date: 4/10/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ENSR's update to scope of work for PSE 2 investigation. Grease Pits Numbers 1 and 2: installed one grouping of tensiometers March 28 and 29.

Action Date: 3/7/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Comment letter sent on closure plan for Fort Richardson Landfill (ADEC Project Number 9321-SWM-004). The following section were not accepted: Groundwater monitoring, determination of landfill cover thickness, methane and gas survey. ADEC disagrees with comments that ADEC has not established guidelines for vadose zone monitoring. Baseline data is required for each season and the extent of the 1st and 3rd aquifers' gradient and the 2nd aquifer's extent throughout the landfill. Recommend that the Army conduct a review of all monitoring data and use 18 AAC 70 in determining if there is a water quality problem as a result of the leachate from the landfill migrating into the three known aquifers. Cover thickness sampling grid needs to be modified to not include sampling of roads, or compacted areas which have stockpiled recyclable material in Areas 4, 5, and 6. Finally, ADEC reiterated from a July 6, 1993 letter to the Army that two feet of cover is the minimum amount ADEC would accept not eighteen inches. The top six inches will need to be able to sustain plant growth. The cover material will need to be as impermeable as possible, no matter what the thickness is. The permeability coefficient that is noted in the plan (10 X -5 cm/sec) is a federal requirement that the State is not enforcing at this time. July 6, 1993 issues not resolved by closure plan submitted: inventory of existing vegetation to include detailed mapping of herbaceous ground cover/woody stemmed under story and over story (trees) will need to be species specific if additional cover will not be proposed. Storm water pollution prevention plan used during closure and after closure. August 18, 1993 inspection of landfill revealed the Army failed to respond to July 8, 1993 letter. The August inspection noted area A found in appendix A of July 1993 letter was cleaned up, no cleanup plan was submitted to office as requested. Access control is still not addressed.

Action Date: 3/29/1999
Action: Proposed Plan
DEC Staff: Louis Howard

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

Action Description: Preferred alternative for contaminated groundwater at buildings 35-752, 796 and 45-590 is monitored natural attenuation combined with natural attenuation. Soil and sediment PCB contamination preferred alternative at Building 35-752 is phytoremediation and if not effective after two seasons-thermal desorption will be implemented. Additionally, windows and doors of Building 35-752 will be sealed with plywood and 8 foot security fence to prohibit access to PCB contaminated dust inside the building. Cooling pond and trench will be filled in and the source of water rerouted to sanitary sewer. COCs in GW include benzene, trichloroethene, iron, manganese, aluminum.

Action Date: 3/11/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from Army received referring to March 4, 1993 meeting regarding the closure of the Fort Richardson landfill. The Fort Richardson Landfill Report developed by E and E and provided during the meeting is the Post's closure plan for the landfill. The Army states that the plan submitted on March 4, 1993 allows the Army to close the landfill in accordance with the current state regulations (18 AAC 60) and not require the Army to meet the new regulations becoming effective later this year (40 CFR 257 and 258). ADEC is expected to review and provide its comments on the plan no later than April 4, 1993. The Army has the option of using the remediated POL contaminated soil as cover for the landfill. The continued storage of the POL contaminated soils in the landfill area will not be a factor in the closure of the landfill. Once top cover requirements are met, for the areas of concern, reduced analytical testing will be required. Areas of concern are those areas that contain solid wastes which may be leachable. Construction debris sites are not considered areas of concern by the Army. Concerns addressed by E and E's proposed closure plan, yet to be submitted, the ADEC are as follows: lack of appropriate cap on landfill over solid potentially leachable wastes, monitoring well locations in respect to the areas of concern in the landfill, methane monitoring, and sewer line systems near the landfill. The plan will also address additional concerns identified on April 4, 1993 by ADEC. The Army also intends to continue efforts in obtaining a topographical map of the landfill area and investigate areas of concern to determine cover requirements.

Action Date: 12/3/1990
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking.

Action Date: 12/3/1988
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: petroleum contaminants, metals

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

required due to violation of an established IC.

Action Date: 11/3/1994
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Federal Facility Agreement remedial project managers meeting to discuss activities conducted to date for operable unit (OU) D. Grease Pits 1 and 2: The former Grease Pits are located west of Fire Training Area 1 and north of the main cantonment. The pits are located over a former landfill area. The pits may be as wide as 20 feet and as long as 30-40 feet. Dennis Hubbard escorted a VSI conducted by ENSR personnel in June of 1994. Mr. Hubbard indicated that the width of the pits was approximately one width of a bulldozer blade (8 to 10 feet). Although the pits have been covered with native backfill, an approximately 15 ft wide area of apparently disturbed soils can be located in the area of the two grease pits and a third pit used for human waste disposal.Past use of the former pits has not been???well documented: A May 1988 AEHA inspection noted55 g drums and liquid grease floating on the surface of the base of the trench. According tofacility personnel, past waste disposal to the trenches may have included oil/water separatorbottoms, fuel tank water and other materials.A VSI reported by SAIC (1990) noted four drums labeled ethylene glycol in the trenches. Thedrums had spilled and their contents were pooling on the trench bottom. An additional 8unlabeled drums were also noted in the grease pits. One of the primary objectives of this investigation will be to pinpoint the location of the trenches.The locations of the trenches were determined during a VSI. The locations visited do not matchthe present site locations as delineated on base maps. This may be because road positionshave not remained stationary over time. Review of aerial photos has shown that the networkof gravel roads have changed near the former landfills.One of the two grease pits identified in the work plan has been located with a good degree of reliability. The location of the second grease pit is confused because several pits have been located in the area. All the pits in the area have since been identified as human waste (sewage disposal) pits. No sampling has occurred at this site. One of the primary objectives of the preliminary source evaluation is to pinpoint the location of the trenches. The locations of the trenches were determined during a visual site inspection. The locations do not match the present site locations as delineated on the base maps. Road positions have not remained stationary over time and air photos show this to be the case.

Action Date: 11/23/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent letter to Kevin Gardner re: Draft Proposed Plan OU D. DEC requests the text describing the history of the grease pits not being well documented instead read: The date the pits began accepting waste is unknown and the history is not well documented; however, the grease.... Strike the sentence on Page 9 describing the start date. If there are no impacts to groundwater from the grease pits, then it should be stated in the description of the contaminants identified during the investigation of the pits. The contaminants must identify the media type which is contaminated (i.e. soil, groundwater, etc.).

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

Action Date: 11/2/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Memorandum from ENSR to Jim Levine US Army CORPS. Some new information has been identified for two of the Operable Unit D sites (the grease pits and the Fire Training Area). A focused investigation is taking place at a third site (Building 955). The new information, or in the case of Building 955, historical information, is summarized below.Grease Pits ENSR???s original scope of work identified one human waste (sewage disposal) pit and two cooking grease disposal pits. The two grease pits were to be investigated because of drums observed during a visual site inspection. The pits were located with help from Mr. Dennis Hubbard (Building 704) of Ft Richardson???s Department of Public Works (DPW). On October 26 I was staking out the locations of the one human waste pit and two grease pits,preparing for field sampling. After staking the locations in the now snow-covered ground Icontacted personnel at Building 704 to confirm the pit locations. On October 27 Travis Barber(Building 704) and I visited the grease pit area. Travis said that there never was a specific pit excavated for old cooking greases. Grease was apparently dumped at random throughout thelandfill. However, there were ???several??? human waste pits in the area (seven?, more?). It is notknown in which pits the drums were seen.About one-half of the human waste pits can be identified with a fair degree of reliability. I donot know of written records or visual signs that would accurately locate the other pits. Amagnetometer or other geophysical survey could be used to locate buried metal objects (drums?). Exploration trenches could be advanced with a backhoe or excavator. Recommended ApproachPrior to sampling a magnetometer or other geophysical survey is recommended to identify tothe extent possible buried metal objects. Buried metal objects would likely be located in aformer pit. ENSR recommends that initial pit investigation be performed with a backhoe. The use of abackhoe should allow for greater ???feel??? than a drill rig; therefore being able to work aroundburied debris (drums?) while minimizing the potential for further releases at the site.For the pits with ???known??? locations, the backhoe could trench down, confirm the location wasa former pit, and collect a sample from about 5 to 6 feet bgs. For the trenches with onlyapproximate locations known, the backhoe could be used to excavate exploratory trenches,locate the pits, and then collect samples.At least three samples should be collected from each pit, at about 5 to 6 feet below groundsurface (bgs). According to present information, most of the pits were constructed with abulldozer to about 6 feet bgs. At least one pit was constructed with a backhoe and is reportedto be deeper than 6 feet bgs. Based on the results of the initial sampling, additional samplesshould be collected from soil borings. The soil borings would be advanced as currentlyplanned, using a hollow-stem auger to retrieve soil samples to depths up to about 20 feet bgs.Excavated soils would be replaced back into the trenches.Fire Training AreaDuring Travis Barber???s visit to the grease pits/human waste pits he identified a second areaformerly used as a Fire Training Area. This area is clearly identifiable and could be sampledin a similar manner to the other Fire Training Area; 10 samples from 6 inches bgs and (basedon these preliminary analytical results) 3-20 foot soil borings in the former Fire Training Areawith l-20 foot soil boring outside the former Fire Training Area.Building 955Based on my report to Jim Levine that ENSR was investigating only

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

one former sludge bin atBuilding 955, Jim requested I review our information. This is the summary of our currentinformation.ENSR???s investigation at this facility has been focused on the area of a former sludge binidentified on an aerial photograph from 1974. At least three sludge bins have been used,including the new building constructed for sludge handling purposes.Some sampling and remediation work has been performed in this area. If you need ENSR toevaluate the adequacy of previous efforts for PSE2 purposes then I will need informationconcerning the remediation and sampling work that was performed this summer, including:. Scope of work:. Site history that developed the scope of work;. Sampling program; and Analytical results

Action Date: 11/15/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Preliminary Source Evaluation 2 for OUD finalized which includes the Grease Pits at the Old Landfill. Field investigation activities included excavating seven trenches ranging 5 to 10 feet below ground surface and 12 to 50 feet in length, to locate some representative pits, prior to drilling soil borings; screening headspace vapors with an OVM and drilling four soil borings to depths of 30 to 60 feet below ground surface. Suction lysimeter arrays were installed in borings AP-3522 and AP-3525 at approximately 25, 45 and 60 feet below ground surface. A suction lysimeter and gypsum block were installed at each depth. These devices collect water from surrounding soil spore spaces. The resistance changes with the moisture content present in the gypsum blocks. Soil contamination SB AP 352295GP1203SL 17.8-18.6' bgsToluene 39 mg/kg (6.5 mg/kg MTGW October 2012 18 AAC 75), PCE 2.2 mg/kg (0.024 mg/kg MTGW), Ethylbenzene 25 mg/kg (6.9 mg/kg MTGW), Total Xylenes 94 mg/kg (63 mg/kg MTGW & Outdoor inhalation), 1,2,4-Trimethylbenzene 38 mg/kg (23 mg/kg MTGW),95GP1290GW 27' bgs Benzene 760 ug/kg (MTGW 25 ug/kg), vinyl chloride was detected at 92 ug/kg (MTGW 8.5 ug/kg) and at 22' bgs 9.2 ug/kg.Benzene was the key constituent of concern; detected in water from lysimeter AP-3522 at 760 ug/L at 27 ft bgs, and 18 ug/L at 43 ft bgs. Varying concentrations of other VOCS were detected up to 190 ug/L in samples from AP-3522. The analytical results for these samples indicated that VOCS generally attenuate at least 1 order of magnitude between 27 and 43 ft bgs. The majority of VOCS were reported below the method reporting limits for samples from AP-3525.The PSE had conducted a risk evaluation of the risks from carcinogens present in the surface and subsurface soil. The residential risk was 5.1 X 10-8 and Occupational carcinogenic risk for soil ingestion at 5.9 X 10-9. Noncarcinogenic hazard indices for soil ingestion is < 1.0 (0.11 residential and 0.0045 for Occupational).

Action Date: 11/10/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Ecology and Environment Site Reconnaissance performed on November 10, 1989. Evidence of limited dumping was present at a borrow pit located along the southeastern corner of the landfill. The recent landfill (disposal area 4 and 5) lacked vegetative cover. The asbestos disposal area had potential runoff problem due to its location on a slope on the southern side of the landfill.Four drums labeled

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

ethylene glycol in the trenches. Drums had spilled and their contents were pooling on the trench bottom. An additional 8 unlabeled drums were also noted in the grease pits.

Action Date: 10/27/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Sampling and Analysis plan from E&E, Inc. received. Sampling plan is a part of the closure plan. It provided sampling methodology and analytical procedures to implement the five-year groundwater monitoring program mandated by ADEC. The plan does not include sampling the landfill cover for the physical properties nor sampling on and around the landfill for methane.

Action Date: 10/15/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Closure Plan Fort Richardson Landfill E&E, Inc. for the Corps of Engineers Alaska District Contract DACA 85-91-D-0003 Delivery Order 29. This site was generally referred to as Disposal Area 5 with trenches approximately 20 to 30 feet deep. Disposal Area 5, opened in 1982, was the first of the disposal areas to be permitted as a sanitary landfill by ADEC. This permit also included other active operations for the landfill. It included an open pit for construction and demolition debris, an area for metal and wood piles, and an area for asbestos material. E and E site visit later revealed that asbestos was disposed of in disposal area 4 rather than disposal area 5. Small amounts of explosives and toxic and infectious wastes were disposed of in disposal area 5 until 1987 (AEHA 1988 and ESE 1983). The explosives subsequently were removed and taken to Fort Wainwright (ESE 1983). Disposal area 5 still accepted sanitary waste and mess hall grease after 1987, when the Municipality of Anchorage began operating a regional landfill that accepts solid waste from the Post on land acquired from the Army (AEHA 1988).Plan includes installation for final cover, vegetative cap, monitoring program and maintenance of cover, written documentation of results of monitoring, and maintenance/repair operations, correct any problems observed with final cover or monitoring program.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich OUD Grease Pits/Landfill
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Maintenance / Inspection Of Engineering Controls
Contaminant CTD: The Army has established Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: The cover is composed of coarse, permeable glacial till material. The

JBER-FT. RICH OUD GREASE PITS/LANDFILL (Continued) **S110144175**

cover is already in place and vegetated. The existing cover uses naturally occurring soils. Five year review in 2008 or annual report to SW Program staff.

Comments: Not reported

ENG CONTROLS:
File Number: 2102.38.004.11
Facility Status: Cleanup Complete - Institutional Controls
Control Details Description: Maintenance / Inspection Of Engineering Controls
Hazard ID: 430

Inst Control:
Hazard ID: 430
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 9/28/2000
File Number: 2102.38.004.11

O64 **JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73** **SHWS** **S113929822**
WNW **CIRCLE DRIVE AND NORTH WAREHOUSE STREET** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.451 mi.
2379 ft. **Site 1 of 2 in cluster O**

Relative:
Lower

Actual:
326 ft.

SHWS:
File Number: 2102.38.040
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.271382
Longitude: -149.693186
Hazard ID: 26068
Problem: A site assessment was conducted during the removal of 1,000-gallon underground storage tanks (USTs) at Buildings 936 and 944. Laboratory results show that the maximum detected level of diesel range organics (DRO) in the project soil was 3,000 ppm at Building 936 and 1,100 ppm at Building 944. These results show that petroleum hydrocarbons have been released to the environment from Tank 99 at Building 936 and Tank 100 at Building 944.

Actions:
Action Date: 9/16/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Cleanup complete determination made by ADEC.Contaminants of ConcernDiesel Range Organics (DRO)Cleanup LevelsThe cleanup level for soils at TU073 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). Modeling using the Hydrocarbon Risk Calculator (HRC), in accordance with Method 3 under 18 AAC 75.340, demonstrated that residual petroleum contaminants in soil do not pose a migration to groundwater risk/concern. In 2013, additional site investigation work was conducted to fill data gaps. The maximum detected concentration was used for input into the HRC (3,090 mg/kg at 25-35??? bgs). No other analytes were detected above screening levels. Groundwater was estimated at approximately 150 feet bgs (greater than 100 feet below the depth of contamination at

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

Building 936) based on water level monitoring conducted in 2012 at nearby monitoring well AP-3221 (located approximately 1,250 feet north of TU073).Cumulative Risk EvaluationThe HRC was used to evaluate risk from petroleum contamination at TU073. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, and other compounds dissolved in petroleum???with the intention and purpose of assessing human health risk from this type of contamination.The estimated rounded cumulative cancer risk at TU073 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (4 x 10-7 and 8 x 10-7 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at TU073 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (0.005 and 0.02 respectively) is below the regulatory risk standard of 1. TU073 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO aromatic and aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for TU073 and no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed and that the TU073 site conditions are protective of the environment.ADEC DecisionBased on a review of the environmental records, ADEC has determined that TU073 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU073 in the Contaminated Sites Database.

Action Date: 9/12/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment Report received.A 1000-gallon UST (Tank 100) was installed on the South side of Building 944. Tank 100 was9 feet 2 inches long and 4 feet 2 inches in diameter. It had a 2 inch vent pipe and a 4 inch fill pipe. Both pipes extended 4 feet above the ground. This UST was installed approximately 4 feet below ground and had no surface dispensers. Information provided by Brown & Root Service Corporation and DPW stated that Tank 100 contained fuel oil.Sample 94-944-BC was taken 9 feet below grade at the center of the tank impression and contained 1,100 mg/kg (PID HNU 3 PPM) diesel range organics. The visual screening of the project soil supported by laboratory data indicates that release mayhave occurred from Tank 100. The maximum detected level of ORO (1,100 ppm) was found inthe soil under the center of the tank. Since the detected levels of ORO in the soil over andaround the tank are higher than the Level C Cleanup level, it is reasonable to conclude that Tank 100 has leaked. A remedial investigation is required in accordance with 18 AAC 78. The report of this investigation must include a recommendation for site cleanup.Further action is required for site closure. The overburden removed during site excavation cannot be used for backfill at the project site.

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

Action Date:	8/27/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft SC report received for review and comment.Data indicate that contamination has not reached groundwater. Groundwater was estimated atapproximately 150 feet bgs (greater than 100 feet below the depth of contamination atBuilding 936) based on water level monitoring conducted in 2012 at nearby monitoring wellAP-3221 (located approximately 1,250 feet north of TU073).The following conclusions were made regarding TU073:??? Based on previous investigations and the 2013 site characterization field investigation, DRO was detected in soil at concentrations above project screening levels at two source areas: Building 936 (former UST 99) and Building 944 (former UST 100).??? At Building 936, DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 25 feet by 75 feet wide centered near boring TU073-SB02/AP-3564, starting at a depth of 5 feet bgs and reaching a total depth of approximately 42 feet bgs (approximately 2,570 cubic yards).??? At Building 944, DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 30 feet by 110 feet wide centered near boring TU073-SB06/AP-3570, starting at a depth of 9 feet bgs and reaching a total depth of approximately 32 feet bgs (approximately 2,810 cubic yards) of impacted soil.??? Using the HRC for contaminated soil within each of the source areas (Buildings 936 and 944), the cumulative carcinogenic risk and noncarcinogenic HI estimates, based on both industrial and hypothetical residential exposure scenarios, are below the regulatory risk standards for the direct contact, outdoor air inhalation, and groundwater ingestion pathways.??? Concentrations of all detected non-hydrocarbon analytes were below their respective 18 AAC75.345 Table B1 cleanup levels for both Buildings 936 and 944; therefore, the vapor intrusionpathway is considered incomplete.??? Using the HRC for contaminated soil at each of the Building 936 and Building 944 source areas, the ADEC risk criteria for bulk hydrocarbons are met for the direct contact, outdoor air inhalation, and groundwater ingestion pathways.??? The migration to groundwater criteria are attained in surface and subsurface soils at both Building 936 and Building 944 in accordance with 18 AAC 75.340, supporting a Cleanup Complete determination.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant (less than 0.5 acre). See Ecoscoping form in Appendix D.RecommendationsThe following are recommended for TU073:??? No further investigation or cleanup of soil and groundwater associated with Building 936 orBuilding 944.??? Agreement from ADEC to grant a ???Cleanup Complete??? designation because the site meets the criteria established for site closure

Action Date:	8/26/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	ADEC has reviewed JBER’s responses to ADEC’s comments for TU073, TU083 and TU085 work plan. The responses to comments are acceptable and the documents may be finalized.

Action Date:	8/14/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

Action Description: Staff provided review comments on the draft UFP-QAPP Work Plan. WS 17Sampling Design and RationaleWhile impacts to groundwater are not anticipated, results of the HRC calculations for petroleum hydrocarbons are applicable only for those alternative cleanup levels allowed by regulation for Method Three - 18 AAC 75.340(e). Site Specific Sampling PlanPage 34This 6 ft. interval shall not be excluded from field screening and sampling requirements due to it being previously removed and replaced during utility investigation activities. ADEC expects in most cases that the U.S. Air Force can definitively identify the utilities at most of the PBR sites for the contractor and the use of the air knife and vacuum truck will be used very infrequently. Page 35Bldg. 936 See above comments regarding Method Three (HRC) not being allowed to calculate risk for groundwater as specified in 18 AAC 75.Page 37Bldg. 944See above comments regarding Method Three (HRC) not being allowed to calculate risk for groundwater as specified in 18 AAC 75.Pages 35 and 37JBER may collect one foc soil sample for whatever purpose it desires, however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected and analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection and Data Reduction for Method Three and Method Four (ADEC, 2008). If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 ADEC Guidelines for TOC Sample Collection must be followed. For example: 4) TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.Please refer to the TOC sampling guidance for additional requirements. Soil Excavation (If Required)Page 38Soil Excavation (If Required)Not necessarily correct, remedial options that address the contaminants of concern which exceed maximum allowable concentrations will be also evaluated regardless of HRC risk calculation results. See comment 1 regarding MAC. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. The text states: ???During excavation, the PID will be used to screen soil using a level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-16 (Appendix B of the Basewide UFP-QAPP) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles and submitted for laboratory analysis of GRO, DRO, RRO, petroleum-related VOCs (BTEXN), and PAHs at a rate of two for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards.???20 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold and does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

stockpiles (???clean??? < 20 ppm PID reading and ???dirty??? 20 ppm and higher PID reading) for definitive laboratory testing. At previous investigations at other DoD installations there have been instances where diesel range organics in soil have been well above 10,250 mg/kg and the arbitrary field screening level of 10 ppm on the PID was used at that time for ???clean??? vs. ???dirty??? soil: PID reading (DRO laboratory result)6 ppm (11,600 mg/kg), 10 ppm (35,800 mg/kg), 12 ppm (28,200 mg/kg), 17 ppm (67,200 mg/kg), and 19 ppm (17,300 mg/kg).

Action Date: 8/1/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for review and comment. The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon RiskCalculator (HRC) approach under Method Three will be used to assess whether site conditionsmeet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will berequested), or whether the site poses unacceptable risk (in which case further remediation may be required).If unacceptable risk is indicated by the HRC, or if vadose zone soils exceed maximum allowableconcentrations, then remedial options will be evaluated that address the contaminants of concernand associated exposure routes that contribute enough risk to cause the cumulative risk estimateto exceed the risk standard.Bldg. 936One boring (TU073-SB1) will be drilled near former boring AP-3563, and one boring (TU083_SB2) will be drilled near former boring AP-3564 to resample the soil at the location and depth where previous sampling showed the highest maximum detected concentrations of DRO, and to collect source area soil samples for polycyclic aromatic hydrocarbon (PAH), volatile petroleum hydrocarbon (VPH), and extractable petroleum hydrocarbon (EPH) analyses.One boring will be drilled north of former boring AP-3563; one boring will be drilled north-northwest of former boring AP-3564; and one boring will be drilled east-northeast of former boring AP-3566 to assess the lateral and vertical extent of contamination. Samples will be analyzed for gasoline-range organics (GRO), DRO, residual-range organics (RRO), PAHs, and petroleum-related volatile organic compounds (VOCs) (benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]).Up to approximately 35 primary soil samples will be collected and analyzed for GRO, DRO, RRO, PAHs, and petroleum-related VOCs (BTEXN). Two of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).If any of the borings are drilled to groundwater, a groundwater sample will be collected and analyzed for petroleum-related VOCs, GRO, DRO, RRO, PAHs, VPH, and EPH. Bldg. 944One boring will be drilled near former boring AP-3570 to resample the soil at the location and depth where previous sampling showed

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

exceedances of the migration to groundwater criteria for DRO, and to collect source area soil samples to analyze for the following: PAHs, VPH, EPH, GRO, RRO, and petroleum-related VOCs (BTEXN).One boring will be drilled east-southeast of former boring AP-3572; one boring will be drilled north-northwest of former boring AP-3570; and one boring will be drilled west-southwest of former boring AP-3569 to assess the lateral and vertical extent of contamination. Samples will be analyzed for GRO, DRO, RRO, PAH, and petroleum related VOCs (BTEXN).Up to approximately 21 new primary soil samples will be collected and analyzed for GRO, DRO, RRO, PAHs, and petroleum-related VOCs (BTEXN). One of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for foc.If any of the borings are drilled to groundwater, a groundwater sample will be collected and analyzed for petroleum-related VOCs (BTEXN), GRO, DRO, RRO, PAHs, VPH, and EPH.

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79478 name: Two 1,000-Gal USTs 99 and 100

Action Date: 6/12/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 3/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Circle Loop Road Release Investigation Bldg. 944 UST 100 received on March 6, 1996. This document presents the findings of Shannon & Wilson’s Release Investigation of a formerunderground storage tank (UST) site located along Circle Loop Road on the United StatesDepartment of the Army’s Fort Richardson facility, Alaska. The former UST, designated Tank100, was a heating oil tank which supplied fuel to Building 944, located along Circle Loop Road.The release investigation for Building 944 was completed as part of a larger assessment covering a total of eleven former UST sites along Circle Loop Road. Each of the eleven tank sites was associated with a warehouse structure, including Buildings 914, 920, 926, 932, 934, 936, 944, 946, 950, 962, and 968.Samples with diesel range organics (DRO) concentrations exceeding the 1,000 parts. per million(ppm) cleanup guideline were collected from three of the five borings drilled at the Building 944 site. The highest DRO concentration reported was 3,800 ppm. Benzene was not detected in thesamples analyzed, and total aromatic volatile organics (BTEX) concentrations did not exceed the 50 ppm applicable cleanup guideline. A total of 13 individual semi-volatile organic compounds(SVOCs) were detected in the soil samples. Nine samples contained detectable levels of one ormore SVOC constituents, including 2-methylnaphthalene, di-n-butyl phthalate, bis(2-ethylhexyl)phthalate, hexachlorobenzene, acenaphthene, benzoic acid, 4-chloroaniline, 2,6-dinitrotoluene, 3-nitroaniline, 2,4-dimethylphenol, 2-nitroaniline, 4-nitrophenol,

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

and fluorene.Based on the DRO concentrations detected in the soil boring samples, the contaminant plume at this site appears to extend directly beneath the former tank's east end with lateral migration to the east. The estimated lateral extent of soil contamination exceeding the Level C cleanup guideline of 1,000 ppm DRO measures approximately 20 feet by 50 feet, or 1,000 square feet. The soils containing DRO concentrations greater than the Level C cleanup guideline extend vertically to a maximum depth of about 24 feet below ground surface (bgs). The subsurface soils to the north of the former tank were uot assessed due to the presence of Building 944. From the estimated horizontal and vertical extent of soil contamination and the apparent plume configuration, approximately 400 cubic yards of soil exceeding the applicable DRO cleanup guideline are present in the subsurface.One site-specific ACL is proposed as a tool to develop cleanup criteria for potential futuresitework. The ACL reflects the maximum estimated contaminant concentration in the soil whichwill not result in groundwater concentrations above the corresponding MCL Since the threecompounds modelled as DRO surrogates did not impact groundwater, regardless of the initialconcentrations in the soil column, ACLs can not be developed for these constituents. However, the proximity of the xylene plume's maximum predicted depth to the groundwater suggests that a more mobile compound would intercept the groundwater table. Although not detected in the Building 944 soil samples, toluene is the most mobile BTEX component and is often associated with diesel fuel releases. A toluene ACL was therefore developed in the event that this_ constituent is detected during future work at the Building 944 site. Specifically, a toluene ACL of 25 ppm is recommended to comply with the corresponding groundwater MCL of 1.0 ppm.

Action Date: 3/22/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the Release Investigation for bldgs: 914 UST 37, 920 UST 95,926 UST 96, 932 UST 97, 934 UST 98, 936 UST 99,944 UST 100, 946 UST 101, 950 UST 102, 962 UST 105 and 968 UST 34 at Fort Richardson, Alaska, February 21, 1996. Based upon a review of the information submitted no further assessment or remediation of the sites is requested at this time. These closures do not preclude future .remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated; DEC reserves all of its rights under' Title 46 of Alaska Statutes and 18 AAC 78 to request additional activities in the future ifnecessary to address these risks. DEC requests any monitoring wells installed as a part of these investigations be added to the Postwide monitoring network established under the CERCLA FFA.

Action Date: 2/21/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Circle Loop Road Release Investigation Building 936 UST 99 received on March 6, 1996. The former UST, designated Tank 99, was a heating oil tank which supplied fuel to Building 936, located along Circle

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

Loop Road. The release investigation of Building 936 was completed as part of a larger assessment addressing a total of eleven former UST sites along Circle Loop Road. Each of the eleven tank sites was associated with a warehouse structure, including Buildings 914, 920, 926, 932, 934, 936, 944, 946, 950, 962, & 968. The primary objective of the release investigation was to define the horizontal & vertical extent of petroleum hydrocarbon contamination at each of the eleven tank sites.Drill cuttings produced at the surface that exhibited a PID reading greater than 25 ppm were placed in 3-ton reinforced plastic soil bags resting on wooden pallets. The soil bags & pallets were then transported to the former Building 956 site for temporary secured storage in one of three storage containers.DRO Results (PID PPM reading)AP-3563 in the tank center: 188SL 30-32??? bgs 1,160 mg/kg (100 ppm), 195SL 20-22??? bgs 1,150 mg/kg 170 ppm, 196SL 25-27??? bgs 1,720 mg/kg (200 ppm), 197SL 30-32??? bgs 3,290 mg/kg (170 ppm), 198SL 30-32??? bgs 3,820 mg/kg (170 ppm). AP-3564 198SL 30-32??? bgs 6,800 mg/kg D (170 ppm)(???D??? Result considered an estimate due to surrogate recovery diluted out, out of control or failure), 2-Methylnaphthalene 7.4 mg/kg (MGW 6.1 mg/kg)199SL 35-37??? bgs 4,920 mg/kg (190 ppm)200SL 40-42- bgs 3,090 mg/kg (200 ppm)Subsurface soils to the northwest of the former tank site were not assessed due to the existing Building 936. From the estimated horizontal & vertical extent of soil contamination & the apparent plume configuration, approximately 1,000 cubic yards of soil exceeding tlie applicable DRO cleanup guideline are present in the subsurface.Laboratory analyses demonstrate that the subsurface ethylbenzene, xylene & naphthalene plumes at the Building 936 site presently extend to approximately 31 to 46 feet b_gs. Modelling of the site using SESOIL indicates that these plumes migrate vertically at constant rates ranging from an estimated 0.360 m/yr (1.18 ft/yr) for xylene to an estimated 0.0867 rn/yr (0.283 ft/yr) for naphthalene. These rates are shown in the leaching assessment to be independent of the initial concentrations in the soil & instead depend on the hydraulic loading in conjunction with the specific chemical & soil properties. Based on the predicted plume behavior, the simulated xylene plume contacts the GW table in 90 years. The ethylbenzene & naphthalene plumes extend to maximum depths of 142 & 70 feet bgs within the 99 year model simulation.The simulated concentrations of xylene in the GW, based on the reported concentrations from the Spring 1995 release investigation, do not exceed the respective MCL within the 99 year model run time. The simulated ethylbenzene & naphthalene (surrogate for 2-methylnaphthalene) plume fronts do not reach GW within the 99 years model simulation. Based on the surrogate results, the slower moving DRO plume is not anticipated to intercept the site's GW in the next 99 years. Therefore, it is our opinion that no further action is required at this site & we recommend that the USACE request ADEC closure for the Tank 99, Building 936 site.The proposed ACLs for this site are the estimated maximum soil concentrations which will not leach into the GW in sufficient quantity to exceed MCLs. Although toluene was not detected at this site, a toluene ACL was developed since it is expected to migrate at a faster rate than xylene & is often associated with diesel fuel releases. The recommended ACLs for the Building 936 site are 1.8 ppm toluene & 20 ppm xylene. ACLs are not proposed for ethylbenzene & naphthalene since modelling indicated the ethylbenzene & naphthalene plumes will not reach GW, irrespective of initial load concentration.Although additional remediation at this

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73 (Continued) **S113929822**

site may not be required, monitoring of the GW in the Circle Loop Road vicinity will continue through sampling of the three monitoring wells installed as part of the release investigation of the eleven former UST sites. Specifically, GW samples will be collected from monitoring wells AP-3542, AP-3547, & AP-3591, located at Buildings 914, 926, & 962, ???respectively, during the USACE's GW monitoring program. Once the monitoring wells are no longer needed, we recommend they be abandoned according to Alaska Statute 18 AAC 80.020c.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU073 Bldg 936 and 944 FTRS-73
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

O65 **JBER-FT. RICH BLDG 946 FTRS-76 TU076** **SHWS** **S113929821**
WNW **CIRCLE DRIVE AND NORTH WAREHOUSE STREET** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.451 mi.
2379 ft. **Site 2 of 2 in cluster O**

Relative: **Lower**
Actual: **326 ft.**

SHWS:

File Number:	2102.38.039
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.269383
Longitude:	-149.692076
Hazard ID:	26067
Problem:	A site assessment was conducted during the removal of a 1,000-gallon underground storage tank (UST) at Building 936. Laboratory results show that the maximum detected level of diesel range organics (DRO) in the project soil was 2,800 ppm. These results show that petroleum hydrocarbons have been released to the environment from Tank 101 at Building 946.

Actions:

Action Date:	9/28/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the site assessment report for UST 101 Fac. 0-00788.The Alaska Department of Environmental Conservation-Defense Facilities Oversight group(ADEC) has received, on September 12, 1994 a copy of the above referenced report. Beloware ADEC's comments.5.3 Conclusion and Recommendations page 11The text states the cleanup criteria is level C, however the factor used for mean annualprecipitation appears to be correct. Based on information from other consultants' reports atFort Richardson the annual precipitation has been calculated to be approximately 13 to 20inches per year (Univ. of AK, Anchorage, Environmental Atlas ... ~972). This

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

correctionwould result in a reclassifying of the cleanup score to 20 or a level D cleanup. It appearsthis error was repeated in all of the reports submitted to ADEC and mayor may not changecleanup levels for each site.The text states levels detected in the soil under the tank indicated tank 101 has leaked and themaximum detected level of DRO is in excess of level D cleanup criteria.Further action is still required by the Army to delineate the vertical and horizontal level andextent of petroleum hydrocarbon contamination in soil and groundwater at each site. ADEClooks forward to receiving the draft release investigation work plan with schedules of actionfor review and comment by January 1995.

Action Date: 9/12/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment Report received.Laboratory results show that the maximum detected level of diesel range organics (DRO) in theproject soil was 2,800 ppm. These results suggest that petroleum hydrocarbons may have beenreleased to the environment from Tank 101 at Building 946.Based on guidelines provided in 18 AAC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 946 qualifies for Level C cleanup which sets the maximum DROconcentration at 1,000 ppm. Since the detected levels for DRO at Building 946 exceeds this level, further action is required for site closure.DRO (HNU reading)94-946-BC 11' bgs 670 mg/kg (1 PPM)94-946-BE 11' bgs 2,800 mg/kg (8 PPM)

Action Date: 8/8/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Cleanup complete determination made. Contaminants of ConcernDiesel Range Organics (DRO)Cleanup LevelsThe cleanup level for soils at TU076 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). Modeling using the Hydrocarbon Risk Calculator, in accordance with Method 3 under 18 AAC 75.340, demonstrated that residual petroleum contaminants in soil do not pose a migration to groundwater risk/concern. In 2013, additional site investigation work was conducted to fill data gaps. The average and 95 UCL DRO concentrations within the NAPL source area are approximately 1,792 mg/kg and 2,440 mg/kg, respectively. No other analytes were detected above screening levels. Groundwater occurs at approximately 150 feet bgs near TU076 and generally flows in a northwesterly direction. Groundwater was not encountered or sampled. Because the DRO soil contamination is vertically bounded at 27 feet bgs, approximately 120 feet above the water table, it is unlikely that contamination has reached groundwater. Cumulative Risk EvaluationThe HRC was used to evaluate risk from petroleum contamination at TU076. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, and other compounds dissolved in petroleum???with the intention and purpose of assessing human health risk from this type of contamination.The estimated rounded cumulative cancer risk at TU076 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (9 x 10-7 and 2 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

TU076 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (0.012 and 0.019 respectively) is below the regulatory risk standard of 1. TU076 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO aromatic and aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for TU076 and no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed and that the TU076 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that TU076 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU076 in the Contaminated Sites Database.

Action Date: 8/23/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the UFP-QAPP work plan.WS 15Reference Limit Evaluation The text states: ???Laboratory method detection limits (MDLs) for both analytes (0.066 mg/kg for 2,4-dinitrotoluene & 0.0311 mg/kg for n-nitrosodi-n-propylamine) are sufficient to detect the analytes if they persist at concentrations similar to the supposed detection in the earlier triplicate sample; however, these MDLs are below the migration to GW soil cleanup levels in 18 AAC 75 Method Two Table B1 (0.0093 mg/kg for 2,4-dinitrotoluene & 0.0011 mg/kg for n-nitroso-di-npropylamine).???The text should actually state the MDLs are ABOVE the migration to GW soil cleanup levels in 18 AAC 75 Method Two B1. Also the text states: ???Because the prior detections were inconsistent between primary & QC samples & there is no reason to suspect TU076 was a potential source of these contaminants, these analytes will be analyzed according to current methods & detection limits. If additional information (new sampling results, additional historical information on site usage, or previous laboratory data packages) support the existence of these analytes at TU076, further investigation may be necessary.???This is all well & good, however the final Basewide UFP-QAPP shows that SW8270 DL, LOD & LOQ for 2,4-Dinitrotoluene will not be able to meet the migration to GW cleanup level of 0.0093 mg/kg & n-nitroso-di-n-propylamine. It is not expected to have 2,4-DNT or N-Nitrosodi-N-propylamine associated with a fuel oil or heating oil release, however, if JBER is going to analyze for it to either prove or disprove the presence of 2,4-DNT or N-Nitrosodi-N-propylamine below applicable cleanup levels, then an alternative laboratory method will be required in lieu of SW8270 (e.g. Method 8330 for GW) for these two contaminants.Table 15-3 Comparison of TestAmerica Laboratory DLs, LODs, & LOQs for Non-TPH Analytes with ADEC Table B1 Method Two Migration to GW Cleanup LevelsSW8270C2,4-Dinitrotoluene CAS 121-14-2 DL 0.89 mg/kg, LOD 0.167 mg/kg, LOQ 0.33 mg/kgN-Nitrosodi-N-propylamine CAS 621-64-7 DL 0.84 mg/kg, LOD 0.167 mg/kg, LOQ 0.167 mg/kgIf GW is sampled at this site with SW8270C, then the DL (2 &181;g/L), LOD (3.0 &181;g/L) & LOQ (10 &181;g/L) will not be able to meet Table C GW cleanup levels for

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

2,4-Dinitrotoluene (1.3 &181;g/L or 0.0013 mg/L) & N-Nitrosodi-N-propylamine???s (0.017 &181;g/L or 0.017 mg/L) DL (1.4 &181;g/L), LOD (3.0 &181;g/L) & LOQ (10 &181;g/L). See Table 15-7 Comparison of TestAmerica Laboratory DLs, LODs, & LOQs with ADEC Table C GW Cleanup Levels. Applied Sciences Laboratory (CH2M Hill-Corvalis laboratory, UST-079) also cannot meet the migration to GW soil cleanup level or the Table C cleanup level for 2,4-Dinitrotoluene or N-Nitrosodi-N-propylamine.Table 15-14 Comparison of Applied Sciences Laboratory DLs, LODs, & LOQs for Non-TPH Analytes with ADEC Table B1 Method Two Migration to GW Cleanup LevelsSW8270D: 2,4-Dinitrotoleune CAS 121-14-2, DL 0.067 mg/kg, LOD 0.083 mg/kg & LOQ 0.17 mg/kg. N-Nitrosodi-N-propylamine CAS 621-64-7, DL 0.067 mg/kg, LOD 0.083 mg/kg, LOQ 0.17 mg/kg.Table 15-18 Comparison of Applied Sciences Laboratory DLs, LODs, & LOQs with ADEC Table C GW Cleanup Levels2,4-DinitrotolueneDL 2 &181;g/L, LOD 1 2 &181;g/L, LOQ 5 &181;g/L (Table C 1.3 &181;g/L) N-Nitrosodi-N-propylamineDL 2 &181;g/L, LOD 2.1 &181;g/L LOQ 5 &181;g/LPage 37JBER may collect one foc soil sample for whatever purpose it desires; however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected & analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four (ADEC, 2008). Page 38Soil Excavation (If Required)Remedial options that address the contaminants of concern which exceed maximum allowable concentrations (MAC) will be also evaluated regardless of HRC risk calculation results. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. 20 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold & does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both stockpiles (???clean??? < 20 ppm PID reading & ???dirty??? 20 ppm & higher PID reading) for definitive laboratory testing.

Action Date: 8/12/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for review and comment. The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390, and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If ADEC Method Two cleanup criteria as established under 18 AAC 75 are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.One boring will be drilled at former boring AP-3576 to resample the soil at the location anddepths where previous sampling showed the maximum exceedances of the migration to groundwater criteria for DRO and to collect source area soil samples for gasoline-range organics (GRO), residual-range organics (RRO), petroleum-related volatile organic compounds (VOCs) (benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]), semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH) analysis.Three borings will be drilled to the east, north, and south of the former tank location todetermine the lateral extent of contamination.Up to approximately 22 new primary soil samples will be collected and analyzed for GRO,DRO, RRO, petroleum-related VOCs (BTEXN), SVOCs, and PAHs. Three of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).If any of the borings are drilled to groundwater, a groundwater sample will be collected andanalyzed for petroleum-related VOCs, GRO, DRO, RRO, SVOCs, PAHs, EPH, and VPH.

Action Date: 7/31/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment. The following conclusions were made regarding TU076:??? Based on previous investigations and the 2013 site characterization field investigation, DROwas the only analyte detected in soil at concentrations above project screening levels and is theCOPC for the site. Historically, 2,4-dinitrotoluene and n-Nitroso-di-n-propylamine were detected in one sample above their project screening levels; however, in 2013, the analytes were nondetect in 26 soil samples.??? The extent of DRO contamination above project screening levels is vertically bounded by samples collected from deeper intervals and laterally bounded by historical and 2013 borings in all directions. The analytical data collected during the 2013 site characterization activities confirm the presence and concentrations of the COPC (DRO).??? The source area, defined as the three-dimensional soil volume with DRO concentrations greater than 250 mg/kg, is approximately 45 feet wide and 45 feet long, extending from approximately 10 to 27 feet bgs (34,000 cubic feet or 1,300 cubic yards) centered on former UST 101.??? Data indicate that DRO contamination is very unlikely to reach groundwater at approximately 150 feet bgs (122 feet below the maximum vertical extent of contamination).??? Using the HRC for contaminated soil within both source areas, the cumulative carcinogenic risk and noncarcinogenic HI estimates, based on both industrial and hypothetical residential exposure scenarios, are below the regulatory risk standards.??? No buildings are present, and all concentrations of volatile compounds are currently below their respective 18 AAC 75.345 Method Two, Table B1 cleanup levels. Therefore, the vapor intrusion pathway is considered incomplete for current industrial and potential future residential exposure scenarios.??? Using the HRC for contaminated

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

soil, the site meets the ADEC risk criteria for bulk hydrocarbons.??? Estimated total GRO, DRO, and RRO concentrations in groundwater beneath TU076 are predicted to be below their respective 18 AAC 75.345 Table C cleanup levels.??? No potential risks to ecological receptors were observed, and petroleum hydrocarbon contamination in surface soil is considered insignificant (less than 0.5 acre).The following are recommended for TU076:??? No further investigation and/or cleanup of soil and groundwater.??? ???Cleanup Complete??? designation because TU076 meets the criteria established for site closure.

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79476 name: 1,000-Gal UST 101

Action Date: 6/12/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 3/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: DECISION DOCUMENT FOR NO FURTHER REMEDIAL ACTION PLANNED AT THE CIRCLE LOOP ROAD WAREHOUSES,HEATING OIL UNDERGROUND STORAGE TANKS, FORT RICHARDSON, ALASKA 1. PURPOSE OF REMEDIAL ACTIONThis decision document describes the rationale forNo Further Remedial Action Planned (NFRAP) at the Circle Loop Road Warehouses, Fort Richardson, Alaska. This action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.The sites addressed by this document include Bldg 914 underground storage tank (UST) 137, Bldg 926 UST 96, Bldg 932 UST 97, Bldg 934 UST 98, Bldg 936 UST 99, Bldg 944 UST 100, Bldg 946 UST 101, Bldg 950 UST 102, Bldg 962 UST 105, and Bldg 968 UST 34. These USTs were removed during the summer 1994 to meet the requirements of the Fort Richardson-State of Alaska, Department ofEnvironmental Conservation (ADEC) UST Compliance Agreement. During removal, soil contamination was found at each site at levels exceeding the State of Alaska level D clean-up standards, 2000 parts per million (ppm) Diesel Range Organics (DRO) and 2000 ppm residual range organics (RRO), specified in 18 Alaska Administrative Code (AAC) 78.A release investigation was conducted which averaged 4 soil borings per site. The borings were drilled to approximately 50 feet below ground surface (bgs), and found DRO concentrations ranging from 3,010 ppm to 16,000 ppm. The Directorate of Public Works, Environmental Compliance and Restoration Branch developed this decision document. Attached is a letter of concurrence from the Alaska Department of Environmental Conservation (ADEC) South-Central Regional Office, Contaminated Site Program Defense Facilities Oversight Office2. SUMMARY OF SITE RISKCircle Loop Road warehouses is an industrial complex. Due to limited acess it is not expected to pose a risk to the general public or other pathways. Contamination is not expected to impact

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

groundwater, based up on a soil leaching potential assessment conducted during the release investigation. Therefore, contamination poses no risk to the potential drinking water supply in the area.3. SUMMARY OF REMEDIAL ALTERNATIVESAn evaluation of remedial alternatives was not conducted forthis site. Previous experience indicated that these sites could be closed through development of alternative clean-up levels(ACL) using a soil leaching potential assessment. This work was conducted concurrently with the release investigation.4. PUBLIC/COMMUNITY INVOLVEMENTInformation concerning investigations and remediation of underground storage tank sites is incorporated in both fact sheets and public meetings developed for Fort Richardson's on-going community relations program.5. DECLARATIONBecause this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years (2001, 2006, 2011, 2016, 2021) to ensure that there is adequate protection of human health and the environment.

Action Date: 3/22/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Release Investigation for bldgs: 914 UST 37, 920 UST 95, 926 UST 96, 932 UST 97, 934 UST 98, 936 UST 99, 944 UST 100, 946 UST 101, 950 UST 102, 962 UST 105, 968 UST 34 at Fort Richardson, Alaska, February 21, 1996. Based upon a review of the information submitted no further assessment or remediation of the sites is requested at this time. These closures do not preclude future .remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated; DEC reserves all of its rights under' Title 46 of Alaska Statutes and 18 AAC 78 to request additional activities in the future ifnecessary to address these risks. DEC requests any monitoring wells installed as a part of these investigations be added to the Postwide monitoring network established under the CERCLA FFA.

Action Date: 2/21/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Circle Loop Road release investigation received for Bldg. 946 UST 101. The former UST, designated Tank 101, was a heating oil, tank which supplied fuel to Building 946, located along Circle Loop Road. The release investigation of Building 946 was completed as part of a larger assessment addressing a total of eleven former UST sites along Circle Loop Road. Each of the eleven tank sites was associated with a warehouse structure, including Buildings 914, 920, 926, 932, 934, 936, 944, 946, 950, 962, and 968.A total of five soil borings were drilled at the Building 946 location. The borings were positioned within and adjacent to the former Tank 101 excavation in order to evaluate the vertical and lateral extent of contamination.AP-3573118SL 10-12' bgs 2,750 mg/kg DRO (110 ppm)119SL 15-17' bgs 2,040 mg/kg DRO (120 ppm)121SL 20-22' bgs 819 mg/kg DRO (47 ppm)AP-3574 135SL 15-17' bgs 1,000 mg/kg (140 PPM)136SL 15-17' bgs 2,000 mg/kg (D) (140 PPM)138SL 25-27' bgs 1,800 mg/kg (120

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PPM)AP-3576145SL 20-22’ bgs 3,010 mg/kg (49 PPM)146SL 20-22’ bgs 694 mg/kg (49 PPP)Detection limits which were above the April 8, 2012 MGW cleanup levels: benzene 0.025 mg/kg, 2,4-Dinitrotoluene 0.0093 mg/kg and N-Nitroso-di-n-proprylamine 0.0011 mg/kg. A leaching assessment was conducted using the information gathered during the releaseinvestigation in order to evaluate alternative cleanup levels for the Building 946 location. Although DRO was the only contaminant present in the soils exceeding the ADEC Level C cleanupguidelines,&183; it was not used as a target compound in the modelling effort since a suitable chemical representation of diesel fuel is not available. Instead, the hydrocarbon constituents toluene, ethylbenzene, and xylene were modelled as DRO surrogates. Each of the surrogate compounds is a component of heating fuel and was detected in the Building 946 soil samples. Modelling of the site using Seasonal SOIL compartment model (SESOIL) indicates that targetcompounds migrate vertically at constant rates ranging from 0.307 meters/year (1.01 feet/year) for ethylbenzene to 0.543 meters/year (1.78 feet/year) for toluene. These rates are shown in the leaching assessment. to be independent .of the contaminant concentrations in the soil and instead depend on the hydraulic loading in conjunction with the specific chemical and soil properties.Migrating at the predicted rate, the toluene plume front is shown by the SESOIL model to contactthe groundwater table in the year 2064, 68 years from the present. The maximum predictedconcentrations of toluene in groundwater do not, however, exceed the corresponding MCL withinthe 99 year model simulation. The simulated ethylbenzene and xylene plume fronts do not reachthe groundwater table within&183; the 99 year model. Based on these surrogate results, the slower migrating DRO hydrocarbons are likewise not anticipated to intercept the site’s groundwater in the next 99 years. Therefore, it is our opinion that no further action is required at this&183; site and we recommend that the Army Alaska District Corps of Engineers request closure for the Tank 101, Building 946 site.One site-specific ACL is proposed as a tool&183;to develop cleanup criteria for potential futuresitework. The ACL reflects the maximum toluene concentration in the soil which will not result in groundwater concentrations above the corresponding MCL. For the Building 946 site, a tolueneACL of 13 ppm is recommended to comply with the corresponding groundwater MCL of 1.0 ppm.ACLs were not calculated for ethylbenzene and xylene since modelling indicated these constituent plumes will not reach groundwater, irrespective of the initial load concentration. Similarly, an ACL is not proposed for DRO since a correlation was not identified between the pres,ent DRO and surrogate concentrations in the soil.

Action Date: 10/28/2017
Action: Report or Workplan Review - Other
DEC Staff: John O’Brien
Action Description: DEC reviewed and provided comments on the Draft 2015 Remedial Investigation/Risk Assessment Report for Non-Operable Unit Source Areas, Eielson AFB, Alaska [August 2016].

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 946 FTRS-76 TU076
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human

JBER-FT. RICH BLDG 946 FTRS-76 TU076 (Continued) **S113929821**

Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

P66 **JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 P** **SHWS** **S107029085**
West **5TH STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1** **INST CONTROL** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.452 mi.
2384 ft. **Site 1 of 3 in cluster P**

Relative:
Lower

Actual:
319 ft.

SHWS:
File Number: 2102.26.023
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.264433
Longitude: -149.692122
Hazard ID: 1792
Problem: Located on Fifth Street, Bldg 979 was a troop motor pool fueling station off Circle Drive. Army removed USTs 40 and 41 (5,000 gallons each) one contained diesel and the other contained gasoline with samples collected during removal detected diesel contamination in soil near pump island. Site conditionally closed. UST Facility ID 788.EPA ID: AK6214522157 USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:
Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/21/2014
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72770 name: auto-generated pm edit Ft. Rich Bldg. 979 USTs 40 & 41

Action Date: 7/1/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In July 1993, two 5,000-gallon USTs were removed from the site. One contained diesel fuel and the other contained gasoline. Eleven samples were collected to determine if soils were contaminated with

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

petroleum hydrocarbons. The tank contents were also sampled. Laboratory results indicated one tank contained gasoline and the other contained diesel fuel. GRO in the soil from below the tanks ranged from 0.4 to 1.8 mg/Kg. DRO levels were all below 100 mg/Kg. Soils sampled near the pump island detected GRO at 22 mg/Kg and DRO at 1,420 mg/Kg.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Project management plan received. Performance objective: Site closure.Performance indicators: &183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by October 2013&183; Complete an approved Characterization/Cleanup Report by March 2014&183; Achieve SC in 2014Potential risk: The nature and extent of soil contamination in the upper 25 feet is greater than anticipated. Groundwater impacts are discovered during site characterization.Risk Mitigation:Excavate soil as needed (estimate 500 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that isappropriate to the nature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective: 2nd Quater 2014. Prepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Cleanup Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Review of Draft PMP for the PBR contract.Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force & regulatory review & concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations & Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, & that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations & may result in field work not being approved or additional work being required & may subject responsible parties &/or contractors to a Notice of Violation (NOV). In addition, proceeding with unapproved work plans & finalizing documents which are not approved by EPA or ADEC will likely cause the regulatory agencies to invoke dispute resolution as allowed for under the respective Federal Facility Agreements (XXI Dispute Resolution). 7.1.2Document Preparation & Version ControlDraft & Draft Final Versions of documentsFor petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews & respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, & contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review & comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers & contracting staff:???Coordinate schedules with ADEC in advance & throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad & other Technical Project Planning team meetings, etc.). ???Plan & maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version & a final review & approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review & Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both interim & final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment & Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state & federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, & reporting of data, & the required sampling & analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting & reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans & contract requirements. 7.2.1UFP-QAPP Requirements (Planning)Any existing approved UFP-QAPPs will be updated to reflect current regulations & guidance that have been updated since they were approved. Page 7-6The text states: ???Our Technical Site Managers & Project Chemists will ensure that, prior to sampling activities, full service analytical laboratories to be used are, at a minimum, DoD ELAP accredited & in good standing based on standard business information sources (e.g., Dunn & Bradstreet). In addition to DoD ELAP, the Project Chemist will also ensure that the supporting laboratories are approved for work in the State of Alaska, when required. Analytical methods used will beAlaska & EPA standard methods, unless technically impractical.???ADEC disagrees. The full service analytical laboratories have to be both DoD-ELAP accredited & Alaska approved. Any non-EPA &/or Alaska methods must be approved by the department prior to sample collection.
Not reported

Action Date: 5/6/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the UFP-QAPP SC Work Plan for SO031 Building 979 ADEC CS DB Hazard ID 1792 on JBER-Richardson on April 17, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

Action Date:	5/2/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Review of SC report. The Alaska Department of Environmental Conservation (ADEC) has completed a review of the environmental records associated with the site SO031 (ADEC CS Database Hazard ID 1792) located on Joint Base Elmendorf-Richardson in Anchorage, Alaska. ADEC concurs with the recommendation to address DRO northeast of the former UST and pump island. ADEC will accept the 11,271 mg/kg cleanup level for DRO at SO031. However, ADEC will require JBER to show that the EPH/VPH results used to determine the DRO cleanup level have also been met in the confirmation samples (i.e. not to exceed MAC of 10,000 mg/kg aliphatic C10-C25 DRO and not to exceed alternate cleanup level of 11,271 mg/kg for total DRO at SO031). Consistent with ADEC's sampling requirements at other DoD facilities where HRC is used and excavation is planned to an alternate cleanup level, ADEC will require fifty (50) of the confirmation samples to include the EPH/VPH analysis as well as the total DRO analysis during excavation activities. If time is of the essence and JBER cannot wait for the EPH/VPH samples turnaround time, then it is suggested JBER use 10,250 mg/kg total as the basis for DRO cleanup at SO031.

Action Date:	5/1/2014
Action:	Site Reopened
DEC Staff:	Alyce Hughey
Action Description:	Site reopened per Louis Howard. Closed status issued in error.

Action Date:	4/25/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft SC Report received for review & comment. The HRC was used to calculate ACL under Method Three to achieve UU/UE & estimate a soil target area. The direct contact cleanup levels (soil ingestion cleanup level) for DRO aliphatics & aromatics in soil are presented in Table B2 of 18 AAC 75.341(d). To determine the total DRO concentration that would exceed the direct contact cleanup levels for the aliphatic & aromatic fractions for SO031, the ingestion cleanup level for each fraction was divided by its site-specific calculated mass fraction determined from EPH/VPH analysis of samples from the site (Table C-1.3 of Appendix C). Table 6-1 shows the calculations: the calculated DRO direct contact ACL using the aliphatic fraction is 11,271 mg/kg, & the calculated DRO direct contact ACL using the aromatic fraction is 36,348 mg/kg. The minimum of the two values (11,271 mg/kg) is recommended as the soil cleanup level for DRO in soil from 0 to 15 feet bgs. In summary, based on the known aromatic & aliphatic fractionation of DRO at the site, a sample with a DRO concentration of 11,271 mg/kg will have a C10-C25 aliphatic concentration of 10,000 mg/kg (i.e., the DRO aliphatic cleanup level).Approximately 130 cubic yards of soil located near boring SO031-SB04 is estimated to exceed the ACL for DRO of 11,271 mg/kg. Soil impacted with DRO is estimated to encompass an area within a 15-foot radius of SO031-SB04 from 5 to 10 feet bgs (Figure 6-1). However, further delineation of DRO in soil to the northeast of the former UST (near SO031-SB04) is necessary.Potential response actions to address DRO in soil include the following:??? LUCs to limit access to soil with DRO at concentrations above the ACL??? Excavation of soil with DRO at concentrations above the ACL to allow for UU/UELUCs

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would restrict soil excavation & transport of soil offsite. The LUCs are designed to prevent or control exposure to DRO in soil, & to protect human health & the environment. The Air Force would implement (to the degree that controls are not already in place), monitor, maintain, & report the identified controls. The Air Force would seek prior concurrence from ADEC & EPA to (a) terminate LUCs, or (b) modify current land use(s).Excavation consists of removal of soil, field screening & confirmation soil sampling, & thermal treatment of soil at Alaska Soil Recycling, Inc., which would be implemented in accordance with the Site Characterization Work Plan (USAF, 2013b) & ADEC Field Sampling Guidance (ADEC, 2010b). Stockpile & confirmation samples would be submitted for DRO & petroleum-related VOC analysis.ConclusionsThe following conclusions were made regarding SO031:??? In 2013, DRO, RRO, & 1,3,5-trimethylbenzene were detected in soil at concentrations above project screening levels & identified as COPCs. BTEX compounds were not detected above screening levels in 2013, which is indicative of an older release & weathered product.??? Methylene chloride was detected in one sample above its screening level in 2013, is a common laboratory contaminant, & is not considered a COPC.??? DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 20 by 130 feet & extends from around ground surface to approximately 15 feet bgs. Further delineation of DRO in soil to the northeast of the former UST (SO031-SB04) is necessary.??? GW was not encountered during the investigation. The maximum vertical extent of DRO at the site is approximately 85 feet above the water table, which is estimated at approximately 100 feet bgs.??? Cumulative carcinogenic risk & noncarcinogenic HI estimates based on current industrial & hypothetical residential exposure scenarios meet the regulatory risk standards.??? The site does not meet the ADEC risk criteria for bulk hydrocarbons. The soil direct contactrisk caused by DRO aliphatic concentrations in soil is above the HQ of 1.??? No potential risks to ecological receptors were observed, & petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre) (see completed Ecoscoping form in Appendix D).RecommendationsThe following is recommended for SO031:??? Further action to address DRO in soil near boring SO031-SB04, approximately 25 feet northeast of the former UST & pump island

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 4/2/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the revised format SO031 Bldg. 979 Draft QAPP Addendum Review.JBER: Soil borings will be drilled to 20 feet below ground surface with continuous core samples collected at 5 foot intervals and screened with a photo ionization detector (PID). If field screening indicates contamination extends beyond 20 feet, the soil borings will be extended to clean material. Two samples will be collected from each boring for laboratory analysis of DRO and RRO: one sample would be collected from the highest PID reading interval, and the second sample would be collected from a low PID reading

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interval beneath the highest PID reading interval. Table 1 presents a summary of samples, analysis, and rationale for collection.Only comment: ADEC: Soil borings will be drilled to 20 feet below ground surface with continuous core samples collected at 5 foot intervals and screened with a photo ionization detector (PID). If field screening indicates contamination extends beyond 20 feet, the soil borings will be extended to clean material. Two samples will be collected from each boring for laboratory analysis of DRO and RRO: one sample would be collected from the highest PID reading interval, and the second sample would be collected from a low PID reading interval beneath the highest PID reading interval. Two additional soil samples (at 5' intervals) will be collected from each boring beyond the last evidence of contamination, and the boring will be terminated. Table 1 presents a summary of samples, analysis, and rationale for collection.Table 1 and text will need to be changed to reflect any additional sampling requirements to prove the negative.

Action Date: 3/9/1994
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Letter from Army sent on compliance advisory letter dated 2/9/1994. The Army notes the concern of failure to meet certain time deadlines specified in the UST compliance agreement could jeopardize our excellent working relationship which we both worked on to achieve. Due to limited staffing we are having difficulty meeting the agreed upon deadlines. We wish to set up a meeting with your Contaminated Sites Office to discuss future deadlines. Tank 26 at Building 786 Driver's Training, Tank 57 at Bldg. 39600, Site Summit arescheduled for removal on or before August 31, 1994. Please find attached the Corrective Action Report prepared by the CORPS for soil piles 3B, 4, 5, 9, 10, 11, 12, and 13 that were thermally treated by Little Susitna (Co.). The CAR for the soil piles treated by Oil Spill Consultants is also attached. Tanks 40 and 41 at Building 979 have been closed and the post-closure information for Alaska UST form has been sent to Linda Nuechterlein as specified in the Compliance Advisory and a copy furnished to John Halverson. The Army has been unable to locate the tank labeled with the identification number 92 at Building 732, the Reserve Motor Pool. The tank should be identified and correctly listed in the Review and Update of UST Information as specified in the Agreement Appendix A-Registration of the UST managment plan.

Action Date: 2/9/1994
Action: Notice of Violation
DEC Staff: Janice Adair
Action Description: Compliance advisory signed by Janice Adair (Regional Administrator) sent to Army in reference to Fort Richardson UST compliance agreement for Tank 26 at Building 786. This advisory is being sent to notify the Army of its failure to comply, in a timely manner, with the Underground Storage Tank (UST) Compliance Agreement (agreement) Upgrading of USTs (Para. 25) and Free Product Recovery and Soil Remediation (Para. 40). In an effort to keep the working relationship that the Army and the department have established, the department would like to move forward with the agreement's intent and goals, which is to come into compliance with the UST regulations. A review of our records did not produce any information indicating the Army has complied with closure or upgrade requirements, outlined in

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Attachment D, for the following tanks and expected dates: UST 26, Bldg 786 Driver's Training 9/30/93, USTs 40 & 41, Bldg 979 POL Gas Station, 9/30/93, UST 57, Bldg 39600, Site Summit, 9/30/93, UST 92, Bldg 732 Resrv. Motor Pool 9/30/93. Attachment I Petroleum Contaminated Soil Stockpiles- The Army has not submitted a final corrective action report for each site as required by 18 AAC 78.340. Soil Pile (SP) and expected date of completion was 10/30/1993: SP 1 Bldg 8102 Arctic Valley, SP 3B Bldg. 796 Vehicle Maintenance, SP 4 Bldg. 908S 1117th Sig. Batt., SP 5 Bldg. 908N 1117th Sig. Batt., SP 6 Bldg 702 Gas Pump Bldg., SP 7 Flying Club, SP 8 Bldg 733, SP 9 Bldg 798 Motor Pool, SP 10 Bldg 782 Gas Station, SP 11 Fuel Depot, SP 12 Bldg 47622 Bryant Airfield, SP 13, and SP 15 Bldg 55804 Ammo Area A.

Action Date: 2/8/1995
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Site Assessment Report Building 979 UST 40 and 41 Fort Richardson, AK.The Alaska Department of Environmental Conservation, Defense Facilities Oversight group(ADEC) has received, on January 30, 1995, a copy of the above document. Below are our comments regarding the site assessment.3.3 Field Screening page 4The document clearly states the contractor did not properly screen the soils for petroleum contamination. This is in clear violation of the ADEC standard Quality Assurance Program Plan (QAPP) sampling procedures Sec. 4. Section 4 states: In combination with regulatory requirements and the results of the presampling investigation, field screening with instrumental or analytical methods will be used to determine where samples will be collected. Field screening refers to the use of portable devices capable of detecting petroleum contaminants on a real time basis or by rapid field analytical technique. Acceptable devices are listed in the Standard QAPP, section 4.4.1 Field Screening Devices. Wherever the requirement for field screening is stated in the QAPP, instrumental or analytical methods of detection will be used, as opposed to olfactory or visual screening methods. Future UST investigations must follow methods outlined in the standard QAPP and proper oversight by the Army of the contractor's work to ensure compliance with UST regulations 18 AAC 78 and the USTMP between ADEC and the Army.ADEC cannot accept the document for final closure of USTs 40 and 41 without additional work through the use of additional borings, field screening with approved devices and laboratory analyses. The borings shall be advanced at least five feet deeper than the former USTs' lowest point or drilled deeper if field screening devices indicate the soil has been impacted from a release beyond the tanks' former excavation. Soil samples will be selected at five foot intervals and at the termination point of the boring for field screening purposes. The boring locations will be at the end of each UST's former location furthest away from the dispenser (pump island). One boring will be advanced at the dispenser and the remaining borings will be at each end of the former USTs. The total number of borings for the USTs will be five. At a minimum, two grab samples will be collected for lab analysis and one additional sample collected at the area showing the highest reading from the field screening. In areas where no contamination resulted from field screening of the borings, analytical sample locations will be from areas most likely to contain contamination. 6.0 Results and Conclusions page 8 .The text states the visual and lab analyses showed soil under and around the storage

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tanks for 979 were not contaminated with petroleum hydrocarbons. This is not entirely true since pump island soil analysis detected 1,420 mg/kg diesel range organics (DRO). The levels detected are above level A criteria, however it may not be appropriate for the Army to use this cleanup level. ADEC requests a matrix score sheet for bldg. 979's two USTs 40 and 41. The site closure may be considered final contingent on the additional screening and laboratory analyses results that confirm the level of soil contamination detected is not above the calculated soil cleanup matrix score.

Action Date:	2/21/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Comments provide on the draft UFP-QAPP work plan.Please provide latitude & longitude coordinates for the site location in decimal degree format with a precision of six decimal places (dd.dddddd). Also include the following:1. Date of collection,2. Method of collection (i.e. GPS, hardcopy map, air photo),3. Scale of the map used to acquire coordinates (if applicable),4. Estimated accuracy & associated unit of measure,5.Reference point for which the coordinates were established (i.e. center of property, entrance gate),6.Horizontal datum (NAD 1983 is strongly preferred) &7. Comments for additional information regarding acquistion of coordinates (if necessary).Executive Summary2nd ParagraphThe text states: ???If ADEC Method 2 criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method 3 will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case remediation, ICs, or both may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern & the associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated??? It is ADEC???s position that ICs would be applied at JBER sites when:??? The GW under or downgradient of a site was contaminated with POL constituents at levels exceeding risk criteria or MCLs; or??? POL contaminants in the soil were above the MAC given in Table B2 of 18 AAC 75 or at levels exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs (June 14, 2012 meeting minutes ???Use of Hydrocarbon Risk Calculator??? with AFCEE, JBER, PBC & ADEC).If soil that was above the MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil & the statistics for the site could be rerun. The ProUCL checks for outliers & the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination. In addition, sites with existing GW contamination above Table C cleanup levels will require that migration to GW cleanup levels be used for soil & ICs will be required. Once GW is below Table C for a period of time (per the latest approved

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, & 6 September 2003)??? two rounds annual GW monitoring), the MAC may become the cleanup levels as determined by ADEC on a case by case basis.Site-specific Proposed WorkIf borings are advanced to GW, JBER shall collect & analyze GW for 1,2-Dibromomethane (ethylene dibromide). EPA 8011 or EPA 504.1 shall be used when evaluating ethylene dibromide (EDB). EPA 8260 will quantify EDB in ground water; however, the detection limits do not meet the Table C cleanup level of 0.00005 mg/L.WS 10The text states: ???In addition, the site must (1) meet the ???migration to GW??? criteria, which indicate that the dissolution (leaching) of chemicals from soil will not cause GW to exceed 18 Alaska Administrative Code (AAC) 75 Table C GW criteria for ingestion risk, & (2) levels in soil must not exceed the maximum allowable concentrations.??? ADEC also wishes to inform JBER that the vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination above Table C cleanup levels. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC. Last ParagraphThe text states: ???There are no drinking water wells in the shallow GW at this time.??? ADEC requests JBER provide information (e.g. location & well construction) on the nearest (within &189; mile of SO031 site) drinking water [Base] well or standby drinking water well that may be used on a temporary, intermittent or permanent basis. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC.

Action Date: 12/16/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Site added by staff.

Action Date: 12/15/1995
Action: Update or Other Action
DEC Staff: Ben Thomas
Action Description: Letter Sent to Sam Swearingen (Army) Waiver No. A 001 RE: Waiver From Requirement to Use AK 101, AK 102, or AK 103 Analytical Procedures For Hydrocarbon AnalysesThis waiver is issued to allow the above named person or firm to avoid the requirement to analyze soil samples in accordance with analytical methods AK 101, AK 102 and AK 103 for the specific project listed below. The waiver further specifies that analytical methods specified below shall be used for the project, with slight modifications in integration ranges.This letter, when signed with an original signature by the appropriate Department official, will serve as a waiver solely from the portion of the following regulations that refer to use of analytical methods AK 101, AK 102, and AK 103: 18 AAC 78.090(e), 18 AAC 78.235(b), 18 AAC 78.300(c), and 18 AAC 78.312(f)(2) requiring the use of analytical methods AK 101, AK 102, and AK 103 for analysis of hydrocarbons in soils, and from 18 AAC 78.315(d)(3) specifying the integration range for analysis of residual range organics, and only for the specific project listed as follows:Underground storage tank release investigation, in association with buildings 47-203, 955, 979, 45-070 and 28-008 at Fort Richardson Alaska. Note that all other portions of

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these regulations cited must be adhered to, including the requirements to take samples for petroleum hydrocarbons and for data collection and interpretation by a qualified, impartial third party in accordance with the UST Procedures Manual.The conditions for issuance of this waiver are:1.During the waiver period, laboratory analyses performed in support of activities regulated by 18 AAC 78, ADEC Underground Storage Tank Regulations, must be performed by a laboratory that is approved by the Department. Further, the analytical methods used for soil and water analyses for gasoline range, diesel range, and residual range petroleum hydrocarbons must be:a)for gasoline range hydrocarbons, EPA method 8015 Modified, and integrated from the beginning of C6 to the beginning of C10 and a boiling point range between approximately 60oC and 170oC;b)for diesel range hydrocarbons, EPA method 8100 Modified, and integrated from the beginning of C10 to the beginning of C25 and a boiling point range between approximately 170oC and 400oC;c)for residual range hydrocarbons, the analytical measurement for the total concentration of petroleum hydrocarbons as derived by using EPA method 418.1, minus the concentration quantified in the gasoline range and diesel range (the ranges listed in a) and b) above).2.Subject to Condition 3, this waiver becomes void on the effective date of Underground Storage Tank Regulations containing updated procedures for AK 101, AK 102, and AK 103 hydrocarbon analyses revised after November 3, 1995. Thereafter, or beginning August 1, 1996, whichever occurs first, the recipient of this waiver must conform to the requirements of those updated procedures or to the analytical procedures promulgated in the November 3, 1995 version of the regulations, whichever is applicable.3.This waiver becomes void if the Department, in its discretion, issues a 30 day notice of its intent to revoke this waiver.4.Because use of the new analytical methods may increase yields from analyses, the person or firm receiving this waiver is advised to plan for the transition to the new methods when considering actions involving the specific project listed above.cc: Marliyn Plitnik DOWL Engineers.

Action Date: 11/8/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Decision Document signed by Army (Richard Stouder Colonel, Garrision Commander). This decision document describes the rationale for No Further Remedial Action Planned (NFRAP) at Bldg 979, Fort Richardson, Alaska. This alternative was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), and Army Regulation 200-1, as applicable.Located on Fifth Street, Bldg 979 was a troop motor pool fueling station. Listed in the Fort Richardson-State of Alaska, Department of Environmental Conservation (ADEC) Underground Storage Tank (UST) Compliance Agreement for upgrade or removal, the Directorate of Public Works removed USTs 40 and 41 in July 1993. Samples taken during the removal detected diesel range organics (DRO) up to 1420 parts per million (ppm). The release investigation of the site consisted of five (5) soil borings. Samples collected from these borings contained DRO ranging up to 700 ppm. The site was recommended for closure and ADEC concurrence was received on 13 November 1996.This decision document was developed by the Directorate of Public Works, Environmental Resource Department with concurrence from

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

the Alaska Department of Environmental Conservation (ADEC). Attached is the letter of concurrence from ADEC.Residual levels of contamination remaining at the site are [above] below the ADEC level C clean-up standard of 500 ppm for DRO as specified in 18 AAC 78. These levels are not anticipated to pose any risk to site workers or the general public through either ingestion, inhalation, dermal contact or migration to the groundwater table.Evaluation of remedial alternatives was not conducted for this site. While a release investigation was necessary, the level of contamination remaining at the site does not require any corrective action or remediation. Because this remedy will not result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a five year review will not apply to the this action.

Action Date: 11/13/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received on November 1, 1996, the October 1996 Final RI report for Bldgs. 47-203, 955, 975, 979, 45-070, and 28-008. Based on the data presented in the document, ADEC agrees that Bldgs. 955, 975 and 979 do not require further investigation or remedial action. (NOTE: DRO up at 1,420 mg/kg may be present in soil-this will be verified by DPW). These closures do no preclude ADEC from requiring further remediation or site investigation if new information indicates there is previously undiscovered contamination from the underground storage tanks or exposures which cause an unacceptable risk to human health, welfare, or the environment. Buildings 47-203, 45-070 and 28-008 will be addressed under a different letter. The following guidance is applicable to soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for transport and disposal off site from where it was generated. If the following criteria are met, ADEC approval for off site transport of soil is not required and institutional control(s) will not be attached to the property: 1. the soil meets the most stringent 18 AAC 75.341 Method Two, Table B1 and B2 cleanup levels for the contaminant(s) of concern.NOTE: this does not apply to the Arctic Zone and only applies to those chemicals that have established 18 AAC 75 cleanup levels.2. the soil may only be disposed of in an upland (not wetland) non-environmentally sensitive location in the Under 40??? or Over 40??? annual precipitation climate zone; and 3. the soil is not placed within 100 feet of water wells, surface water, and drainage ditches. The off site transport or disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval for that action shall be made by the ADEC Section Manager.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by the ADEC and the U.S. Army. Purpose of the agreement is to bring Fort Richardson into compliance with Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation,

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

and corrective action (remediation) associated with USTs at Fort Richardson (excluding the Alaska Department of Military and Veterans Affairs and Army National Guard USTs). Listed in Attachment D requiring either an upgrade or closure for USTs 40 and 41.

Action Date: 10/31/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Remedial Investigation Report for Buildings: 47-203, 955, 975, 979, 45-070, and 28-008 received (DOWL/Ogden Joint Venture). Four borings to maximum depth of 30' bgs were installed. Soil samples collected during the RI were analyzed for BTEX, GRO, DRO, and lead. Two soil samples were analyzed for SVOCs and TOC.DRO was detected in borehole AP-3678 in concentrations ranging from 17 to 700 mg/Kg with the highest concentration at the surface. Benzene was detected in two samples at concentrations of 0.03 and 0.18 mg/Kg at eight sampling locations (Current cleanup level 18 AAC 75 2012 is 0.029 mg/kg for migr to GW) with the highest concentration detected at five feet. DRO was detected in one sample in borehole AP-3681 at a concentration of 480 mg/Kg at the surface.The sampling results for Building 979 indicate soil contaminated with diesel range organics inexcess of 100 mg/Kg were found at AP-3678 at one and five feet (700 mg/Kg and 200 mg/Kg, respectively), AP-3681 at the surface with a value of 480 mg/Kg, and AP-3682 from a depth of five feet bgs. The two highest GRO levels were detected at AP-3678 at five feet (52 mg/Kg) and at AP-3682 at a depth of 25 feet (45 mg/Kg). All other GRO sample results were less than 10 mg/Kg. The lead sampling results were around established background levels.The matrix score for Building 979 is 24, or Category C. This requires the following soil clean-up levels:DRO 1,000 mg/KgGRO 2,000 mg/kgTPH(TRPH) RRO 2,000 mg/kgBenzene 0.5 mg/kgBTEX 50 mg/kg. No groundwater was encountered at this site. The contaminated soil present at this site is most likely due to the asphalt paving or surface oiling. It is recommended a letter be submitted to the ADEC requesting no further action at this site, since current contaminant levels are below clean-up criteria and the sources have been removed.

Action Date: 1/31/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received. One boring (SO031-SB01) will be drilled in the vicinity of historical sample locations AP-3678 & AP-3681 to a depth up to 100' bgs (the approximate depth to the water table) to investigate the area of residual contamination & characterize the nature of the contamination.Soil samples will be collected every 5??? from ground surface to 25??? bgs & every 10??? from 25??? bgs to 100' bgs. If the boring encounters GW, HydroPunch GW samples will be collected from just below the water table to confirm contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, monitoring wells may be installed in the soil borings. GW samples will be analyzed for GRO, DRO, RRO, VOCs (petroleum-related), PAHs, VPH, & EPH. Observations of odor, turbidity, & color will be recorded on the GW sample collection log.SO031-SB02 will be drilled to a depth up to 50 feet bgs in the vicinity of historical sample locations AP-3678 & AP-3681, to collect additional source area data. Soil samples will be collected every 5??? to 50 feet bgs. These proposed

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new borings are located where the vadose zone is interpreted to be contaminated. If the boring reaches the maximum vertical extent of the soil contamination (based on PID screening, visual observation, & evidence of odor), two samples will be collected beyond the last evidence of contamination, & the boring will be terminated. Both borings will be drilled to at least 25??? bgs.Three additional borings will be drilled to a depth of 25??? bgs E, W, & N of the source area, to define the lateral extent of soil contamination. Soil samples will be collected every 5 feet from ground surface to 25??? bgs.Based on field observations & the results of the PID screening, soil samples within each 5-foot interval throughout the boring will be selected for lab analyses. All soil samples (up to 26 primary samples) will be analyzed for GRO, DRO, RRO, & VOCs (petroleum-related). To facilitate HRC calculations, a subset of soil samples will be collected & analyzed as follows:??? Approximately 3 samples (including quality control [QC] samples) from more heavily contaminated soils (as observed at the time of sampling based on PID readings, visual observation, & evidence of odor) will be analyzed for PAHs, VPH, & EPH.??? Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for foc.??? Approximately one sample representative of the site subsurface conditions will be analyzed for bulk density, grain size distribution, specific gravity, & moisture content.If potential risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern & associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated. If excavation is the selected alternative, the contaminated soil will be excavated up to a depth of 25’ bgs, where possible, & thermally treated at Alaska Soil Recycling, Inc. (ASR). The following decision rules will be used to determine whether excavation is necessary:??? The target of the excavation will be soil contamination in the upper 15’ bgs, with concentrations > approximately 10,250 mg/kg DRO.??? Soil contamination creating unacceptable vapor intrusion or migration-to-GW risk up to 25’ bgs will be excavated if soil contamination below 25 feet bgs does not create unacceptable risk.If excavation is selected as the remedial approach, field screening & soil sampling will be performed in accordance with ADEC Field Sampling Guidance (ADEC, 2010). During excavation, the PID will be used to screen soil using a level of 20 ppm to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yds of soil. SOP-05 (Appendix B in USAF, 2012a) provides the methodologies to be followed for field screening. The dirty & clean soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles & submitted for lab analysis of GRO, DRO, RRO, VOCs (petroleum-related), & PAHs at a rate of 2 for the first 50 cy of stockpiled soil with one additional sample for each additional 50 cy.After the excavation has been completed, soil from the sidewalls and bottom of the excavation will be field screened before sample collection for lab analysis. Sidewall field screeningsamples will be collected at a rate of one sample for every 10 linear feet of excavation, and field screening of the excavation bases will be conducted at a rate of 10 samples for the first250 sq ft of excavation plus one additional sample for each additional 100 sq ft of excavation.

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

Action Date:	1/28/2015
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Consistent with the July 24, 2009 Site Closure memorandum (S. Bainbridge), staff granted a method two cleanup complete determination based on confirmation results which showed DRO & RRO are below cleanup levels. Memo: ???Soil below health-based concentrations: A Cleanup Complete (without ICs) is applicable when migration to GW is not a complete pathway as determined by 18 AAC 75.350; or if an approved method 3 or 4 soil cleanup level results in residual soil contamination is between method 2 Migration to GW & health-based concentrations. However ICs may be needed if DEC determines that there is a future probable risk for contaminated soil to be placed in an environmentally sensitive area or surface water; or there is potential for migration of contaminants from polluted soil to surface water that could result in a violation of Alaska water quality standards (18 AAC 70).???The cleanup level for soils at SO031 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs).The cleanup level for soils at SO031 containing RRO contamination is 10,000 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). GW was not encountered in the borings advanced in June & July 2013 prior to termination at 25 feet bgs. Taking into consideration the photoionization detector (PID) data, the depth to GW estimated at around 100 feet bgs, & the fact that analytical data for soils samples collected at depth are below project screening levels, impacts to GW are unlikely.In 2014, approximately 120 tons of petroleum-contaminated soil was excavated. & transported to ASR. The confirmation soil samples for DRO & RRO were all below Method Two cleanup levels. Residual concentrations of DRO & RRO in soil are below the Method Two cleanup levels of 10,250 &10,000 mg/kg, respectively. The remaining concentrations in soil at SO031 meet regulatory risk standards for the current industrial & hypothetical residential exposure scenarios.An ecoscoping form was completed for SO031 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed & that the SO031 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that SO031 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for SO031 in the Contaminated Sites Database, subject to the following standard conditions.Standard Conditions1.Any proposal to transport soil or GW off-site from SO031 requires ADEC approval in accordance with 18 AAC 75.325. A ???site??? [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. 2.Notations of these requirements shall be made on the Environmental Restoration map/ Base General Plan which will show up during a dig permit review/work

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

clearance request process.

Action Date: 1/28/2015
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 1/12/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Remedial Action Completion Report received for review & comment. Based on the results of the 2014 remedial design borings, two 20-by-20-foot-square excavation areas were proposed: a western excavation centered at SO031-SB04 with a proposed depth of 10 feet bgs (approximately 150 bank cubic yards [bcy] of soil), and an eastern excavation centered at SO031-SB15 with a proposed depth of 5 feet bgs (approximately 75 bcy of soil).Since the ACL of 11,271 mg/kg was calculated based on the aromatic & aliphatic fractions in soil samples, ADEC required that confirmation samples be analyzed for aromatic & aliphatic fractions using Northwest Extractable & Volatile Petroleum Hydrocarbon (EPH/VPH) analytical methods if the ACL was going to be used. However, because the relatively long laboratory turnaround time for EPH/VPH analyses would significantly delay backfilling of the excavation, USAF & ADEC agreed at the June 25, 2014, scoping meeting that excavation confirmation soil samples with concentrations of DRO & RRO below 10,250 & 10,000 mg/kg, respectively (18 AAC 75.341(d) Method Two, Table B2 ingestion cleanup levels), would allow the site to achieve UU/UE (USAF, 2014b), & aromatic & aliphatic analyses would not be required.In the western excavation, which was approximately 20 feet by 20 feet (400 square feet) by 8 feet deep, three floor samples were collected (SO031-CS001 through SO031-CS003). One sidewall sample was collected from each of the four walls at locations with the highest PID readings & stained soil (SO031-CS004 through SO031-CS007). DRO & RRO concentrations from the three floor samples & the northern & western walls were below cleanup levels. DRO & RRO concentrations from the eastern wall sample (SO031-CS004) & southern wall sample (SO031-CS007) exceeded the cleanup level.On the southern side, the asphalt was cut by a saw, & the excavation was extended to the south by approximately 2 feet. An additional sidewall confirmation sample (SO031-CS015) was collected, & concentrations of DRO & RRO were less than the cleanup level. The eastern side was overexcavated by an area measuring 3 by 8 feet horizontally at 2.5 feet bgs. The sidewalls & floor of the overexcavated area were screened, & two sidewall samples (SO031-CS016 & SO031-CS017) & one floor sample (SO031-CS018) were collected.The northern sidewall sample (SO031-CS017) results exceeded the cleanup levels; however, because of the proximity to the abandoned stormwater line, additional contaminated soil was hand excavated & placed in two 55-gallon drums. The northeastern corner of the excavation was field screened, & a final sidewall confirmation sample (SO031-CS019) was collected; DRO & RRO concentrations in the final confirmation sample were lower than the cleanup levels.In the eastern excavation, which was approximately 21 feet by 12 feet (252 square feet) by 4 feet deep, three floor samples were collected (SO031-CS012 through SO031-CS014). One sidewall sample was collected from each of the four walls at locations with the highest PID readings & stained soil (SO031-CS008 through SO031-CS011). The DRO & RRO concentrations from

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

all samples were less than the cleanup levels. No overexcavation was required in the eastern excavation.Approximately 28 bank cubic yards (bcy) of non-contaminated soil was stockpiled onsite. The stockpile was field screened, & three confirmation samples (SO031-SP001 through SO031-SP003) were collected from the three locations with the highest PID reading. DRO & RRO concentrations were less than the cleanup levels; therefore, the soil was reused as backfill. USAF has determined that SO031 is considered suitable for a ???Cleanup Complete??? designation based on the following information:Residual concentrations of DRO & RRO in soil are below cleanup levels of 10,250 & 10,000 mg/kg, respectively, & allow for UU/UE. The remaining concentrations in soil meet regulatory risk standards for the current industrial & hypothetical residential exposure scenarios.Groundwater was not encountered during the investigation. The maximum vertical extent of DRO at the site is approximately 85 feet above the water table, which is estimated at approximately 100 feet bgs.No potential risks to ecological receptors were observed, & petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 979 SO031 USTs 40 & 41 USTA 2 P
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	SoilSoil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported
Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 979 SO031 USTs 40 & 41 USTA 2 P
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	SoilSoil
Control Type:	No ICs Required
Control Details Description1:	Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

Inst Control:

Hazard ID:	1792
Facility Status:	Cleanup Complete
Action:	Institutional Control Record Removed
Action Date:	1/28/2015
File Number:	2102.26.023

Q67
West
1/4-1/2
0.468 mi.
2469 ft.

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY
WAREHOUSE STREET, CIRCLE DR. & 5TH ST., FORMERLY FORT RICHAR
FORT RICHARDSON (JBER), AK 99505

Database(s): SHWS, INST CONTROL
EDR ID Number: S110144173
EPA ID Number: N/A

Site 1 of 2 in cluster Q

Relative: Lower
Actual: 322 ft.

SHWS:

File Number:	2102.26.018
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.267208
Longitude:	-149.692660
Hazard ID:	1791
Problem:	Diesel range petroleum hydrocarbon contamination was encountered during the removal of a registered UST. All petroleum contamination has been dealt with to the maximum extent practicable, no further action required or planned. Last staff assigned was Howard. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/28/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Staff commented on the ICs report which included this site. ADEC does not concur that the Army does not need to conduct a five-year review for this site. Hazardous substances remain above levels that would allow for unlimited use and unrestricted exposure. Please refer to the potential leaching assessment included in the Draft Release Investigation Report June 1994 where the Army proposed an alternative cleanup level for diesel range organics at 16,000 mg/kg. ADEC concurred with the proposed cleanup level on July 25, 1994. As an alternative cleanup level, ADEC expects the Army to impose institutional controls upon the contaminated soils at the site to reduce exposure of workers to contamination at the site.Also, ADEC expects any excavated soils, which are contaminated to be treated and disposed of in accordance with 18 AAC 78 Underground Storage Tank regulations. Hazardous substances remain at the site above levels, which would allow for unlimited use and unrestricted exposure.A review will need to be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/14/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

Action Description:	Institutional controls report received for several sites which include this building. DRO was detected up to 16,000 mg/kg, a leachability study was used to obtain site closure (NFA actually). This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health or the environment. ADEC requests any monitoring wells installed as a part of the investigation be added to the Post-wide monitoring network established under the CERCLA Federal Facility Agreement. ICs tracked under Fort Richardson Master Plan (GIS).
Action Date:	8/30/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2664 N latitude -149.6943 W longitude
Action Date:	8/23/1993
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	Site Assessment report received. On July 17. 1993. Oil Spill Consultants performed a site assessment and collected samples during the removal of an underground storage tank (UST) at Building 956 located at Fort Richardson. Alaska. Fort Richardson is owned by the United States Federal Govemment and is under the United States Department of Defense.Mr. Randy Easley (Senior Engineer for Oil Spill Consultants) collected three samples from thesoil which previously contained the UST at Building 956. One sample was collected from thesoil overburden. One background sample was also collected. These samples were submitted to Commercial Testing & Engineering Co. (formerly Chemical & Geological Laboratories of Alaska) for diesel range hydrocarbon and total petroleum analysis using EPA Methods 8100M and 418.1. respectively.The laboratory results indicate that the soil under and around the UST is heavily contaminatedwith diesel range hydrocarbons. These results are supported by the strong petroleum hydrocarbon odor emitted as the soil was excavated. Additionally. the soil under the UST appeared to be saturated with diesel fuel.Under guidelines published by the Alaska Department of Environmental Conservation. the maximum allowable level of diesel range hydrocarbons (from a spill or leak) that can remain without cleanup is 2,000 mg/kg. Since the diesel range hydrocarbons were 12,400 mg/kg in the soil under the UST for Building 956, cleanup is required.It is recommended that the following steps be implemented for Building 956:- Perform additional site sampling to identify the extent of ground contamination.- Excavate all contaminated soil. ('Ft'fe soil should be placed on a 20 mil plastic liner be and covered as required by the Alaska Department of Environmental Conservation.)- Backfill the excavated area with clean soil.Visual inspection and laboratory analysis indicate the soil under and around the storage tankfor Building 956 is significantly contaminated with petroleum hydrocarbons. The AlaskaDepartment of Environmental Conservation has established 2,000 mg/kg as the maximum level of diesel range hydrocarbons that can remain in soil from leaking underground storage tanks without any cleanup actions. Since the diesel range hydrocarbon contamination for the Building 956 tank ranges from 1,370 to 12,400 mg/kg, cleanup action is required for the excavation created by tank removal.The diesel range hydrocarbon level

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

for the soil stockpile created during the excavation was 556 mg/kg. By comparison, it was 95.4 mg/kg for the project background sample. In view of this, it is recommended that the excavated soil be cleaned using procedures approved by the State of Alaska.The total petroleum hydrocarbon (TPH) for the project samples ranged from 1,370 to 17,800 mg/kg with the maximum level in the soil one foot below the tank impression. The TPH level for the background sample was 2,690 mg/kg.In view of the heavy petroleum contamination resulting from the UST at Building 956, soilcleanup is required.

Action Date: 8/12/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the draft UFP-QAPPWS 17Sampling Design & RationaleResults of the HRC calculations for petroleum hydrocarbons are applicable only for those alternative cleanup levels allowed by regulation for Method Three - 18 AAC 75.340(e): Under method three, a responsible person may propose a site-specific alternative cleanup level that modifies(1)the migration to groundwater or inhalation levels in Table B1 of 18 AAC 75.341(c) or Table B2 of 18 AAC 75.341(d), based on the use of approved site-specific soil data, & the equations set out in the department???s Cleanup Levels Guidance, dated June 9, 2008, adopted by reference; the alternative cleanup level that then applies at the site for a hazardous substance is the most stringent of the Table B1 direct contact or Table B2 ingestion level & the site-specific calculated levels for inhalation or migration to groundwater; (2)the migration to groundwater levels in Table B1 or Table B2 based on approved site-specific soil data & an approved fate & transport model that demonstrates that alternative soil cleanup levels are protective of the applicable groundwater cleanup levels under 18 AAC 75.345 if the alternative migration to groundwater cleanup level does not exceed(A) the direct contact level in Table B1 or the ingestion level in Table B2;(B) the inhalation level in Table B1 or Table B2; or(C) a site-specific inhalation level calculated under (1) of this subsection; the level that applies at the site is the most stringent level; or(3)the direct contact level or the inhalation level in Table B1 or the ingestion level or the inhalation level in Table B2 based on use of commercial or industrial exposure parameters listed in Appendix B of the Cleanup Levels Guidance, adopted by reference in (1) of this subsection, if the department determines that the site serves a commercial or industrial land use, & if the alternative direct contact level or inhalation level does not exceed the migration to groundwater cleanup level in Table B1, the alternative ingestion level or inhalation level does not exceed the migration to groundwater cleanup level in Table B2 or the alternative level does not exceed a site-specific migration to groundwater level calculated under (2) of this subsection.The Site Cleanup Rules for Method Three do not allow for changes to Table C groundwater cleanup levels or calculation of risk based groundwater cleanup levels (???exposure point concentrations???). ADEC will not recognize the use of HRC for calculation of risk of groundwater contamination at TU074 or any site on JBER-E or JBER-R, except through the use of Method Four [risk assessment as allowed by 18 AAC 75.325(h)]. Therefore, Table C Groundwater Cleanup levels will apply at all JBER sites with no alternative or ???risk-based??? groundwater cleanup levels allowed via Method Three (e.g. HRC). Where the HRC guidance & user manual

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

conflict with existing promulgated regulations, the regulations will be applicable & supersede or override any guidance, manuals or technical memoranda. Site Specific Sampling PlanJBER may collect one foc soil sample for whatever purpose it desires, however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected & analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four (ADEC, 2008). If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 ADEC Guidelines for TOC Sample Collection must be followed. For example: 4) TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.Please refer to the TOC sampling guidance for additional requirements.

Action Date: 8/1/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulativerisk estimate to exceed the risk standard.One boring will be drilled at former location AP-3377 to resample the soil at the location anddepth where previous sampling showed exceedances of the migration to groundwater criteriafor DRO and to collect source area soil samples for PAHs, VPH, and EPH analysis.? One boring will be drilled west of former sample 93FRB956-RB-14-1 to assess the lateralextent of contamination.? Up to approximately 10 primary soil samples will be collected and analyzed for GRO, DRO,RRO, PAHs, and petroleum-related VOCs (BTEXN). One of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for foc.? If either boring is

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

drilled to groundwater, a groundwater sample will be analyzed forpetroleum-related VOCs, GRO, DRO, RRO, PAHs, VPH, and EPH.

Action Date: 7/25/1995
Action: Report or Workplan Review - Other
DEC Staff: Jennifer Roberts
Action Description: Staff reviewed and commented on the June 1994 Draft Release Investigation report, Bldg 956, Former UST 104 Contract No. DACA85-93-D-0013 Delivery Order No. 0007The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on June 16, 1994, a copy of the above referenced report. ADEC will consider tank104 closed out based on the data and the conservative assumptions used in the leaching modelanalyses presented in the report. For your reference, ADEC is currently using the SESOILS modelto evaluate leaching assessment models. Closing out this site does not preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that previously undiscovered contamination or exposures lead to groundwater contamination above the applicable water quality criteria (18 AAC 70) or pose a risk to human health, wildlife or the environment, then future investigation and/or remedial actions will be required by ADEC.

Action Date: 7/25/1994
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. Area noted on Post Management plans and maps as an area requiring ICs and waste management and disposal at a permitted facility if soil were to be excavated at any time in the future.

Action Date: 7/25/1994
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Jennifer Roberts sent letter to Army-RE: June 1994 Draft Release Investigation report, Building 956, Former UST 104 Contract No. DACA85-93-D-0013 Delivery Order No. 0007. ADEC has received on June 16, 1994, a copy of the referenced report. ADEC will consider tank 104 closed out based on the data and conservative assumptions used in the leaching model analyses presented in the report. For your information, ADEC is currently using the SESOILS model to evaluate leaching assessment models. Closing out this site does not preclude ADEC from requesting further remediation or site investigation at a later date. If new information indicates that previously undiscovered contamination or exposures lead to groundwater contamination above the applicable water quality criteria (18 AAC 70) or pose a risk to human health, wildlife or the environment, then future investigation and/or remedial actions will be required by ADEC.

Action Date: 7/21/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC Report received for review and comment.The NAPL source area at Building 956 associated with former UST 104 is defined by

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

DROconcentrations above screening levels. Current data indicate DRO within the soil source arearanges up to 5,370 mg/kg and covers a lateral extent of approximately 40 by 50 feet (Figure 4-3).Sample results from within the former tank footprint that were collected in 1993 and 1994 arenot considered representative of current conditions because they are more than 19 years old andthe former tank footprint was re-sampled in 2013. The highest concentration representative ofcurrent conditions was recorded in boring TU074-SB06 (located within the former excavationfootprint) at a depth of 25 to 30 feet bgs. Contamination extends from 10 to 30 feet bgs(Figure 4-6) for a total of approximately 40,000 cubic feet (1,500 cubic yards) of impacted soil.No other compounds were detected above screening levels. Data indicate that contamination has not reached groundwater. Groundwater was measured at approximately 138 feet bgs (greater than 105 feet below the depth of contamination at Building 956) based on groundwater sampling conducted in November 2013 at monitoring well AP-3375 (located approximately 400 feet north-northeast of Building 956 at Building 952). A nondetect (reported at the LOD) above the project screening level was reported for one result for benzene in soil at Building 956. This sample had a low percent solids (Table 4-6). In 2013,12 samples (including three duplicates) were submitted from the three TU074 source areas; ofthese, nine had nondetect results with LODs below the project screening level. Benzene has notbeen detected in any samples from the historical or 2013 site characterization samples and is notconsidered a COPC. The NAPL source area at Building 956 associated with former UST 104 is defined by DROconcentrations above screening levels. Current data indicate DRO within the soil source area ranges up to 5,370 mg/kg and covers an area of approximately 40 by 50 feet. Contamination extends from 10 to 30 feet bgs for a total of approximately 1,500 cubic yards of impacted soil. No other compounds were detected above screening levels.The potential future indoor air exposure pathway (vapor intrusion) is considered insignificantbecause volatile petroleum-related compounds in soil were not detected above the most stringent 18 AAC 75.345 Table B1 cleanup levels.

Action Date: 6/3/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment Report for UST 104 received. EMCON Alaska, Inc. (EMCON) was retained by the U.S. Anny Engineer District, Alaska (COE), under Delivery Order No. 0007, Contract No. DACA85-93-D-0013, to conduct a subsurface investigation in support of Release Investigations in the vicinity of former underground storage tank (UST) 104 at Building 956, Fort Richardson, Alaska.The proposed soil boring locations were selected to define the vertical & horizontal extent of impact associated with UST 104. 8 soil borings were advanced & sampled at 5??? intervals beginning at the surface to a maximum depth of 32??? bgs. GW was not encountered during drilling. Soil samples were collected from the borings & submitted for lab analysis. Selected soil samples collected during the 1994 sampling program were analyzed using EPA Methods 8260 for VOCs, EPA 8100 Modified for DRO, EPA Method 9060 for total organic carbon (TOC), & for biofeasibility parameters.Proposed cleanup levels for site soil were obtained for VOCs (other than petroleum hydrocarbons) from the EPA Region 10 Risk-Based Cleanup Levels (EPA, 1992). The proposed cleanup levels for BTEX, GRO, DRO, & RRO were based on the Matrix

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

Score Sheet provided in the ADEC UST Regulations (ADEC, 1991).Based on the results of the February 1994 investigation at this site in the vicinity of former UST 104, remaining site soils exceed ADEC cleanup criteria for petroleum hydrocarbons. EMCON conducted an exposure assessment for the development of alternative cleanup levels (ACLs) using the EPA numerical leaching model multimedia contaminant fate, transport, & exposure model (MMSOILS). Results of the assessment indicate that the potential for human & ecological receptors to be exposed to contaminants in the impacted zone located at Building 956 is very low. The results of the assessment & the findings of the release investigation indicate that GW is not being influenced by DRO present in the contaminated zone at this site.The cooler temperature (6.3&176;C) for the cooler containing samples 94FRU187SL, 94FRU189SL, 94FRU190SL, 94FRU193SL, 94FRU195SL, 94FRU206SL, 94FRU208SL, 94FRU200SL, 94FRU202SL, 94FRU201SL, & 94FRU711RB exceeded the recommended 4&176;C requirement. All samples, except 94FRU201SL, were analyzed for EPA Method 8100M (DRO), & samples 94FRU206SL & 94FRU201SL were also analyzed for ASTM Method D4129-82 Modified for TOC, & EPA Methods 350.3M, 351.4M, 353 .2M, 365.3M, & 9045 for inorganics. EPA Method 305.1 for ammonia ion salicylate was requested for samples 94FRU206SL & 94FRU201SL, but not analyzed. All results were non-detect for these target analytes except for DRO in samples 94FRU187SL (16,000 mg/kg), 94FRU206SL (6,000 mg/kg), & 94FRU200SL (252 mg/kg). Low concentrations of DRO may not have been detected due to the elevated cooler temperature. The cooler temperature (15 .7 &176;C) for the cooler containing samples 94FRU298SL & 94FRU300SL also exceeded the recommended requirement. These samples were analyzed for EPA Method 8100M (DRO) & EPA Method 8270 (semi-volatiles). All analytical results were reported as non-detect. Low concentrations of DRO may not have been detected due to the elevated cooler temperature.15 soil samples were submitted from the 8 borings for DRO analysis. Five samples contained detectable levels of DRO. The levels ranged from 5.4 mg/kg in sample 94FRU257SL to 16,000 mg/kg in sample 94FRU187SL [AP3377(FRU-30)] at approximately 15??? bgs. Detected DRO concentrations exceeded the ADEC soil target cleanup level of 1,000 ppm in two samples (94FRU206SL & 94FRUI87SL). 94FRU206SL is AP-3378 (FRU-31) sample results for DRO were 6,000 mg/kg at approximately 15??? bgs. Based on the results of this subsurface investigation, the investigation at Building 952 (approximately 400??? NE of this site), & the modeling results, potential impacts to GW are unlikely. GW at Building 952 was encountered at approximately 144??? bgs, & the analytical information collected in April 1994 indicated that VOCs, & metals were not detected in the GW. DRO were detected in GW at Building 952 at 140 ug/L. No GW was encountered during subsurface investigation at Building 956. The results of the modeling conducted at Building 952 & 956 indicate that the impacted soils identified at these buildings would not be expected to impact GW through hydraulic loading. The depth to GW for Building 956 was assumed to be approximately 145??? bgs based on the depth to water observed in monitoring well AP3375, which is located near building 952.EMCON recommends that remedial action not be performed at this site and that the sitebe considered for closure.

Action Date: 6/16/1994
Action: Update or Other Action
DEC Staff: Louis Howard

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

Action Description:	Release investigation - Soil samples taken during removal contained diesel range organics (DRO) ranging up to 12,100 milligrams per kilograms (mg/kg). Eight (8) soil borings were installed at the site in 1994 as part of a release investigation. Samples from these borings, advanced to 32 feet below ground surface, contained DRO at up to 16,000 mg/kg. A soil leaching potential assessment was conducted and indicated that contamination at this site would not pose a risk to groundwater at the site.
Action Date:	6/11/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 72769 name: auto-generated pm edit Ft. Rich Bldg. 956 UST 104
Action Date:	5/21/2015
Action:	Cleanup Complete Determination Issued
DEC Staff:	Louis Howard
Action Description:	Cleanup complete determination provided for TU074. The cleanup level for soils at TU074 containing DRO is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). The cleanup level for soils at TU074 containing GRO is 1,400 mg/kg in the Under 40-inch Zone based on the maximum allowable concentration, ingestion & inhalation pathways within the 0 to 15??? interval below ground surface (bgs). Based on the analytical data for soil samples collected, leachability study results, GW samples collected, depth to GW, modeling using the Hydrocarbon Risk Calculator (HRC), the residual GRO & DRO contamination in soil does not pose a migration to GW concern. The HRC was used to evaluate risk from petroleum contamination at TU074. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, & other compounds dissolved in petroleum???with the intention & purpose of assessing human health risk from this type of contamination. In 2014, a follow-up soil gas study was conducted & the results of the study show no vapor intrusion risk for both residential & industrial scenarios is insignificant. Concentrations of 2-methylnaphthalene in soil gas at 8??? bgs are below ADEC???s shallow soil gas target levels, well-oxygenated soil & the presence of elevated CO2 levels indicate that the subsurface conditions are sufficient to support biodegradation & attenuation of 2-methylnaphthalene. Based on a review of the environmental records, ADEC has determined that TU074 has been adequately characterized & has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU074 in the Contaminated Sites Database.
Action Date:	5/21/2015
Action:	Institutional Control Record Removed
DEC Staff:	Louis Howard
Action Description:	Institutional Controls have been removed.
Action Date:	4/21/1998
Action:	Site Ranked Using the AHRM

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/23/1993
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Diesel range petroleum hydrocarbon contamination.

Action Date: 11/22/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Notice of Release Letter sent.Notice of Release/Request for Corrective Action, Building 956, UST 104 Facility IDN: 788 Spill : 93-2-1-00-306-61On November 2, 1993, our office received a site assessment report stating diesel rangepetroleum hydrocarbon contaminated soil was discovered during closure of an underground storage tank (tank 104) located at building 956 at Fort Richardson. The tank was registered as a regulated underground storage tank and a closure notice was submitted to the Department, however, it appears the tank may not be regulated under 18 AAC 78. Please check your records to determine whether the cleanup will be conducted under Alaska's Oil and Hazardous Substance Pollution Regulations (18 AC 75) or Alaska's Underground Storage Tank (UST) Regulations (18 AAC 78).In either case, it appears the Army did not notify the Department of the release in a timelymanner. Please note, according to state regulations most releases must be reported within 24hours of discovery. In this case, the tank was removed on July 17, 1993 and no spill reportwas submitted until the site assessment report was received on November 2, 1993. Theclosure notice we received in June indicates USTs were also being removed at buildings 979,952 and 756. To date we have not received site assessment reports or notification of releases for these closures. Please note, according the recently signed UST Compliance Agreement, site assessment report are to be submitted within 60 days of completion of site assessment field work. The Department requests submittal of site assessment reports and any necessary release notifications as soon as possible, since this appear to be in violation of the regulationsand the compliance agreement. Tank 104 was registered as an UST, thus this letter outlines requirements under 18 AAC 78and the compliance agreement between the Amy and the Alaska Department of Environmental Conservation (ADEC). In accordance with 18 AAC 78.220, within 24 hours of discovering a release the owner oroperator must report the release to the Department, take immediate action to prevent furtherrelease and identify and reduce fire and safety hazards. In addition to reporting the release,the owner or operator of the UST must perform Initial Abatement and a SiteAssessment/Release Investigation, in accordance with 18 AAC 78.230.Enclosed is a Site

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

Assessment/Release Investigation Summary Form to further assist you inconducting work and reporting the required information. The compliance agreement containsa schedule for submittal of additional work plan. According to that schedule, a draft releaseinvestigation plan should be submitted by no later than March 2, 1994. The release investigation plan should include a schedule for implementing the field work.In addition, upon confirmation of a petroleum release, the owner or operator of the USTmust undertake Corrective Action in accordance with 18 AAC 78.240.Many of the corrective action requirements should conducted during the release investigation,thereby allowing for development and implementation of a remedial action plan during thenext phase of the project.Please include the facility name, facility ID number and the spill number as shown at the topof this letter in all future correspondence and submit reports to:Alaska Dept. of Environmental ConservationSouthcentral Regional Office3601 C Street, Suite 1334Anchorage, AK 99503Attn: John HalversonBased on the information that will be submitted, the Department may request additionalinformation and/or work plans which are determined necessary to respond to this release.Enclosed are copies of a Preliminary Risk Evaluation Form, and a Site Assessment/ReleaseInvestigation Summary Form to help you address this release. You will help satisfy bothstate and federal regulations by following the requirements outlined above.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU074 Bldg 956 UST 104 USTA 2 Party
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported
Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU074 Bldg 956 UST 104 USTA 2 Party
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

Inst Control:

Hazard ID:	1791
Facility Status:	Cleanup Complete

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY (Continued) **S110144173**

Action: Institutional Control Record Established
Action Date: 7/25/1994
File Number: 2102.26.018

Hazard ID: 1791
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 5/21/2015
File Number: 2102.26.018

Q68
West
1/4-1/2
0.469 mi.
2478 ft.

JBER-FT. RICH BLDG 952 USTS 180 & 181 **LUST** **S122436120**
CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 2 in cluster Q

Relative:
Lower

Actual:
322 ft.

LUST:
Facility Name: JBER-FT. RICH BLDG 952 USTS 180 & 181
Facility Status: Cleanup Complete
Record Key: Not reported
File ID: 2102.26.076
Oname: U.S. Air Force
Lat/Lon: 61.26718 -149.6927
Lust Event ID: Not reported
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

69
WSW
1/4-1/2
0.472 mi.
2490 ft.

JBER-FT. RICH TU117 FORMER BLDG 772 UST 130 FFA **SHWS** **S104892952**
5TH & D STS. FAC ID 0-00788 FBKS-MORSE GEN. PLANT, FORMERLY **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
312 ft.

SHWS:
File Number: 2102.26.009
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Active
Latitude: 61.259653
Longitude: -149.692394
Hazard ID: 2766
Problem: Leaking underground storage tank up to 15,000 mg/kg DRO at 30'. Groundwater impacts unknown. UST Facility ID 788. Site W008.EPA ID: AK6214522157This site is the future location of an Army HQ Facility that is part of the Maneuver Enhancement Brigade (MEB) Complex. The MEB Complex will include the proposed HQ Facility Building, Company Operations Facility (COF), barracks, and associated facilities. The proposed HQ Facility Site is located near the northwest comer of D Street and 5th Street on JBER-Richardson and encompasses the area fonnerly occupied by Building 772.Building 772 was a standby diesel generator plant that was demolished during September 2011 along with the removal of Tank 113, a 20,OOO-gallon underground storage tank (UST).Additional USTs, electrical transfonners, and other buildings have also been removed from the Building 772 site during the past

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SO-plus years. Contaminants of potential concern (COPC) in soil at the site include diesel-range organics (DRO), residual-range organics (RRO), polychlorinated biphenyls (PCB), pentachlorophenol, benzo(a)pyrene, carbon tetrachloride, trichloroethene (TCE), and tetrachloroethene (PCE). Formally added to the FFA as a new source area on April 4, 2012.

Actions:

Action Date: 9/8/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The Underground Injection Control (UIC) program at the U.S. Environmental Protection Agency,Region 10, has received the December 2010 Closure Plan Report prepared on your behalf by BristolEnvironmental Remediation Services, LLC (Bristol), along with your letter dated January 25,2011,regarding the removal of a Class V Injection Well at Building 772 located on Joint Base Elmendorf-Richardson, Alaska.The Class V injection well was a wooden log cesspool which received fluids from a septic tankthat was connected to the sanitary line of Building 772. The cesspool and septic tank wereinstalled when the building was constructed in 1952. The septic tank was located approximately27 feet south of the building and was connected to the building with a 4 inch diameter cast ironpipe. The cesspool was connected to the septic tank with approximately 10 feet of pipe.On August 16, 2010, Bristol located and exposed the tops of the outfall pipe, septic tank, andcesspool, which were encountered at approximately 7 feet below ground surface (bgs). Thewood cribbed lids of both the septic tank and cesspool were found to be collapsed and the insideof both were full of wood cribbing, debris, and soil.It was unclear whether any of the floor drains or trench drains located at Building 772 wereconnected to the septic system, therefore soil samples were collected from inside and surrounding the septic tank and cesspool in order to characterize the soil for disposal purposes.The samples were analyzed for the following parameters associated with the fluids stored andused in the building: gasoline range organics (GRO), diesel range organics (DRO), residualrange organics (RRO), volatile organic compounds (VOCs), semivolatile organic compounds(SVOCs), RCRA metals, dioxins, furans, polychlorinated biphenyls (PCBs), and pesticides. Thesoil had detectable levels of PCBs and concentrations of DRO and RRO above 1,000 mg/kg andtherefore it was determined that the excavated soil and debris were to be transported to theColumbia Ridge Landfill, a Subtitle D landfill located in Arlington, OR, for disposal.On September 16, 2010, the septic tank, cesspool, and surrounding soil were excavated.Visually stained soil with a strong diesel odor was encountered a few feet below the bases of the septic tank (at approximately 18-19 feet bgs) and cesspool (at approximately 20 feet bgs). Soil removal was halted at approximately 22 feet bgs because at this point groundwater began toaccumulate in the excavation pit. In total, 163.86 tons of petroleum contaminated soil and debris were excavated and disposed of accordingly.Four confirmation soil samples were collected from the sidewalls of the excavation; two fromnear the former septic tank at 18 and 21 feet bgs and two from near the former cesspool at 18 and 21 feet bgs. Due to the presence of groundwater, soil samples were not collected from the base of the excavation. The samples were analyzed for GRO, DRO, RRO, VOCs, SVOCs, RCRAmetals, dioxins, furans, PCBs, and pesticides. DRO and SVOCs were detected at concentrationsthat exceeded the Alaska Department of Environmental

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Conservation (ADEC) cleanup levels inthe soil samples that were collected at 21 feet bgs.Before backfilling the excavation with clean soil, the outfall pipe was cut approximately 8 feetfrom the building's south sidewall. The last foot of the remaining pipe was permanently sealedwith a cement grout.The UIC program file for this facility has been updated to show that the Class V injection well has been permanently removed from the site. The UIC program understands that Joint Base Elmendorf-Richardson is working with ADEC's Contaminated Sites Program and the EPA Office of Environmental Cleanup to address appropriate next steps to respond to the analytical findings. If additional information becomes available indicating that the injection well closure activities at this site were inadequate, Joint Base Elmendorf-Richardson is required to provide the additional information to the EPA and further efforts may be required in the future. You are also advised that Joint Base Elmendorf-Richardson is responsible for compliance with all other federal, state, or local laws and regulations. Signed, Peter Contreras, Manager, Ground Water Unit

Action Date: 9/4/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: An additional borehole was drilled and a 4-inch groundwater monitoring well was installed in1998 (USACE (US Army Corps of Engineers). 1998 (November). EM 1110-1-4000, Engineeringand Design - Monitoring Well Design, Installation, and Documentation at HazardousToxic, and Radioactive Waste Site). This boring was near the 1997 borehole from which the soil samples with the highest DRO had been collected. Groundwater was observed at 71 feet bgs and the monitoring well was installed to a depth of 78 feet bgs. In 10 of 14 soil samples collected during drilling for monitoring well installation, DRO was detected in 10 of 14 soil samples collected during installation of the well with the highest concentration (5,430 mg/kg) in a sample collected from a depth of 25 feet bgs. Groundwater samples collected from the well contained DRO at a concentration (3.5 mg/L) exceeding the cleanup level (1.5 mg/L). The well is still located at the site but is not part of an active monitoring program.

Action Date: 9/30/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Bristol (Bristol Environmental Remediation Services, LLC). 2010 (December). Class V Underground Injection Control Closure, Building 772, Fort Richardson, Alaska Closure Plan Report.In September 2010, Bristol Environmental Remediation Services, LLC (Bristol), on behalf ofJBER performed a Class V Underground Injection Control closure at Building 772. Activitiesincluded exposing and characterizing the septic tank, cesspool, and adjacent soil; removal,transportation, and disposal of the septic tank, cesspool, tank piping, and adjacent soil;performance of confirmation sampling; and backfilling of the excavation with clean fill.Confirmation soil samples collected from the sidewalls near the base of the excavationindicated concentrations of DRO, 1-methylnapthalene, 2-methylnapthalene, arsenic, andmethylene chloride above ADEC Method Two cleanup levels established in Title 18 AlaskaAdministrative Code (AAC), Chapter 75 (18 AAC 75) (ADEC 2008). Concentrations ofDRO, 1-methylnapthalene, and 2-methylnapthalene were linked to petroleum contaminationonsite, while arsenic was attributed

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to naturally occurring background levels, and methylenechloride was attributed to laboratory contamination

Action Date: 9/29/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: USACE. 2011b (March). Preliminary Site Evaluation, FTR271 Maneuver Enhancement Brigade Complex Phase II, JBER, Alaska. Prepared by Jacobs Engineering Group.Also in September 2010, Jacobs performed a preliminary site evaluation (PSE) at the MEBcomplex sites on behalf of JBER. Activities included 15 soil borings and soil samplecollection at the proposed HQ Facility. Soil borings were advanced to 15 feet bgs. Twoanalytical samples were collected from each soil boring. Although concentrations of arsenic, chromium, and methylene chloride exceeded ADEC Method Two cleanup levels, these concentrations were attributed to naturally occurring background conditions or laboratory contamination (USACE 2011b). Concentrations of DRO, TCE, PCB Aroclor 1260, and dieldrin were also found at concentrations that exceeded the ADEC Method Two cleanuplevels in samples collected from 4 to 14 feet bgs. No groundwater was encountered in any ofthe borings advanced in 2010.

Action Date: 9/24/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the 1st draft of the HHRA received on August 8, 2013. Document received for review on August 8, 2013. An extension to review the report was requested & received with a deadline for regulator comments on September 30, 2013. The Vapor Intrusion model spreadsheet was absent from the original draft report & was received for review on September 9, 2013. The following comments include review of the Vapor Intrusion model spreadsheet.Sec 6.0p. 6-1In the Uncertainties Analysis, Sampling & Analytical Limitations section, suggests the sampling effort conducted under the Interim Removal Action at the Brigade HQ facility is sufficient to conduct a risk assessment. However, the introduction both the Human Health Risk Assessment & of the RI/IRA report, page 1-1, states ???goals were to characterize the environmental conditions, to define the nature & extent of contamination, & to conduct an interim removal of contaminated soil necessary to protect the safety of workers during construction activities.??? The Response to Comments in the Interim Removal Action Report agrees Section 2.1.1, Evaluation of Data Quality, p. 2-7:Please provide a specific justification from the QAPP indicating why various sample results were considered valid when specified quality control procedures were not met, as the designation of less than twice the specified holding time seems arbitrary. P.2-7Secondly, the treatment of contamination in method blanks appears inconsistent with EPA guidance. According to the CLP National Functional Guidelines (EPA 2010), when a blank sample contains detectable levels of organic or inorganic chemicals not considered to be common laboratory contaminants, the result in the primary sample should be positively detected only when the concentration in the sample exceeds 5 times the maximum amount detected in any blank. Samples containing less than 5 times the amount in any blank should considered non-detect, with the blank-related concentration set as the quantitation limit for the sample. If needed, the results of the associated primary samples should be re-qualified & subsequent

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evaluations adjusted as necessary.EPA 2010. National Functional Guidelines for Organic Superfund Data Review. EPA-540-R-08-01http://www.epa.gov/superfund/programs/clp/download/somnfg.pdfSec 2.2 Process of Identification of Chemicals of Potential Concern, p. 2-9 to 2-11The use of a separate screening process to assess the vapor intrusion pathway for contaminants detected in groundwater fails to account for the potential of cumulative exposure, as the initial screening levels do not account for the vapor intrusion pathway. Thus, while VOCs may not pose an unacceptable risk/hazard due to vapor intrusion alone, the cumulative exposure may be unacceptable when combined with additional pathways. Accordingly, all VOCs selected as COPCs in groundwater should be evaluated in the vapor intrusion assessment. In addition, where the screening levels are presented in Appendix B, ???risk-based??? values should clarify whether they were selected from EPA???s Regional Screening Level tables or the ADEC tables of cleanup values.Section 2.3, Derivation of Exposure Point Concentrations, p. 2-11As a clarification, EPA considers the 95 percent UCL on the arithmetic mean as a central tendency estimate of exposure concentration, & recommends it be used in estimates of both central tendency & reasonable maximum exposure, & the text here should be revised accordingly to clarify that use of the UCL is not limited to a RME evaluation.Section 3.2.3, Receptors and Exposure Routes, p. 3-4The discussion in this section lists inhalation of fugitive dust as a complete exposure pathway for residential, onsite workers, and construction workers. However, the subsequent discussion in Section 3.3 presents no further information on the quantification of the inhalation pathway, and it does not appear to have been evaluated. The discussion in Section 3.2.3 should either provide acceptable justification why this isn???t considered a complete exposure pathway, or is considered insignificant, or exposure via inhalation of fugitive dust should be quantitatively evaluated in the subsequent sections.Table 5-1 p. 5-6Table 5-1 is titled as the Summary of Noncancer Hazards and Cancer Risks for Current/Future Indoor/Outdoor onsite workers. However the last line of the table provides a summary calculation risk for Total HI and ILCR for Resident. Please clarify the Total HI and ILCR risks to workers. This issue is repeated on Table 7-1.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/20/1995
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to Army (S. Swearingen) re: Site Assessment Tank 130 Bldg.

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772, Fort Richardson, Alaska August 31, 1995. The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on September 14, 1995, a copy of the referenced report for building 772. ADEC concurs that the level B cleanup criterion was exceeded at tank 130 and will require further investigation to delineate the vertical and horizontal extent of the contamination at the site prior to implementing corrective action. ADEC looks forward to receiving a copy of the workplan for the release investigation with schedules of action for review and comment no later than January 1996.

Action Date: 9/14/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: In 1995, Oil Spill Consultants collected soil samples and performed a site assessment duringthe removal of Tank 130, a 20,000-gallon UST that supplied fuel to operate diesel-poweredelectrical generators situated inside former Building 772. The UST was approximately 2&189; feet below ground surface (bgs) and had no surface dispensers. There was no historical documentation regarding spills or releases relating to Tank 130 although visual inspection showed evidence of surface spills prior to tank removal. Soil samples collected during the tank removal were analyzed for DRO, total petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylenes (BTEX). Petroleum contamination was present at depths between 15 feet and 40 feet below ground surface (bgs).DRO was detected at a concentration of 1,730 mg/kg in soil, exceeding the ADEC Method Two cleanup level (250 mg/kg). Results from a sample of the tank contents confirmed that the tank was used to store diesel fuel(1995 (August 1995 Site Assessment Report. Facility No. 0-00788/Building 772 Underground Storage Tank 130. Fort Richardson, Alaska). During tank removal activities, two empty, crushed, drums of tetrachloroethene (PCE) were discovered. The surrounding soil was sampled, but no PCE contamination was detected.

Action Date: 8/9/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Human Health Risk Assessment report received. Uncertainties arise from limits on the number of locations that can be sampled. The sampling protocol used at TU117, however, was designed to optimize efficiency of the sampling effort & reduce uncertainty by focusing on areas around former process bldgs., storage structures, & potential transfer piping. Sampling appears to be sufficient to show that the contamination is largely limited to soil & GW. Surface water & sediments are not present in the vicinity of the TU117 site. Soil vapor data for VOCs are not available, which introduces uncertainty regarding concentrations & potential for migration to indoor air within the HQ facility. Indoor air data from within the HQ facility are also not available.A further source of uncertainty for noncancer effects arises from use of an effect level in the estimation of an RfD or RfC, because this estimation is predicated on the assumption of a threshold below which adverse effects are not expected. Therefore, an additional uncertainty factor is usually applied to estimate a no-effect level. Additional uncertainty arises from estimating RfD values for chronic exposure from less-than-chronic data. Unless empirical data indicate effects do not worsen with increasing duration of exposure, an additional uncertainty factor is

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applied to the no-effect level in the less-than-chronic study. In summary, the EPA methodology for both cancer & noncancer toxicity evaluation is intentionally designed to be protective. However, the extent to which toxicity values may overestimate toxic potency is not clear, & it is possible that the toxicity values for some compounds may not be adequately protective.Total HI estimates for the indoor/outdoor onsite worker for soil & GW are 0.02 & 0.1, respectively. The COPCs for the soil HI were dioxins/furans, metals, VOCs, & SVOCs. The COPCs for the GW HI were bis(2-ethylhexl) phthalate (BEHP), carbon tetrachloride, chloroform, & TCE. The total HI for all soil & GW for the indoor/outdoor onsite worker is 0.2. The total ILCR estimate summed across all media for the indoor/outdoor onsite worker receptor was 2E-5. The ILCR for soil & GW were 1E-6 & 2E-6, respectively. The COPCs for the ILCR were dioxins/furans, PCBs (Aroclor 1260 only), metals (arsenic only), VOCs, & SVOCs in soils & BEHP, carbon tetrachloride, chloroform, & TCE in GW. Exposure to carbon tetrachloride via vapor intrusion (VI) into bldgs. from GW resulted in an HQ of 2.8E-07 & ILCR of 7.2E-11.The current & future construction worker was evaluated for exposure to soils (ingestion, dermal contact, & inhalation of fugitive dust). Total HI for soils for the construction worker is 0.1. The COPCs for soils are dioxins/furans, metals, VOCs, & SVOCs. The total ILCR for the construction worker is 4E-6. The COPCs for the ILCR in soil are dioxins/furans, Aroclor 1260, metals (arsenic only), VOCs, & SVOCs.Total HI estimates for the future resident for soil & GW were 0.03, & 0.4, respectively. The COPCs for the soil HI were dioxins/furans, metals, VOCs, & SVOCs. The COPCs for the GW HI were BEHP, carbon tetrachloride, chloroform, & TCE. The total HI for soil & GW for the resident was 0.4. The total ILCR estimate summed across all media for the resident was 1E-4. The COPCs for the ILCR were BEHP, carbon tetrachloride, chloroform, & TCE in GW, & dioxins/furans, Aroclor 1260, metals (arsenic only), VOCs, & SVOCs for soil & air. Exposure to carbon tetrachloride via VI into bldgs. from GW resulted in an HQ of 2.8E-07 & ILCR of 7.2E-11.Total HIs for contaminants in soil & GW are less than 1 for the current/future indoor/outdoor onsite worker, current/future construction worker, & hypothetical future resident. Total cancer risk to soil & GW for a current/future indoor/outdoor onsite worker are within the acceptable EPA cancer risk range of 1E-6 to 1E-4 but exceed the acceptable ADEC risk range of 1E-6 to 1E-5. Total cancer risk to soil for a current/future construction worker are within the acceptable EPA cancer risk range of 1E-6 to 1E-4 & the acceptable ADEC risk range of 1E-6 to 1E-5. Total cancer risk to soil & GW for the future resident are within the acceptable EPA cancer risk range of 1E-6 to 1E-4 but exceed the acceptable ADEC risk range of 1E-6 to 1E-5. The primary contributor to the elevated GW cancer risk for the resident is the ingestion of carbon tetrachloride. VI HIs & ILCRs for the indoor bldg. air scenario are below the acceptable EPA & ADEC risk management ranges.

Action Date:	8/29/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2596 N latitude -149.6922 W longitude

Action Date:	8/25/2011
Action:	Update or Other Action

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DEC Staff: Cheryl Paige
Action Description: Letter to Doyon Utilities, Attn: Robert Zacharski, UST Site Manager from Cheryl Paige (ADEC IPP Terminal and Tank Farms Section). Subject: Closure of Underground Storage Tank,ADEC :Facility 3547The Alaska Department of Environmental Conservation (department) has received your post-closure documentation for permanent removal of the following underground storage tank (UST) system.Facility Name: Doyon Utilities FRA I ADEC Facility 3547Address: Building 772,724 Quartermaster Road City: JBERADEC Tank 1 (113), Owner 130A, Tank Contents-diesel Volume-20,000 gallons Compliance Tag 0949I have permanently closed this tank in the department's UST database for both Facility3547-Doyon Utilities (as Tank:1) and Facility788-JBER Fort Richardson (as Tank 113). The Site Assessment and Release Investigation Report is due no later than October 4, 2011, and is also required to satisfy the State UST regulations of Title 18 Alaska Administrative Code (AAC) 78, Underground Storage Tanks, regarding permanent closure. The department's Contaminated Sites Program has oversight of any further requirements, upon review of your Site Assessment and Release Investigation Report) in accordance with applicable State of Alaska statutes and regulations. Keep a copy of this letter in your UST file for at least ten years (18 AAC 78.276(d)). If you have any questions please call me at (907) 269-7679 or email cheryl.paige@alaska.gov.

Action Date: 8/23/2002
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Email from Mark Prieksat (ARMY) to Louis Howard RE: Transformer Oil Spill at Bldg. 772. We have reported a release of transformer oil to soil on the north side of Bldg 772 on Ft. Rich. About 100 gallons of oil leaked from the transformer onto the concrete pad and surrounding soil. The remaining oil was drained from the transformer and any obvious soil contamination was excavated. The contaminated soil has been stockpiled on a liner in the Circle Drive area and covered. Samples were collected from the oil and contaminated soil. The oil does contain PCB (aroclor 1260) but at a max concentration of about 10.5 ppm. All the soil sample results for PCB were less than 1 ppm (highest was 0.741 ppm). However, the soil does contain high levels of DRO (35,000 ppm) and RRO (1720 ppm). Because the PCB levels are less than 1 ppm, the soil will be thermally treated.

Action Date: 8/2/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from the Dept. of The Army, Albert J. Kraus, Colonel, Director of Public Works to ADEC (L. Howard). Attached find soil results for the overburden and excavation created during removal of underground storage tank (UST) 130 at building 772, the backup power plant, on Fort Richardson. The results indicate that diesel range organics (DRO) are all below level C cleanup levels except for samples 95FTR-772-130-181, an overburden sample, and sample 95FTR-772-130-184, a sample from the excavation sidewall. These showed DRO contamination of 1,730mg/kgand 1,170 mg/kg respectively.Approximately 350 cubic yards of soil was generated during the excavation. Public Works is requesting approval to use the overburden as backfill, prior to obtaining the site assessment. If the site assessment-requires a release investigation then one Will be

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initiated, and a corrective action will be developed to address both the contaminated overburden, and the contamation remaining in the excavation.

Action Date: 8/10/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Draft Remedial Investigation Work Plan Proposed Headquarters Facility and Proposed Rapid Deployment Facility June 2011.Table 4-1 Proposed RDF: Field screening with a PID will not serve to identify non-volatile contaminants (e.g. metals, non-chlorinated pesticides, PCBs, and RRO) that may or may not be collocated with volatile contamination that the PID reacts to. ADEC will require at least one of the soil samples be collected from the saturated soils just above the water table or the zone of seasonal water table fluctuation, where contaminants are most likely to migrate, in addition to the sample(s) collected from the area with the highest field screening results. NOTE: this section does not specify the number of samples per boring under Rationale like the Proposed HQ Facility does later on in the table.Worksheet 15 soil :1,1,1-Tricholoroethane has a migration to groundwater cleanup level (Table B2 Method Two 18 AAC 75) of 0.82 mg/kg. 1,1-Dichloropropene has a migration to cleanup level of 0.033 mg/kg. Endrin has a migration to groundwater cleanup level of 0.29 mg/kg. gamma-Hexachlorocyclohexane (Lindane) has a migration to groundwater cleanup level of 0.0095 mg/kg. For those contaminants without an ADEC soil cleanup level (e.g. 1,2,3-Trichlorobenzene), ADEC requests that EPA???s risk based Regional Screening Levels for Chemical Contaminants at Superfund Sites be used. For example, 1,2,3-Trichlorobenzene has residential soil screening level of 49 mg/kg and a protection of groundwater soil screening level of 0.087 mg/kg. Worksheet 15 groundwater: For those contaminants without an ADEC groundwater cleanup level or MCL (e.g. 1,1,1,2-Tetrachloroethane) ADEC requests that EPA risk based Regional Screening levels for Chemical Contaminants at Superfund Sites be used. 1,1,1,2-tetrachloroethane has an EPA carcinogenic target risk ingestion level in tap water of 0.52 mg/L at 1 x 10-6 risk. Worksheet 19: PCB analyses have no holding times and 40 days to analysis of extract is recommended (ADEC Draft Field Sampling Guide, Appendix D and E May 2010). Attachment F-1: ADEC Interim Guidance for Non-UST POL Soil has been superseded by ADEC???s UST Procedure Manual (November 2002) and ADEC???s draft Field Sampling Guidance (May 2010). Please cease from using this outdated guidance in this work plan???s SOPs and any future planning, scoping documents. Provide effective dates for the referenced possible applicable, relevant, and appropriate requirements (regulations, guidance, permit) for the State of Alaska.See site file for additional information.

Action Date: 7/31/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: APVR-RPW-EV 31 July 1995 MEMORANDUM FOR Ellen Klug, Alternate Contracting Officer, JOCSUBJECT: Drums and Related Contaminated Soils at Building 772 from Sam Swearingen, Environmental Scientist. 1. In discussion with BRSC and with Bernie Miller on Friday, 21 July 1995, it appears that 4drums of dry cleaning solvent were found buried on top of UST 130 at building 772 duringexcavation. Further, one of the

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drums was crushed during removal contaminating approximately30 cubic yards of soil, which BRSC had the sub-contractor excavate and stockpile seperatelyfrom the POL contaminated soils.2. I need BRSC to have their sub-contractor, Oil Spill Consultants, take samples of theremaining three (3) drums, and have a waste management profile conducted on them, with thequickest turn-around time possible. I estimate that the analysis will cost approximately $3,000 to $4,000. Further, I need the soil sampled for the same thing. Two to three samples of the soilshould be analyzed. 1 estimate this will cost another $3,000 to $4,000.

Action Date: 7/26/2016
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the RI/FS mgt. Plan. Main comments were regarding the need to ensure the contractor drills to groundwater and not limit drilling to an arbitrary contract limit of 80 feet bgs and to ensure that surface soil sampling at a site where fill material was placed occurs at the original surface soil interface and not in clean fill material. See site file for additional information.

Action Date: 7/25/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Sampling & Analysis Report PCBs in soil, paint, oil, surface wipes & concrete-Bldg. 772 JBER received. Results indicate;??? Building sidings is cement asbestos board??? Two pipe fittings within the building contain asbestos??? Paint on the interior & exterior of the building & caulking on the exterior of the building contain PCBs at less than 50 ppm with the exception of 2 paint samples collected from the concrete floor.??? Soil samples immediately adjacent to the building structure were found to contain PCBs.??? Concrete core samples show surface contaminated with PCBs & no PCBs detected from mid depth or the bottom of the cores.??? Concrete composite samples from the interior floor slab (slab was divided into 15' x 15' grids with 9 subsamples per grid) show PCBs less than 50 ppm with the exception of one grid.??? Used oils from rotating equipment & sludge from trenching showed some PCBs with concentrations less than 50 ppm.??? Wipe samples from equipment scheduled for recycling show less than 100 ug/100cm2 Remediation of PCBs will be performed under 40 CFR 761.61 (b) Performance Based DisposalBuilding 772 is currently owned by Doyon Utilities LLC (DU). It is the original diesel powered electrical generation facility for Ft. Rich. It was transferred to DU as part of base wide utilities privatization. The US Army retains title to the land around & under Building 772. After DU demolishes & removes Building 772 the site will be transferred back to the US Army.The scope of the demo work is limited to building components; no remediation or removal of contaminated soils is part of this work.Wipe samples were collected from diesel engines, generators, etc. to assess surface contamination. The intent is to clean these items for recycling. Each wipe sample was collected from 100 cm2 area. Sample area was wiped with a gauze pad wetted with hexane, & then sealed in an amber glass jar for transport to lab. 24 wipe samples were submitted for analysis. No duplicates were submitted for this method.Oil samples were extracted from engine crankcases & bearing boxes & sealed in 100 ml glass jars for transport to lab. 14 oil & 3 oil/sludge samples were submitted for analysis. Oil/sludge

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samples were collected from the bottom of utility trenches.7 core samples were collected from the floor slabs within the building. Core samples indicated the majority of the floor slabs were 6 to 8??? thick. Subsamples from these cores consisted of the top one half inch, a 1/2 section from the middle of the core & the bottom 1/2 of the core for a total of 21 core samples submitted for analysis. No duplicates from this method were submitted for analysis.Originally no information was available to determine slab thickness. It was assumed that the slabs were a minimum of 24??? thick. Based on this assumption the intent was to take composite surface samples & then follow up with composite sample from deeper within the slab. After determining the slabs were typically less than 8??? thick it was decided to profile the slab waste from the surface samples only based on the cost of segregated contaminated from noncontaminated concrete.The top surface of the floor slabs were sampled utilizing a technique published by Region I EPA (New England), SOP for Sampling Concrete in the Field. This method uses an impact hammer drill to produce a surface sample from the upper &189;??? inch of the slab. The drill method generates a fine, uniform powder that is easily processed for analysis by the lab. The bldng foot print was divided into approximately 15' x 15' grids with 9 sub samples collected from each grid. 40 concrete surface composite samples were collected. 10 of these samples were submitted for duplicate analysis.Concrete Core SamplesResults indicate surface contamination is present throughout the majority of the bldng slabs. No PCBs were detected from the mid or bottom sub samples. Concrete Surface CompositeResults indicate surface contamination is present throughout the majority of the bldng slabs. 1 sample grid shows PCBs greater than 50ppm. The remainder of the contamination is less than 50 ppm.Paint & CaulkingResults indicate PCBs are present in all interior paints & in the majority of the exterior paints. 3 of the floor paints from the interior contain PCBs in excess of 50 ppm. All of the remaining paints from the interior & exterior of the structure contain PCBs less than 50 ppm.Oils & SludgeResults show all oils & oil/sludge below 500 ppmWipe Samples24 wipe samples from equipment scheduled for recycling indicate no PCBs on 14 samples & less than 100 ug/100cm2 on the remaining 7 samples.ConclusionsPCBs are present throughout the majority of the floor system & painted bldng components. The demolition waste stream will be profiled & disposed of in regulated landfills located outside AK. Fluids & equipment within the building will be recycled in AK.

Action Date: 7/21/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Remedial Investigation Work Plan received for Proposed HQ Facility & Proposed Rapid Deployment Facility (June 2011). The goals of this project are to characterize the environmental conditions, define the nature & extent of contamination, & ascertain whether modifications to building design &/or remedial actions are needed to provide for the safety of construction workers & future building occupants at the proposed Headquarters (HQ) Facility (CC-FTRS-17) & the proposed Rapid Deployment Facility (RDF) (CC-FTRS-16).CC-FTRS-17: The site covered by this Work Plan encompasses the area around existing Building 772 (Figure A-2). This site is the future location of an Army Headquarters (HQ) facility that is part of the Maneuver Enhancement Brigade (MEB) Complex. Building 772 is an industrial facility that

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houses generators & other electrical equipment including a transformer that provides a backup power source for critical operational elements. The facility is scheduled to be demolished by August 2011 before the Remedial Investigation begins.CC-FTRS-16: This site is the future location of a Rapid Deployment Facility (RDF) that will be located adjacent to railroad siding. The location is near the south side of JBER-Richardson???s closed solid waste landfill. The area formerly housed warehouse facilities with railroad loading platforms & USTs.There are several closed sites with l& use controls located near the RDF site: CC-FTRS-70 (former Building 934), CC-FTRS-73 (former Buildings 936 & 944), & CC-FTRS-76 (former Building 946). All of these facilities were warehouses where heating oil tanks leaked, resulting in the l& use controls. All of these facilities were demolished within the past 25 years.Proposed HQ Facility-Chemical data does exist for the proposed HQ Facility; however, the data is limited & not comprehensive for the site. Data gaps exist for subsurface soils & groundwater. Surface soils may also potentially contain contaminants. The site currently houses a standby generator plant & a UST. The previous UST leaked & the site is surrounded by known contaminated sites. In 2010, a RI identified DRO, PCBs, TCE, & dieldrin as contaminants in subsurface soil. Contaminants are expected in groundwater & possibly in air due to the presence of volatiles in the subsurface soil. Although groundwater in the area is not used as a drinking water source, this pathway is potentially complete because a formal ADEC evaluation of the groundwater per 18 AAC 75.350 has not yet been performed. Surface water is not present on site. Biota could act as a secondary source by plant or animal uptake through impacted soil. However, this pathway is incomplete because that area is not used for hunting, fishing, or harvesting of wild or farmed foods. Likely future & current receptors are nearby residents, site workers, visitors, trespassers, & recreational users.Proposed RDF-To date, no chemical data is available at the proposed RDF. Data gaps exist for surface & subsurface soils, soil gas, & groundwater. The area formerly housed warehouse facilities, loading platforms, & USTs which indicates a possibility of surface & subsurface spills & leaks to the soil & underlying groundwater at the site. Petroleum hydrocarbons & their constituents are the most likely contaminants of potential concern for the proposed RDF. In addition, the nearby landfill & known methane plume lends to the possibility for soil gas exposure in the air & volatile organics, pesticides, & PCBs in the soil. Although groundwater in the area is not used as a drinking water source, this pathway is potentially complete because a formal ADEC evaluation of the groundwater per 18 AAC 75.350 has not yet been performed. Surface water is not present onsite. Biota could act as a secondary source by plant or animal uptake through impacted soil. However, this pathway is incomplete because that area is not used for hunting, fishing, or harvesting of wild or farmed foods. Likely future receptors include residents in the area, workers, visitors, & trespassers. Likely current receptors include recreational users on the trail that cuts through the area.The primary objective of the RI is to assess the potential presence of contaminants at each location & to define the nature & extent of contaminants. The information obtained from the Remedial Investigation/Feasibility Study will be used to determine whether modifications to building design &/or remedial actions are needed to provide for the safety of construction workers & future building occupants. The decisions regarding treatment of each source

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area will be made by the 673 CES/CEANR, EPA, & ADEC.

Action Date: 6/25/1997
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter sent to Army (S. Swearingen) RE: Draft Work Plan and Site Safety and Health Plan UST RI B1dgs. 772, 35610, 35620,59000 Fort Richardson Contract No. DACAS5-95-D-000S June, 1997.The Department of Environmental Conservation, has received the above document on June 24,1997. After reviewing the information provided, the work plan is approved as submitted. DECdoes not review site safety and health plans, but will retain a copy on record for our files.

Action Date: 6/12/2014
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: Federal Facility Agreement (FFA) Document Schedule for TUl 17 -Brigade Headquarters Facility, JBER-Richardson.Attached for your review and acceptance is the proposed document schedule for TUI17 - Brigade Headquarters Facility on Joint Base Elmendorf-Richardson, Richardson (JBER-R), Alaska. If approved, the schedule will be attached to the current JBER-R FFA (5 December 1994).If you concur with the proposed schedule, please sign in the block provided on the attached signature page and return the original signature page to me. Should you have questions or comments, please feel free to contact me at (907) 384-1824.Document type: Draft Feasibility Study, date due for agency review: 22 December 2014Document type: Draft Record of Decision, date due for agency review: 15 October 2015.Upon approval, this document will be attached to the current FF A (effective 5 Dec 1994). Thedocument schedule may be updated or modified to include additional primary or secondarydocuments as necessary to meet FF A requirements. Changes will require approval of FF AProject Managers.Signed by G. Fink USAF, S. Halstead EPA, L. Howard ADEC.

Action Date: 6/1/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Report of Chemical Findings & Employee Exposure Monitoring, FTR271B (PN72270) Maneuver Enhancement Brigade-Phase II Tactical Equipment Maintenance Facility (TEMF) Maintenance Facility, Joint Base Elmendorf Richardson, Alaska (11-023).The northern portion of the proposed site is currently a recreational vehicle storage lot & a fueling point consisting of Bldg 992, while USTs, AST, fuel canopies, tank slabs, & fuel dispensers are located on the southern portion of the site.According to the historical aerial photographs, the existing Fueling Point (Building 992) site has been a fueling point since at least 1954. The Preconstruction Environmental Survey report also indicates that historically, the subject site had been used for bulk oil storage since 1954 through at least 1984. Prior to that, the site was partially developed & used for parking as far back as 1947 (the earliest aerial photograph available). The Existing Fueling Point is located near a former railroad offloading point where old, historical spills were noted. The existing Fuel Point site contains both UST & AST fuel tanks, thus the possibility of leaking tanks & associated piping exists. The existing fueling point & associated tanks are scheduled to be removed as part of MEB Phase 1, FTR269 (PN55695). While this site has not been comprehensively investigated, evidence

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of subsurface fuel contamination was noted during a natural gas pipeline installation along Warehouse Street (at the south boundary of the South RV Lot) in 2003. Workers were forced to evacuate the construction trench when strong fuel hydrocarbon vapors filled the trench. In addition, the Existing Fuel Point is documented as a hazardous waste generator including fluorescent tubes, absorbents, aerosol cans, etc. However, according to the Preconstruction Environmental Survey report, the proposed TEMF Maintenance Facility site has no record of leaking UST/AST???s, Hazardous Waste Generation, or known contamination (DERA). Due to the current & historic use of the land, hazards associated with possible petroleum, lubricants, & oils exist at this site location. Recently, Jacob???s Engineering was contracted by DPW to perform a site investigation at the subject site. Although the final report had not been received to date, preliminary results indicate the following contaminants above state clean up limits are present on site in association with the present fueling area: 1,2,3-trichloropropane & benzene .Twenty-one borings were completed during the geotechnical investigation on the FTR271B project site. Samples from three of the twenty-one borings were collected & analyzed for contamination. The objectives of the project were to conduct exposure monitoring for evaluation of employee exposure & to collect soil samples for analyses to ensure proper disposal of investigative derived waste.Arsenic was present in TB-10 (AP-5669 at 7.2 mg/Kg), TB-11 (AP-5670 at 7.4 mg/Kg), & TB-16 (AP-5675 at 6.8 mg/Kg & a duplicate at 5.2 mg/Kg). Chromium was present in TB-10 (AP-5669 at 36 mg/Kg), TB-11 (AP-5670 at 41 mg/Kg), & TB-16 (AP-5675 at 29 mg/Kg & a duplicate at 25 mg/Kg). Arsenic & chromium are above ADEC criteria but are within background levels for the installation (ref. 1.d). In addition, the clean up level for chromium is based on the presence of the more toxic hexavalent chromium. Site history does not indicate the presence of the more toxic hexavalent chromium species. A separate analysis was run for hexavalent chromium & no exceedances were noted.These results indicate that for the site where the sampling was performed & the task being monitored the employee exposure was less than 1/10th of the TLV & 1/100th the PEL for benzene.Due to current & historic use of the site, further environmental site investigation is recommended. Based on the employee chemical exposure data, continue utilizing established work practices & established safety protocols. Should site conditions or processes change, additional evaluations should be performed.

Action Date: 5/4/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed & commented on the draft work plan addendum for the Proposed HQ Facility Work Plan Addendum.1.0 IntroductionPlease direct the reader to the proposed building footprint drawings or diagrams which detail the building footprint limits & depths of the required buried utilities (electrical, water, sewer, stormwater) necessary as part of the proposed Headquarters Facility. 2.0 Site BackgroundText states subsurface soil outside the building footprint & onsite groundwater contamination will be addressed in a future FS. ADEC requests clarification on the future feasibility study based on unknown horizontal & vertical extent of contamination in the soil & groundwater if JBER does not conduct the required sampling now to capture these data gaps as part of this remedial investigation. 1994

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Federal Facility Agreement Part III PURPOSE paragraph 3.2(c) states: ???Establish requirements for the performance of a Remedial Investigation (RI???) to determine fully the nature & extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at the Site, & to establish requirements for the performance of an FS for the Site to identify, evaluate, & select alternatives for the appropriate remedial action(s) to prevent, mitigate, or abate the release or threatened release of hazardous substances, pollutants, or contaminants at the Site in accordance with CERCLA & applicable state law;???VIII. Scope of AgreementEPA Guidance for Conducting Remedial Investigations & Feasibility Studies under CERCLA October 1988 EPA/540/G-89/004???The objective of the RI/FS process is not the unobtainable goal of removing all uncertainty, but rather to gather information sufficient to support an informed risk management decision regarding which remedy appears to be most appropriate for a given site.??? ???Analyses that are important to the subsequent risk assessment & subsequent development of remedial alternatives include the horizontal & vertical extent of contamination in soil, ground water, surface water, sediment, air, biota, & facilities. Spatial & temporal trends in contamination may be important in evaluating transport pathways.???Stopping excavation, characterization of contaminated media based on the footprint of the future building (vertically & horizontally) & be able to proceed to a feasibility study does not match the FFA & EPA guidance regarding remedial investigations under CERCLA. It is highly likely additional remedial investigation-like activities will be needed to characterize the nature & extent of contamination after this phase of work is completed prior to conducting a feasibility study.3.0 Project Execution ApproachThe text states the soils will be excavated to a depth of 9 feet below ground surface at locations within the proposed HQ Facility footprint. Excavations will continue, as necessary, until contaminated soil likely to be encountered during the building construction activities has been removed. ADEC requests JBER clarify what will be done if contaminated soil remains in the ground below this depth or in a horizontal direction beyond the HQ Facility Building footprint. 5.3 Field ScreeningLack of a positive field screening response from the PID, PetroFLAG or any other field screening device shall not preclude JBER from taking the required number of laboratory soil samples. 5.5 Stockpile Characterization SamplingSee comment on 5.3 above.

Action Date: 5/31/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the Remedial Investigation/Interim Removal Report for TU117 Brigade HQ Facility (FTR-271A) CS DB Hazard ID 2766 on JBER-Richardson on May 28, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

Action Date: 5/31/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: May 2011 UIC Closure Plan Report received. Confirmation soil samples were collected frombeneath the former septic tank and cesspool from excavation sidewalls. Confirmation soilsample results also indicated

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concentrations of arsenic above the site background level of 5.59mg/kg (E&E, 1996). Arsenic results from the confirmation samples ranged from 4.9 to 7.4mg/kg; however, results were considered within an acceptable range of background levels.Because the presence of methylene chloride was detected in the trip blank, it is believed thatthe reported concentrations are due to laboratory contamination and are not present at the siteat the reported concentrations. DRO from approximate depth of 21 feet bgs, near the base of the excavation just above the apparent groundwater level. The highest concentration of DRO detected was found in sample 10FRAUIC32SO at a concentration of 8,900 mg/kg. Sample 10FRAUIC32SO was collected from the west sidewall of the cesspool excavation from a depth of 21 feet bgs, within a foot of the soil/groundwater interface. samples were collected from the east sidewall, beneath the former septic tank, at a depth of 21 feet bgs. The DRO in soil samples 10FRAUIC33SO and 10FRAUIC35SO was detected at concentrations of 4,500 and 2,200 mg/kg, respectively.Concentrations of 1-Methylnaphthalene and 2-Methylnaphthalene were detected inconfirmation sample 10FRAUIC32SO (Lab ID 580-21862-3) taken on 9/17/2010: 6.8 mg/kg and 12 mg/kg respectively. Methylene chloride was detected in confirmation soil sample 10FRAUIC36SO at a concentration of 17 &181;g/kg; however, methylene chloride was also detected in the method blank. Due to the presence of method blank contamination, and because methylene chloride is a common laboratory contaminant, professional judgment was used to discount the methylene chloride detection in sample 10FRAUIC36SO.

Action Date: 5/3/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft JBER Proposed Headquarters Facility Work Plan Addendum dated May 3, 2012 Air Force Center for Engineering and the Environment (AFCEE) Contract No. FA8903-08-8773 Task Order 109 received for review and comment. This WPA only addresses the soil contamination within the proposed HQ Facility footprint to a depth of 9 feet below ground surface (bgs) and petroleum, oil, and lubricant (POL) contamination in surface soil (0 to 2 feet bgs) throughout the site. The 2012 IRA activities will focus on an estimated 250 cubic yards (cy) of soil at four locations within the footprint of the proposed HQ Facility and two surface locations within the footprint of former Building 772. Soil will be excavated to a depth of 9 feet below ground surface (bgs) at the locations within the proposed HQ Facility footprint and to about 2 feet bgs where surface samples (SS01 and SS03) identified contamination during the 2011 RI. Excavated soil will be temporarily stored onsite in two segregated stockpiles: one for contaminated soil and another for suspected clean overburden soil, as determined by previous sample results, photoionization detector (PID) field screening, PetroFLAG&174; field screening, and field observations. Waste characterization samples will be collected from the stockpiled soil to determine whether the soil should then be thermally treated, disposed of at the Anchorage Regional Landfill (ARL), or re-used onsite (if the soil meets the most stringent ADEC cleanup levels). Excavation confirmation samples will be collected from the floor and sidewalls of each excavation at the frequencies specified in the ADEC Draft Field Sampling Guidance (ADEC 2010). Excavation confirmation soil samples will be analyzed for DRO, residual-range organics (RRO), PCP, and/or PCBs based on the

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contaminants identified in the original soil borings and adjacent soil borings during previous investigations. Soil sample results will determine whether remaining soil contains concentrations of contaminants above ADEC cleanup levels. Excavations will continue, as necessary, until contaminated soil likely to be encountered during the building construction activities has been removed. Sample frequencies and analyses for the specific excavation areas are discussed below.RI activities to be conducted in 2012 will characterize PCB contamination near soil boring HQF30, where PCB contamination was detected at a concentration of 12 mg/kg, well above the ADEC cleanup level of 1 mg/kg. Twenty soil borings will be advanced to a depth of 5 feet bgs and two primary samples will be collected from each boring and analyzed for PCBs. The additional RI activities will include collection of groundwater samples from four onsite wells. Following the completion of excavation activities, groundwater samples will be collected from each of the four monitoring wells onsite (AP-3874, AP-3914, AP-5689, and AP-5690). To test whether contaminants are present in the groundwater system, one sample will be collected from each of the wells. Groundwater samples will be analyzed for GRO, DRO, RRO, VOCs, SVOCs, pesticides, PCBs, and RCRA metals. These contaminants were all identified in either soil or groundwater during the 2011 investigation activities. Groundwater sampling procedures are presented in the field SOP JBER-SOP-4 (RI Work Plan, Appendix B [USAF 2011]), including field documentation forms.The objective of the additional RI sampling is to further characterize and quantify PCB contamination in soils near location HQF30, where PCBs were identified at 12 mg/kg. Thistask will be achieved by completing the following: - Determine the extent of PCB-contaminated soils using direct-push soil borings. A total of20 soil borings will be advanced to a depth of 5 feet below ground surface (bgs)surrounding HQF30.- Collect laboratory analytical composite samples from 0 to 2.5 feet bgs and 2.5 to 5 feetbgs. These samples will be used to determine the depth of the contamination bgs and thehorizontal extent of the contamination.- Collect wastewater samples from the decontamination water used to clean the drillingequipment.- Plug bore holes with bentonite or grout to 0.5 feet bgs to prevent infiltration of water tothe subsurface soil.- Survey soil borings to guide future excavation activities.

Action Date: 5/29/2012
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: Approval granted to JBER to transport 250 cy of petroleum contaminated soil from FTR271 project (Proposed HQ Facility) to ASR.

Action Date: 5/24/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the JBER’s responses to ADEC comments on the HQ Facility Work Plan Addendum. Document may be finalized.

Action Date: 5/16/2016
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Conf. call with JBER, EPA, DOYON UTILITIES, ADEC staff. Basically the Air Force and Doyon met May 6, 2016 and decided to proceed with full demolition of the 772 Central heating power plant instead of

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temporarily encapsulating the 30-45 of the siding which has flaking paint. Funding is an issue, it will be sought for this fiscal year and if by October 1, 2016, no funding can be made available to demolish the building to 12' below grade to 1 ppm PCBs, a new approach will be sought in the interim. This will likely involve encapsulation of the siding as originally proposed. 12' bgs is the depth of the first floor to the top of the 2nd floor below the ground and that is what is being proposed as the demolition depth for concrete. Asbestos in all of the structure (3 floors above grade, 3 floors below grade). The sediment basin(s) on site will be looked and sampled for PCBs/Lead to determine whether or not the decades of peeling paint has reached these areas.

Action Date: 5/12/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA Dave Bartus Region 10 provided comments on the the draft sampling and analysis plan for Bldg. 772. 1 Background Page 3Based on our teleconference discussions, I???m thinking that a more realistic statement of purpose might be ???The purpose of this sampling endeavor is to better characterize the nature and extent of PCB bulk product and PCB remediation waste within the building, contents and concrete slab for purposes of selecting an appropriate regulatory pathway under 40 CFR 761 and for selection of final disposal facilities.??? I???m guessing that this sampling will not comprehensively address all data needs for demolition and disposal given that it is currently not clear how much PCB bulk product waste and PCB remediation waste exists and where it may be located.2 Scope of Work Page 3Surface wipe samples should be limited to non-porous surfaces (metal, for example). If there are non-porous surfaces, they should be identified and media-specific sampling protocols proposed.I???d like to see an explicit depth. For purposes of characterization of the depth of PCB penetration into concrete, I???d recommend sample intervals of 0-.5??? and .5-1.??? While I???m supportive of sampling to characterization of PCB concentration with depth in concrete, how will this data be used for planning and executing building demolition and subsequent waste management? It may be difficult or un-economic to separate concrete into separate waste streams for disposal.Most likely, the decision criteria will be a combination of 1) Concrete with as-found concentrations >50 ppm that must be managed in a chemical or hazardous waste landfill; 2) Concrete with intermediate levels (10-49 ppm) which may be managed out-of-state at a Subtitle D landfill, and 3) concrete with <10 ppm that can be disposed of locally. I???m recommend documenting these decision criteria in the plan. As we discussed during our teleconference, the purposes of this sampling exercise is to obtain additional data to figure out what TSCA regulatory authority would be best for PCB remediation waste, including consideration of disposal requirements.3.1 Work Task Summary Pages 3 and 4I???m not sure what the reference to 40 CFR 761 really means. For example, 40 CFR 761 Subpart N provides a method for characterization of PCB remediation waste, but not PCB bulk product waste. Also, what is the relationship between this work task and the current sampling and analysis plan? Are there two separate document, or does the current document satisfy this work task?Will this be per each sample type (soil, building components, equipment and concrete)?During our conference call, we described the proposed exercise as a ???facility assessment.???

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Should the same phrase be used here?3.3 Statement of Intended Data Quality and Usage Page 4I???m curious what role institutional controls are contemplated in this context, given that the stated purpose of the project is building demolition and off-site disposal, with any soil issues to be addressed separately by JBER.What about corresponding data quality requirements for samples of other than soils? Most likely, it will not be possible to achieve a level this low (in appropriate units, of course) for PCBs in oil.3.3.1 Definitions of Analytical Levels Pages 4 and 5Of these levels, which will be required for this specific project4 Field Sampling Plan Page 7It would be very helpful to include a diagram of the building indicating the number and location of the various samples to be obtained.4.3 Sample Locations and Frequency Page 9(c) What is a ???representative number??? of samples? I???d recommend at least one sample from each distinct type of caulk or adhesive that can be identified on the basis of visual means(f) Is the same sampling density to be applied to machinery bases and building slab areas? 4.5.1 Rationale of Analytica Methodology for Samples Page 10For paint and concrete, EPA recommends Soxhlet or pressurized fluid extraction for sample preparation. See comments in Section 3.3The following appears to be specific to concrete sampling. Are there specific sampling procedures for other sampling media (paint, soil, oil, etc.?)4.5.3 Concrete Sampling Procedures Page 11 Last BulletSee previous comments on the 10 criteria.5.7 Internal Quality Control Checks Page 13 Duplicate SamplingSee earlier comments on the 10 criteria.Given that PCBs are the subject of this work (a specific analyte), concentrations of decision criteria are known and the type of analysis is known, what will be the specific precision, as measured by relative percent difference that is necessary for the data to be acceptable for this project?

Action Date: 5/11/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft work plan.Page 3Section 1- ADEC requests the Army state when the sampling was conducted & the source of the document. ADEC has just received the document in May of 2011. Sampling had occurred in October 2010 & the report with PCB test results from wipe sampling & a soil sampling was available as of November 17, 2010. Providing documentation six months later is not a timely notification to ADEC of sample results showing a past release of a hazardous substance (e.g. PCBs) had likely occurred in Building 772 & in surface soil. Page 3Section 2-The Scope of Work includes characterizing PCB in soil for site access & building perimeter. ADEC will not accept the soil sampling as proposed in the document for Contaminated Site Program site management decisions nor for definitive data required under the Fort Richardson Federal Facility Agreement. One bulk sample from 2010 has shown PCB contamination is present above 1 mg/kg at the building entrance. Whatever protective measures are used they must be able to prevent the soil from being disturbed, tracked, & transferred to previously clean areas during building demolition activities. Page 4Section 3.2- ADEC requests a copy be provided for its files & a copy also be provided to EPA Region 10 TSCA Program staff (suggest overnight delivery or same day electronic mail) - Dave Bartus for his review & comment. Page 6Section 3.6-ADEC will require completed laboratory data review checklists (January 2010) be completed for all environmental sampling

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results in accordance with ADEC???s Laboratory Data & Quality Assurance Policy ??? Technical Memorandum (March 2009). All reports submitted to ADEC containing analytical laboratory sample results shall contain a completed Laboratory Data Review Checklist & a Quality Assurance (QA) Summary.Page 7Section 4.2-Soil sampling as proposed will not be used for definitive data in subsequent site management decisions by ADEC when a subsequent remedial investigation is conducted for Building 772. The soil sampling is not acceptable for site characterization of the nature & extent of PCB soil contamination for the site as required by CERCLA or 18 AAC 75. It is outside ADEC???s regulatory authority to state whether or not the proposed soil sampling is adequate for worker safety as this is an OSHA issue. ADEC suggests using a nine point composites from a 15??? by 15??? grid for the surface soil sampling as described in the EPA guidance for the soil surrounding the perimeter of the building & site entrance route to address the limited area which is not the entire site which will be investigated by the Army at a later date as required by CERCLA & the Federal Facility Agreement. See site file for additional information.

Action Date: 5/10/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Sampling & Analysis Plan received for support of Demolition of Building 772. These slabs will be sampled & characterized for PCBs. Slab surfaces (up to &189;-inch deep) will be sampled to determine if the slabs are contaminated by PCB-containing oil. Deep samples (greater than &189;-inch deep) of the slabs will be completed from the same sample location to determine the extent that PCBs have permeated into deeper parts of the slabs. Analytical results returned from the slab samples will be compared to current EPA standards to determine the need, if any, for special handling & disposal methods during demolition of the structure & foundation. Specific work tasks 1.Prepare an EPA-compliant ???Site-Specific Sampling & Analysis Plan??? (Concrete) according to 40 CFR 761.2.Sample project site, building components, equipment & concrete for PCBs; deliver to the subcontract laboratory, Bureau Veritas for analysis per EPA Method 8082. Sample collection will include a minimum of 10 duplicates for project QA/QC.3.Prepare a ???Final Site Characterization Report???.4.Provide project management & consulting as neededThe objective is to acquire data of sufficient quantity & quality to accurately assess PCB contamination that may be present in;a.Surface contamination of soil that will impact access to the site & access around building perimeter.Composite soil samples will be collected from surface soils located in a path from the main facility entrance along the existing driveway to building 772. Soil sampling will continue around the perimeter of the Building 772. Perimeter samples will extend approximately 10??? from the building.Each composite sample will be collected from approximately 400 ft2. (20??? x 20??? or 10??? x 40???). Approximately 20 subsamples, each consisting of 1 in3 of material will be collected & homogenized. Sub samples will be placed in Ziploc type bags sealed & the placed in an additional bag for shipping.b.Painted building structural components scheduled for demolition.Wipe samples will be collected from walls & structural components to assess surface contamination; additional paint chip samples will be collected to assess PCB concentrations of the paint systems.Each wipe sample will be collected from 100 cm2 area. Sample

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area will be wiped with a gauze pad wetted with hexane, & then sealed in an amber glass jar for transport to laboratory.Paint chip samples will be collected from the same areas as the wipe samples to ensure paint chip samples are contaminated by surface PCB residue. Paint chips will be collected & sealed in 50 ml centrifuge tubes for shipping.c.Miscellaneous caulking & adhesives.Bulk samples of caulking & adhesives found throughout the building will be analyzed for PCB concentrations.Bulk samples will be sealed in 50 ml centrifuged tubes for transport to laboratory.d.Surface contamination of electrical generation & switching equipment.Wipe samples will be collected from diesel engines, generators, motors switch gear, etc. to assess surface contamination.Each wipe samples will be collected from 100 cm2 area. Sample area will be wiped with a gauze pad wetted with hexane, & then sealed in an amber glass jar for transport to laboratory.e.Oil contamination in diesel engine crankcases & in rotating equipment bearings.Oil samples will be extracted from engine crankcases & bearing boxes & sealed in 100 ml glass jars for transport to laboratory.f.Surface & subsurface contamination of concrete equipment pads, trenches & slabs.A technique published by Region I EPA (New England), ???SOP for Sampling Concrete in the Field,??? will be closely followed for sampling at the concrete equipment pads and the concrete slab.Sample Locations and Frequencya.Composite soil samples ??? Approximately 18 composite soil samples will be collected to characterize the site entrance route and the exterior perimeter of the structure.b.Painted building components ??? 24 wipe and paint chip samples will be collected from the interior and exterior of the building.c.Miscellaneous caulking and adhesive materials ??? A representative number of caulking and adhesive samples will be collected to characterize these materials where present.d.Surface contamination of electrical equipment ??? A minimum of 24 wipe samples will be collected from electrical generation and switching equipment.e.Oil samples ??? Oil samples will be collected from the crankcases of all diesel engines and bearings boxes that are assessable. Equipment that is suspect but not assessable will be noted in the final report.f.Concrete slabs ??? Surface and subsurface concrete samples will be collected on a grid approximately spaced 10??? x 10???. Obvious stains within the grid areas will be targeted for sample collection.

Action Date: 4/4/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Supplemental RI/FS Mgt. Plan received for review & comment. The following activities will be performed at TU117: ??? Mobilize & Prepare for Site Work ??? Obtain all necessary materials, equipment, & personal protective equipment (PPE), as well as a dig permit.??? Soil Boring Advancement ??? Advance 10 soil borings to groundwater & record visual & olfactory observations & field screening values.??? Groundwater Well Installation ??? Four of the 10 soil borings will be completed as groundwater monitoring wells according to the procedures listed in JBER-SOP-1200 Monitoring Well Installation & Development (Appendix C) to a depth of approximately 70 to 85 feet bgs based on an approximate depth to groundwater of 65 to 80 feet bgs.??? Soil Boring Sampling ??? Collect field screening soil samples 1 from borings every 5 to 40 feet bgs, followed by every 10 feet to the groundwater interface, & collect five analytical soil samples per boring. Soil samples will be analyzed for GRO, DRO, RRO, VOCs, SVOCs,

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pesticides, PCBs, & RCRA metals plus nickel & vanadium. Samples collected from the soil-groundwater interface will be analyzed on a 7-day turnaround time to help determine the proper monitoring well locations.??? Surface Soil Sampling ??? Collect surface soil samples from surface locations (not borings) from 0 to 2 feet bgs. Soil samples will be analyzed for GRO, DRO, RRO, VOCs, SVOCs, pesticides, PCBs, & RCRA metals plus nickel & vanadium. Locations for the surface samples will be evaluated following the soil boring activities.??? Well Development ??? Develop groundwater monitoring wells at least 24 hours after installation using EPA & ADEC low-flow guidelines (EPA 2009; ADEC 2016b).??? Groundwater Sampling ??? Collect one analytical groundwater sample at least 24 hours after development from each of the four newly installed wells & from existing wells AP-5000 (deep upgradient), AT035-MW02 (shallow downgradient), & AP-3914 (deep downgradient), twice & approximately 6 months apart. Groundwater samples will be analyzed for GRO, DRO, RRO, VOCs, SVOCs, pesticides, PCBs, & RCRA metals plus nickel & vanadium.??? Vapor Intrusion Evaluation ??? Collect four indoor air, four outdoor air, & four near slab soil gas samples & indoor air handling system readings quarterly, from up to 10 buildings. Samples will be analyzed for VOCs. Buildings that will be sampled for vapor intrusion will be selected after the soil & groundwater results have been reviewed.??? Site Survey ??? Record positions of site features, soil borings, & monitoring well tops of casings using global positioning system (GPS) positioning methods &/or differential level-loop measurement methods.??? Investigation-Derived Waste Disposal ??? Manage all investigation-derived waste (IDW) (i.e., used PPE & sampling equipment, soil cuttings, & decontamination/purge water) & ensure proper disposal.See site file for additional information.

Action Date:	4/4/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Memorandum to the Site File (memo) received. This memo was prepared in accordance with the EPA Guidance & will become part of the administrative record for FfR271A & JBER. The FTR271A Proposed Headquarters (HQ) Facility site is a new site to be added to the Fort Richardson FF A per this memorandum. Site DescriptionThis site is the future location of an Army HQ Facility that is part of the Maneuver Enhancement Brigade (MEB) Complex. The MEB Complex will include the proposed HQ Facility Building, Company Operations Facility (COF), barracks, & associated facilities. The Site is located near the NW comer of D St & 5th Street on JBER-Richardson & encompasses the area formerly occupied by Bldg 772.Building 772 was a standby diesel generator plant that was demolished during September 2011 along with the removal of Tank 113, a 20,000-gallon UST. Additional USTs, electrical transformers, & other buildings have also been removed from the Building 772 site during the past 50-plus years.Contaminants of Potential ConcernCOPC in soil at the site include DRO, RRO, PCBs, pentachlorophenol (PCP), benzo(a)pyrene, carbon tetrachloride, TCE, & tetrachloroethene (PCE). DRO & PCP are the only COPCs that were identified both inside & outside the proposed building footprint above the most stringent ADEC Method Two, under 4O-inch zone cleanup levels. Other COPCs that were identified above ADEC Method Two cleanup levels were encountered onsite, but outside of the proposed building footprint:??? PCBs were detected in concentrations above the ADEC cleanup level in samples up to 4 feet bgs on the eastern side of

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the site??? Petroleum, oil, & lubricant (POL) contamination was discovered at the surface to 27 feet bgs??? Carbon tetrachloride was detected above the ADEC cleanup level at 25 feet bgs & at 70 feet bgs, presumably in the smear zone??? A single PCE result was detected at 25 feet bgs??? TCE was detected at 10, 17, 25, & 70 feet bgsThe following list outlines the procedures to be following for construction at this site:I) A removal action will be conducted to excavate & treat or dispose of POL-related contamination present within the footprint of the proposed building as shown on Figure 1. Contaminated soil will be excavated from within the building footprint. Field screening procedures & analytical sampling will be employed to delineate contamination & confirm that lateral extent of contamination has been excavated. Additionally, surface soil contamination (non-PCB) will be excavated from areas inside & outside the building footprint. The depression created by removal of former Building 772 will be backfilled with clean fill following necessary removal actions. The necessary work plans will be developed & submitted to ADEC for review & approval. 2) A vapor intrusion analysis will be conducted to determine the potential for diesel fuel vapors to migrate into the proposed facility. Mitigation measures will be implemented if necessary.3) Excavation will not be allowed in areas on the east side of the site where PCB contamination has been detected in near-surface soils. This area will be covered with about 2 feet of classified fill & then covered with asphalt pavement, concrete sidewalk, or vegetation layer. Drainage features will be lined with impermeable liner to ensure proper site drainage & to prevent water infiltration into contaminated areas. 4) If it is necessary to remove vegetation (trees & shrubs) from any area where potential contamination exists, the contractor will ensure that all soil is removed from the debris & left on-site. If the debris contains soil, the contractor will characterize & properly dispose of the materials at an appropriate facility.5) Additional soil borings will be drilled in the area where sample HQF30 was collected to further delineate PCB contamination at the site. This information will be included in the remedial investigation report.Completion of RI & Decision DocumentActions outlined in this memo will be undertaken to facilitate construction of the proposed Army HQ Facility. RI activities will be completed in 2012 & presented to ADEC & EPA for review & comment. The new source area (FTR 271A) will meet the general requirements & deadlines as described in Attachment I (Federal Facility Scope of Work) of the Fort Richardson FFA, unless otherwise agreed to by the Air Force, EPA & ADEC. Development of a risk assessment, PP, & ROD will begin in 2012 & will document the selected remedy for this site. Construction may result in encapsulation of contaminants at this site, but these actions will not preclude selection of a remedy resulting in the eventual removal of contamination from this site. The risk to the Air Force is that remedial action could require demolition of newly constructed parking structures.

Action Date: 4/29/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER’s responses to ADEC’s comments and finds them acceptable and concurs with the responses.

Action Date: 4/21/1998

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Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 4/18/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft Mgt. plan for TU117. Main comments were regarding definition of a Murphy Plant listed in the text for a notation on as-builts for the facility, requesting 1,4-dioxane analysis in groundwater since chlorinated solvents are also present and VI pathway evaluation for PCBs since the Henry's law constant is exceeded by what EPA considers a substance to be volatile. Lastly, staff requested that the migration to groundwater cleanup levels are also promulgated cleanup levels which need to be considered during the RI/FS investigation in addition to screening levels based on 1/10th of ingestion, outdoor inhalation, direct contact levels which in many cases are higher than migration to groundwater cleanup levels in soil. See site file for additional information.

Action Date: 4/15/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: DOD Supplemental Guidance for Implementing & Operating a Joint Base. Operational Ranges2.13.1 The supporting Component will be responsible for overseeing environmental requirements on the operational range (e.g. planning & consultation) when the real property &/or operational range management activities transfer.2.13.2 The supported Component will identify unique mission requirements (i.e. buffers) to the supporting Component.2.13.3 The supporting Component in coordination with the supported Component will ensure that the Operational Range Assessments required per reference (p) are conducted in a timely manner. Operational Range Assessments that are currently underway or have been completed by the supported Component will be provided to the supporting Component to fulfill this requirement. Any follow-on Range Assessments or range mitigation measures that are required as a result of the initial Operational Range Assessment will be the responsibility of the supporting Component provided mitigation resources were programmed by the supported component prior to TOA transfer to cover such required mitigation measures stemming from the initial range assessment.2.17 Environmental Restoration Program (ERP)2.17.1 The supporting & supported Components should commence negotiations as soon as possible on the Joint Base MOA to ensure all details regarding the timing & logistics associated with site & contract management transfer are identified in a timely manner. The MOA will identify a mutually agreeable date for the transfer of restoration program management responsibilities to the supporting Component.2.17.2 The supported Component will provide the supporting Component with current site status, phase data, & cost-to-complete estimates & all pertinent site data, including land use controls, & regulatory correspondence & agreements to assist in the transfer of the sites to the supporting Component.2.17.3 The timing for transfer of POM & budget resources required to support sites being transferred (i.e. , funding through the FYDP, personnel, etc) will be negotiated between supporting &

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supported Service level Components, consistent with reference (a).2.17.4 The supporting Component will manage all environmental restoration sites on non-contiguous Joint Base properties in accordance with reference (t), & existing regulatory status or legal authority of the property at the time of site transfer.The supporting Component may manage contiguous Joint Base sites under the regulatory status or legal authority that best fits the installation-specific circumstances & management approach of the supporting Component subject to prior RCRA permits, orders or other pre-existing agreements.2.17.5 The supporting Components will honor all existing, previously negotiated Federal Facility Agreements in place at the installations to become the Joint Base at the time of transfer. The Federal Facility Agreement may need to be amended to document that responsibility has been transferred from the supported Component to the supporting Component.2.17.6 The supporting Component will assume responsibility for environmental restoration data reporting, budgeting, record keeping, & financial liability at the time of transfer.2.17.7 The supporting Component must work with the supported Component to ensure that the Defense State Memorandum of Agreement (DSMOA) or other State-recovery program is appropriately funded between the start of the current Cooperative Agreement cycle & the date when real property is transferred to the supporting Component.2.17.8 At the time of property transfer, the supporting Component will assume responsibility for all existing Restoration Advisory Boards (RABs) at the Joint Base. The supporting Component should meet with all RABs associated with the installation to determine if the RABs will remain separate or be merged into a single RAB for the Joint Base. All CERCLA/NCP public participation requirements must also be maintained.For properties or areas listed on the National Priorities List (NPL), the supporting Component will notify the EPA of any transfer of environmental restoration responsibilities from the supported Component for the property or area on the NPL.See site file for additional information.

Action Date:	3/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Rapid Deployment Facility RI report received. A total of 42 subsurface soil boring samples, two surface soil samples, and five soil gassamples were collected during the 2011 sampling effort and submitted to TestAmerica (Tacoma, WA) for analysis of gasoline-range organics, diesel-range organics (DRO), residual-range organics, volatile organic compounds, semivolatile organic compounds, pesticides, polychlorinated biphenyls, and metals.One surface soil sample collected near the railroad switches contained DRO at a concentrationof 550 mg/kg, exceeding the ADEC cleanup level (250 mg/kg). No other analytes, other thanthose listed above, were detected in soil above the ADEC cleanup levels.Work Plan DeviationsThe five deep soil borings were advanced to 80 feet bgs but did not reach groundwater. The Work Plan stated that soil boring would be advanced to groundwater, which was estimated at 80 feet bgs; however, groundwater at the proposed RDF site appears to be deeper than 80 feet. Since subsurface contamination was not encountered anywhere at the site, the probability of groundwater contamination at the site is low.Two surface soil samples were collected from underneath railroad switches in response to concerns of possible historic use of polychlorinated biphenyls (PCB) oil in the devices.

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Samples were collected in accordance with Standard Operating Procedure 2 (Appendix B of the Work Plan), Collection of Analytical Subsurface Samples, modified for surface collection by eliminating the drilling activities. Section 2.3 provides additional detail. One borehole (RDF16) was extended beyond the original planned depth of 15 feet to 25 feet because historic diesel-range organics (DRO) and benzene, toluene, ethylbenzene, and xylenes contamination at 22 feet bgs was noted on the dig permit. No wastewater samples were collected from the accumulated decontamination water during the RI. A sample will be collected from the accumulated water in spring 2012 to meet transportation and disposal requirements. Concentrations of arsenic and chromium were also detected above the ADEC cleanup levels (3.9 mg/kg and 25 mg/kg, respectively). Concentrations of arsenic ranged from 5.1 to 20 mg/kg, and concentrations of chromium ranged from 25 to 48 mg/kg. Although the upper end of both the arsenic and chromium ranges are slightly greater than the background ranges specified in Background Metals Sampling Report, Volume 1 (USAF 1993), these concentrations most likely reflect background concentrations. Concentrations of arsenic and chromium are generally higher in samples collected from within or near the Elmendorf Moraine as documented by the samples collected during the installation of the landfill and Operating Unit E wells (CH2M HILL 2004). Arsenic and chromium are not considered contaminants of potential concern at the proposed RDF site.Laboratory LOQs were evaluated against the project Work Plan sensitivity requirement ofone-tenth the ADEC cleanup levels. Analytes where the LOQs were greater than the WorkPlan sensitivity requirements due to limitations in the methodology were compared to theADEC cleanup level. When the LOQ exceeded the cleanup level, the LOD was evaluated.Both the LOQ and LOD exceeded the ADEC cleanup levels for the following SW8260 andSW8270 analytes in multiple samples:1,2,3-Trichloropropane, 1,2-Dibromoethane, 1,2-Dichloroethane, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, bis-(2-Chloroethyl)ether, Chloromethane, Methylene chloride, n-Nitrosodimethylamine, n-Nitrosodi-n-propylamine, Pentachlorophenol. Based on the results of the 2011 RI at the proposed RDF site, it is recommended that a limitedremoval action should be conducted at the railroad switch location containing a concentrationof DRO above the ADEC cleanup level. After the contaminated soil has been removed, thesite is recommended for Cleanup Complete Status.

Action Date:	3/21/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	EPA (Sandra Halstead) provided comments on the RI/IRA Report.Sec. 1.1 & 2.0The project goals and objectives narrative states the RI/IRA was performed to ensure worker safety during construction activities. This may not provide representative data for a remedial investigation for future industrial or residential scenarios. Please repeat the objective of this RI for worker safety during construction in the opening sentence of section 2.0.Figure 2-1Please explain the tan contour lines in the legend of Figure 2-1. Surface topography?There appears to be an error in reporting the cleanup level for soil boring at AP-5690. 0.023 is reported as both the cleanup level and the sample result. Cleanup level should be consistent with 0.005 mg/kg for carbon tetrachloride.Figure 2- 1 and Figure 2-2Note: Carbon Tetrachloride was found at depth (to ~70 fbgs in the gw smear zone) in all well borings and groundwater samples with the exception of

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AP-3914, which is about 30 ft deeper than the other groundwater wells at ~103 fbgs. Additoinal characterization to determine the source of the carbon tetrachloride is recommended.Excavation Analytical Results (numerous sections including 3.2.1.1; 3.2.6; 3.3.2)In numerous locations, confirmation samples exceeded cleanup levels for contaminants but excavation was not advanced and contaminants were left in place. (HQF 34, SS02). ???Capping??? with clean material and/or construction of a building over the contaminated soil cannot be determined as the final remedy as a part of this interim removal action.EPA strongly recommends further evaluation of the contaminated soils and groundwater, especially in regard to compounds that may contribute to the indoor air exposure pathway via volatilization.3.3.2This section summarizes PCB contamination near sample location HQF30 which has not been defined over a lateral extent within the 3600 ft2 sampling area. Please clarify the sentence ???Although the precise lateral extent of PCB contamination was not defined in close proximity to HQF30, numerous soil samples collected in the general vicinity of the HQF30 investigation area did not exhibit concentrations of PCBs exceeding the ADEC cleanup level of 1 mg/kg.???

Action Date: 3/21/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the HHRA Work Plan.Sec 1.0,p. 1-1The introductory sentence describes the HHRA as addressing potential risks based on results of the 2010-2012 field sampling activities. In the accompanying draft RI/IRA, the goal of the 2011-2012 sampling effort was to protect worker safety during construction activities (draft Proposed HQ Facility RI/IRA report, January 2013, Section 1.1, page 1-1). The 2011-2012 sampling has not adequately characterized site conditions for risk to future workers or residents, particularly in regard to the source and extent of carbon tetrachloride contamination in soils and groundwater. Please clarify how the HHRA will assess risk to future workers (in the building) and residents based on samples collected for the specific purpose of protecting workers during construction activities.Sec 1.2, p. 1-5Please update EPA 1997a Exposure Factors Handbook with the 2011 version of the Exposure Factors Handbook, which supersedes the 1997 edition.EPA Exposure Factors Handbook (2011) under Downloads on this pagePlease add the followingEPA guidance to the list of reference guidance documents.Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment), 2009EPA Risk Assessment Guidance Part F (2009 Inhalation Risk Assessment)Sec 3.1.2Fig 3-1Please delete reference to the use of Frequency of Detection as a means of evaluating data inclusion in the HHRA. Given the small numbers of samples and the use of Risk Based Screening as outlined in section 3.2.1, the frequency of detection in less than 5 of samples as a data screening tool should be eliminated from the narrative and the flow chart in Figure 3-1.Sec 3.2.3Screening of metals against background is not consistent with EPA???s 2002 guidance (EPA 540-R-01-003, Appendix B), which says to include them and then discuss the contribution of background to the overall risk estimate.From APPENDIX B POLICY CONSIDERATIONS FOR THE APPLICATION OF BACKGROUND DATA IN RISK ASSESSMENT AND REMEDY SELECTION Summary points on page B-5 to B-6:The COPCs retained in the quantitative risk assessment should

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include those hazardous substances, pollutants, and contaminants with concentrations that exceed risk-based screening levels. The Risk Characterization should include a discussion of elevated background concentrations of COPCs and their contribution to site risks. Naturally occurring elements that are not CERCLA hazardous substances, pollutants, and contaminants, but exceed risk-based screening levels should be discussed in the risk characterization

Action Date: 2/6/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft HQ Fac. PCB-Contaminated Soil Removal. IntroductionThe text states: ???This removal action was conducted to remove PCB-contaminated soil that would present a health risk to workers during the placement and compaction of structural fill to support parking lot construction.???The removal action appears to be equivalent to an interim action under the Fort Richardson Federal Facility Agreement. Interim actions shall neither be inconsistent with nor preclude implementation of the final expected Site remedy and shall be undertaken in accordance with the NCP, 40 CFR Part 300, as amended, and with the requirements of CERCLA. Soil Removal ActivitiesThe text states: ???To prevent exposure of the construction workers to the contaminated soil, USAF and USACE requested that Jacobs complete the removal activities using properly trained and qualified personnel to package, transport, and dispose of the contaminated soil in accordance with all applicable regulations.???ADEC could not locate the resumes and work experience of all the ???qualified persons ??? that were involved in this project. While this is a technical memorandum, the information regarding ???qualified persons??? must be included. In accordance with 18 AAC 75.355(b), the Air Force must ensure that the collection, interpretation, and reporting of data, and the required sampling and analysis at TU117 was conducted or were directly supervised by a qualified, impartial third party. Please provide to ADEC for its review, the names of the staff and their qualifications in the technical memorandum as an appendix that shows that they meet the educational and work experience requirements of 18 AAC 75.990(100) if they were the ???qualified person??? on site for field work at TU117 Headquarters Facility.

Action Date: 2/28/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the RI/IRA report for the proposed Headquarters Facility. Executive SummaryADEC requests JBER state that the purpose of the remedial investigation & interim removal action activities were not to fully characterize the site as required by CERCLA (e.g. OSWER Directive 9355.3-01) & the Fort Richardson Federal Facility Agreement (e.g. VIII. Scope of Agreement), but it was conducted to support the construction of a new building (Proposed Headquarters Facility). Proposed HQ Fac. & Proposed Rapid Deployment RI WP states: ???The goals of this project are to characterize the environmental conditions, define the nature & extent of contamination, & ascertain whether modifications to building design &/or remedial actions are needed to provide for the safety of construction workers & future building occupants at the proposed Headquarters (HQ) Facility (CC-FTRS-17) & the proposed Rapid

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Deployment Facility (RDF) (CC-FTRS-16).???Site Description & HistoryThere is conflicting information in the work plan which states two crushed drums of PCE were discovered during tank removal & four drums found on top of the UST during excavation noted in the Public Works Memo below. APVR-RPW-EV 31-July 1995MEMORANDUM FOR Ellen Klug, Alternate Contracting Officer, JOCSUBJECT: Drums & Related Contaminated Soils at Building 772Samuel P. SwearingenADEC has no records of the analysis of the stockpiled soil, confirmation samples taken for chlorinated solvents, disposition of the remaining drums. Please state that there were four drums with chlorinated solvents uncovered at the site & one drum was crushed during UST removal activities. Please state that during the 1997 DOWL/Ogden JV RI detected DRO from samples collected at depths of 20 & 30 feet bgs (13,700 mg/kg & 15,000 mg/kg boring AP-3805).Also missing from this section is discussion of the July 22, 2011 WEC report ???Sampling & Analysis Report PCBs in Soil, Paint, Oil, Surface Wipes & Concrete Building 772??? The purpose of the sampling endeavor described in this report was to obtain information to adequately address worker protection during the demolition actives, develop demolition strategies based on the findings & to profile the demolition waste stream. The scope of the demolition work was limited to building components; no remediation or removal of contaminated soils was part of this work. PCBs were detected above the 1 mg/kg cleanup level in seven composite soil samples ranging from 1.40 mg/kg (Sample ID 060-CPS) to 57 mg/kg (sample ID 059-CPS). The 4 composite soil samples with the highest PCB exceedances collected on May 26, 2011 (WEC) are in the vicinity of the one sample collected by Jacobs in 2010 (HQ15). 3.2.1HQF34 Borehole LocationThe text states: ???Contaminated soil identified on the east side of this excavation was left in place because that area was outside the footprint of the proposed HQ Facility building.??? This appears to the reader to be an area requiring further investigation or excavation & confirmation sampling. 3.2.1.1Excavation Analytical ResultsThe text states: ???Soil samples 12HQF34-C50-05, 12HQF34-C51-05 (a duplicate of 12HQF34-C50-05), & 12HQF34-C54-05 collected from the eastern sidewall of the excavation exhibited concentrations of DRO ranging from 308 to 404 mg/kg; all of which slightly exceed the ADEC cleanup level of 250 mg/kg. Because the eastern edge of the HQF34 excavation was at the boundary of the proposed HQ building footprint the excavation activities did not continue east.???Last ParagraphThe text states: ???Soil sample 12HQF34-C56-05 (collected from the northeastern sidewall of the excavation) exhibited concentrations of DRO & PCBs at 422 mg/kg & 4.21 mg/kg, respectively; both of which exceed their applicable ADEC cleanup criteria. Similarly this location was at the edge of the proposed HQ building footprint & additional excavation activities were not conducted.???This appears to the reader that these two areas require additional investigation, excavation activities & confirmation sampling. HQFSS01 Borehole LocationThe text states: ???The identified contaminated soil was discovered within the former building???s footprint at approximately 7 feet below grade; therefore, the potentially contaminated soil was only removed to approximately 2 feet bgs.??? ADEC requests clarification on which confirmation samples were taken after the 17 cy was removed from the location. Table 3-2 does not indicate which samples are sidewall samples and which samples are from the base of the excavation. This area appears to the reader to be an area that requires additional investigation, excavation and confirmation sampling. Or if already

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covered by the construction of the new building, an area that will need to be addressed as part of the selected remedy.

Action Date: 2/28/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the HHRA work plan. 4.5Quantification of Exposure PointsThe maximum detected concentration in groundwater shall be used as the EPC for the assessment of risk posed due to exposure to groundwater (i.e., ingestion, dermal contact, inhalation of volatiles from water). Considering the dynamic nature of groundwater, it is not deemed appropriate to average concentrations over an aquifer. This is recognized in 18AAC75.345 (e). This is also consistent with compliance determination in 18AAC75.380(c)(2) requiring the use of the maximum concentration in groundwater.As discussed in previous comments above, all groundwater is considered drinking water source on JBER & should not be eliminated as a pathway for purposes of a baseline risk assessment. The NCP establishes general expectations for purposes of groundwater restoration as follows:(F) EPA expects to return usable ground waters to their beneficial uses wherever practicable, within a timefrarne that is reasonable given the particular circumstances of the site. When restoration of ground water to beneficial uses is not practicable, EPA expects to prevent further migration of the plume, prevent exposure to the contaminated ground water, & evaluate further risk reduction.???Principles/or Groundwater Remediation???As discussed in the NCP & in various associated guidance, there are in general, five key principles that stem from the overarching expectations for groundwater restoration. These are as follows:1) If groundwater that is a current or potential source ofdrinking water is contaminated above protective levels (e.g., for drinking water aquifers, contamination exceeds Federal or State MCLs or non-zero MCLGs), a remedial action under CERCLA should seek to restore that aquifer to beneficial use (e.g., drinking water standards) wherever practicable.2) Groundwater contamination should not be allowed to migrate & further contaminate the aquifer or other media (e.g., vapor intrusion into buildings; sediment; surface water; or wetland).3) Technical impracticability waivers & other waivers may be considered, & under appropriate circumstances granted if the statutory criteria are met, when groundwater clean up is impracticable; the waiver decision should be scientifically supported & clearly documented.4) Early actions (such as source removal, plume containment, or provision of an alternative water supply) should be considered as soon as possible. ICs related to groundwater use or even surface use, may be useful to protect the public in the short-term, as well as in the long-term.5) ICs should not be relied upon as the only response to contaminated groundwater or as a justification for not taking action under CERCLA.9 To ensure protective remedies, CERCLA response action cleanup levels for contaminated groundwater should generally address all pathways of exposure that pose an actual or potential risk to human health & the environment.???(EPA OSWER Directive 9283.1-33 ???Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration??? June 26, 2009). See site file for additional information.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking

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DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/10/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA comments on the 1st draft final redline HHRA.HHRA ReportComment: The Final Human Health Risk Assessment Report, TU117 HQ Facility indicates that the potential for current & future receptors to be exposed to contaminants through direct contact, dermal absorption, inhalation of volatile contaminants, & inhalation of fugitive dust is likely overestimated due to the presence of the TU117 HQ building & 2 to 3' of clean fill covering a majority of the site; however, unless the site includes LUCs/ICs which keep the building & fill intact, there is no assurance that the area will remain undisturbed. Please revise the HHRA Report to clarify that ICs are not considered in the risk assessment in regard to the potential for current & future receptors to be exposed to contaminants through direct contact, dermal absorption, inhalation of volatile contaminants, & inhalation of fugitive dust.HHRA ReportComment: Insufficient data are available to sufficiently evaluate the potential for vapor intrusion/inhalation of indoor air. Section 2.2 states, ???To address vapor intrusion/inhalation of indoor air for workers within the TU117 Brigade HQ Facility, groundwater data from monitoring wells AP-5690, AP-3874, AP-3914, & AP-5689 were evaluated.??? Section 2.2 indicates that GW data from four monitoring wells (i.e., AP-5690, AP-3874, AP-3914, & AP-5689) were used to evaluate VI/inhalation of indoor air for workers within the TU117 HQ Facility & Section 6.0 indicates that no soil vapor data for volatile organic compounds (VOCs) were available. As such, the VI/inhalation of indoor air for workers within the TU117 HQ Facility is based on only four sampling locations, three of which no longer exist (decommissioned or buried) according to Figure 1-4. Please revise the HHRA Report to clarify how 4 sampling locations are sufficient to characterize VI/inhalation of indoor air for workers within the TU117 Brigade Headquarters Facility. HHRA ReportComment: Section 3.2.3 indicates that the two to three feet of clean fill which covers the majority of the site will reduce the potential for current & future receptors to be exposed to contaminants through inhalation of volatile contaminants. While the clean fill will reduce the potential for current receptors to be exposed to contaminants through inhalation of volatile contaminants, the potential for future receptors to be exposed to contaminants through inhalation of volatile contaminants will likely not be reduced as contaminants in the subsurface &/or GW could volatize & contaminate the clean fill, potentially collecting under the TU117 HQ Facility. Please revise the HHRA Report to clarify that the clean fill cover does not reduce the potential for future receptors to be exposed to contaminants through inhalation of volatile contaminants. HHRA ReportThe text indicates that EPA???s GW_ADV spreadsheet model was used in the evaluation of the vapor intrusion pathway. The GW_ADV model is based on the Johnson & Ettinger model. While the ADEC guidance for vapor intrusion indicates that ADEC will accept the results of models based on the Johnson & Ettinger model, the guidance also recommends that a thorough uncertainty analysis be provided for the model application. An analysis of the uncertainties associated with the application of the GW_ADV model has not been provided. In addition, due to the uncertainties associated with the J&E Model, EPA

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does not support its use to contraindicate the presence of or the significance of vapor intrusion when detections in environmental media exceed the most relevant health-based screening criteria. In cases where environmental concentrations of subsurface vapor sources exceed the screening criteria obtained from the Vapor Intrusion Screening Level (VISL) calculator, EPA recommends that VI generally be assessed using multiple lines of evidence. This assessment should address, but may not limited to:???Characterization of the subsurface vapor source(s);???Characterization of vapor migration & attenuation in the Vadose zone;???Characterization of the building foundation, including the susceptibility to soil gas entry;???Characterization of the building interior; &???Characterization of outdoor & indoor sources of vapor-forming chemicals.The characterizations should be based on appropriate sampling results; however, site-specific modeling (e.g., site-specific modeling using the GW_ADV) can be considered as one component of the building interior characterization.
Not reported

Action Date: 2/10/1997
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: Comment letter sent to Army (S. Swearingen) re: Soil Stockpile Remediation for 35750, 772, 28008, 45070 and 47022 at Fort Richardson, Alaska.The Department of Environmental Conservation (DEC) has received the Post Treatment SampleResults for the above piles on February 6, 1997. Based on a review of the data, it appears the soils can be used for any purpose the Post sees fit since they all are below the strictest criteria: Level A.

Action Date: 12/31/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: USAGAK (U.S. Army Garrison, Alaska). 2009. Preconstruction Environmental Survey; Project: FTR 162/PN56914; Preconstruction Environmental Categorization Report. A Preconstruction Environmental Survey (PES) report was developed in 2009 as part of the military construction program (U.S. Army 2009). The report indicated that soil samples had been collected around the sides of a concrete pad on the north side of the building where three electrical transformers had been located. One of the transformers reportedly leaked and a spill response was conducted to excavate contaminated soil. Confirmation samples were collected and analyzed for PCBs. Six of eight soil samples collected during the 2002 investigation contained the PCB Aroclor-1260 at levels ranging from 0.247 to 0.541 mg/kg.

Action Date: 12/15/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Installation Restoration Program FY97 Fourth Quarter Update, Underground Storage TanksFort Richardson, Alaska Engineering Manager: Brian West1. PROJECT DESCRIPTION: This project is to investigate where DERA funded UST???s or leaking tanks were removed in FY88-FY94. The investigations are being conducted in accordance with a two party agreement signed with the State of Alaska. Sites include UST???s located at the following Buildings:740 762 782 798956 750 755 756974 955 975 979704 712 794 7728102 2700 1 47662 4559047811 45080 47203 2800845580 39600 35610 3562059000 450702. CHEMICALS OF CONCERN:

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Hydrocarbons, VOCs, and Metals.3. SUMMARY OF LAST QUARTER ACTIVITIES: The following sites have been considered closed: Buildings 712, 796, 36012. 45726, 47663, 952, 47438, 47641,28004, 955, 975, and 979.4. CURRENT CONTRACTING ACTIONS: Risk Assessments at Buildings 794, 45-590, 45-580, 39600, 755, 704, and 712 lube rack.5. CURRENT &/OR FUTURE REMEDIAL ACTIONS: None.6. EXPECTED DELIVERABLES WITHIN THE NEXT QUARTER: Sampling reports from 762 and 28-008, 772, 35610, 35620: and 59000. Risk Assessment for Building 47203.7. EXPECTED FIELDWORK TO BE PERFORMED NEXT QUARTER: Sampling at Building 45070.

Action Date: 12/10/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Underground injection Control Class V Closure Plan sent by Army to EPA received. The plan covers the septic tank and wooden cesspool at Fort Richardson-Building 772. Itis the intent to decommission, close, and remove the septic system and wooden cesspool. This Plan will cover the decommissioning, closure, and removal of one septic tank and wooden cesspool at Fort Richardson Building 772. This septic tank and cesspool are being closed in preparation of the demolition of Building 772 later next year. BUILDING 772The Fairbanks-Morse (FM) Generator Plant was constructed in 1952 as a temporary generator plant and is located just north of D Street and Fifth Avenue. The plant uses two large diesel-powered generator sets and two smaller diesel-powered generators sets to produce electricity. There is one septic tank and wooden cesspool located approximately 27 feet south of the southern wall of Building 772. Records indicate that the septic tank and cesspool were connected to the sanitary line from the building however it is unclear if any of the floor and trench drains were also connected to this system.In August 2008 Building 772 was transferred to Doyon Utilities (Doyon), the privatized utility provided for Fort Richardson. While the building and two underground storage tanks (UST) were transferred to Doyon, the UIC remain the Army's responsibility. It is planned that once the UIC is removed and closed that Doyon will demolish the building and remove the USTs on site. All impacted soils associated with the UIC, USTs and building demolition will be addressed by the Army and either state and/or federal regulatory authorities.Although the septic system was connected to receive sanity waste it is unclear if therewere any additional floor drains or trench drains connected to this system. Therefore allfluids stored and used within the building must be considered as potential contaminatesof concern. The diesel generators and electrical switching was maintained on site insideBuilding 772. Lube oils such as OE-3D and turbine oils were kept inside. Used absorbents, used floor sweep, purged diesel and dielectric fluids were also within the building as well as cleaning solvents.After the septic tank and cesspool have been emptied, the contractor shall expose all piping and remove them prior to removing the tank and cesspool. Once the tanks and cesspool have been removed from the ground, a total of ten (10) analytical samples along with QA/QC samples shall be collected from under the tank and cesspool and long the side walls as determined by the contractor to assure a complete site characterization. Disposal of the tank, cesspool and piping are the contractor's responsibility and shall be done in accordance with all regulations. A copy of the disposal record shall be provided to the government. All excavated soils generated during the decommissioning process will be returned to the excavation pit. Final

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determination of any soil disposal associated with this closure will involved discussions between the Army and state/federal regulatory authorities under the Environmental Restoration Program.

Action Date: 11/28/2011
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved via email the DOYON revised SAP for Tank 113 on JBER-Richardson at the former bldg. 772.

Action Date: 11/20/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Diesel fuel contamination.

Action Date: 11/17/2010
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: November 17, 2010 report which was sent by White Environmental Consultants, Inc. PCB Test Results received on behalf of DOYON Utilities, LLC. Building 772 is diesel powered electrical generating facility. Based on the age of the facility it is reasonable to assume PCBs were once used in the facility. On October 19, WEC collected 9 wipe samples and one bulk sample. The purpose of this sampling was cursory in nature. Visually stained concrete was targeted for wipe sampling. Not aU visuaUy stained areas were sampled. The wipe samples were collected from various locations with a wipe area of 100 square centimeters. The bulk sample was collected outside the building from an area of visually stained soil.Results indicate PCBs have been spilled in the past use of this facility. The concentrationsdetected by wipe methods exceed the continued use level of 10ug/l00 cm2 (40 CFR 761.30(p).This facilitv should not be entered or occupied until the facility is decontaminated and post-cleaning sampling confirms PCB concentrations are below reuse or continued use criteria.Sample ID Location/Surface (Results are in ug/wipe)11OW-OI East end of building at door/concrete 35.6 l1OW-02 At air compressor SE end of building/concrete 21.91l0W-03 North end of generator foundation east end of building/concrete 49.511OW-04 North east end of building in conduit trench/concrete 5311l0W-05 North end of generator foundation center generator/concrete 1261l0W-06 At back-up generator in conduit trench/concrete 806,0001l0W-07 Switch gear rack/metal frame 12,5001l0W-08 South side of main generator 2/concrete 104011OW-09 SW blower foundation/concrete 244110W-IO At south man door entrance/soil 181110W-11 Field Blank 1.59RecommendationsThe structure currently is scheduled for demolition so cleaning for continued use may not beappropriate. Further investigation will be required to fully assess contamination of concrete,equipment and also the wood structure itself.Significantly more information will be needed to accurately determine the extent ofcontamination. Once the extent of the contamination is known, decontamination, demolition anddisposal plans can be developed.

Action Date: 11/12/1997
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Comment letter sent to Army (S. Swearingen) re: Remedial Investigation Report for Bldgs. 772, 35610, 35620, 59000 Fort

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Richardson-AK October, 1997. General Comments-The Environmental Protection Agency risk based concentrations (RBCs) have been updated since the 1995 version that was used during the 1997 release investigation. The newest version that must be used is dated October 22, 1997 which differs from the June 20, 1996 version by only changing the RBCs for PCBs. EPA Region III's address where the documents can be found is http://www.epa.gov/reg3hwmd7riskmenu.htmBldg. 35610 4.2.3 Groundwater Occurrence-The groundwater flow was assumed to be in a westerly direction, however based on the groundwater elevations listed in Appendix B Soil Boring Logs it appears the flow may be in a northeasterly or northwesterly direction. Well AP-3813 is not in any of the figures in the document nor is the location mentioned in the boring logs. Please locate the well on a map for future reference.Bldg. 772 5.1.4 Recommendations-The text states that ACLs be evaluated for this site due to soil contamination at depths of 40' and install a monitoring well to determine if groundwater is present onsite. DEC concurs, however it is requested that the well be installed as close as possible to COE Boring AP-3805 where the highest contamination was detected (15,000 mg/kg DRO).5.2.4 RecommendationsThe recommendations at the site are to excavate to groundwater and dispose/treat the soils properly with groundwater monitoring. DEC concurs, however it is requested that there be at least two monitoring wells installed at the site. Based on the exact location of well AP-3813, one of the two wells may need to be moved. One well would be placed approximately sixty-two feet or half the distance from AP3809 and Ship Creek. The other well would be placed fifty feet perpendicular to AP3812 NW of bldg. 35610. These wells would act as sentinel wells and further characterize the horizontal extent of soil contamination from the site since it appears the soils are contaminated at levels above level A at AP3812 and AP3809. Because of the shallow depth of groundwater, proximity of both Ship Creek and the backup standby wellS, DEC requests that the Army excavate all soils above Level A criteria or excavation to groundwater whichever is greater. The text infers that monitoring frequency will be changed after the initial monitoring period. DEC will require the results of monitoring for no less than two years of quarterly monitoring will dictate whether or not subsequent monitoring will increase or decrease in frequency.Bldg. 35620- See comments above for bldg. 35610 regarding excavation and monitoring frequency.Bldg. 59000 5.4.4 RecommendationsThe text states that ACLs be evaluated for this site due to soil contamination at depths of 40' and install monitoring wells to determine if groundwater is present onsite. DEC concurs, however it is requested that the wells be installed as close as possible to COE Boring AP-3823 where the highest contamination was detected (3,170 mg/kg DRO) and AP-3824 (2,430 mglkg DRO).

Action Date:	11/12/1993
Action:	Enforcement Agreement or Order
DEC Staff:	Janice Adair
Action Description:	State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC and U.S. Army. Purpose of the agreement is to bring Fort Richardson into compliance with Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site

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assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding the Alaska Department of Military and Veterans Affairs and Army National Guard USTs).Site Assessment or Svstem Tirrhtness Test29. The Army shall conduct a site assessment or a system tightness test, as required by AS 46.03.380(b) and 18 AAC 78.01S(i)(3), on all USTs located at Ft. Richardson, or permanently close the USTs in accordance with 40 CFR 280 and 18 AAC 78. If site assessments or system tests have been conducted, the Army shall submit proof of compliance by the deadlines set forth in the USTMP. Site Assessments or System Tightness Tests shall be conducted under the schedules in 18 AAC 78.015(i)(3) or, in order to come into compliance, as scheduled in the USTMP. All tightness testing work will be conducted by a certified UST worker as required by 18 AAC 78400. Site Assessment work will be conducted pursuant to 18 AAC 78 and an ADEC-approved Quality Assurance Program Plan (QAPP). With respect to UST recordkeeping requirements, the Army shall compile all required records by the date set forth in the USTMP and shall thereafter maintain and update those records as required by 18 AAC 78 and 40 CFR 280.Release Investigation Reoorts31. The Army shall submit to ADEC a Release Investigation report for eachUST site having a documented release of petroleum products or hazardous substances. Thesereports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b)32. If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the ADEC concluded that additional assessment is required.See site file for additional information.

Action Date: 10/9/2009
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SUBJECT: Installation Support Memorandum of Agreement (MOA) for Joint Base Elmendorf-Richardson1. PURPOSE. The purpose of this MOA is to define the installation support relationshipbetween the supporting Component ??? the United States Air Force (USAF), hereafter referred toas the ???supporting Component???, and the supported Component(s) ??? the United States Army(USA), hereafter referred to as the ???supported Component(s)??? for fully implementing BaseRealignment and Closure (BRAC) 2005 Joint Base decisions per references (a), (b), (c), and (d)at Joint Base Elmendorf-Richardson. For the purposes of this MOA, the terms ???party??? and???parties??? shall be understood to refer exclusively to the supporting Component and the supportedComponent(s), either collectively or individually. This MOA establishes a comprehensive framework for Joint Base Elmendorf-Richardson Implementation, and captures the most practical methods for transferring Installation Support functions while meeting mission requirements. The MOA represents Full Operational Capability (FOC). Initial Operational Capability (IOC) requirements, to include reimbursement arrangements, will be addressed in the Implementation Plan (Attachment 1).The strategic imperative of Joint Basing is to provide consistent, high quality installation support to the missions. In order to meet this imperative in a dynamic mission environment, the MOA may require refinement as mission requirements evolve, organizational structures mature, andefficiencies improve

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product delivery.The Joint Base Partnership Council (JBPC) shall review the MOA at least once prior to FullOperational Capability (FOC) for any needed changes, taking into account the experiences of theInitial Operational Capability (IOC) period. Thereafter, at a minimum, the JBPC shall reviewthe MOA annually for mission, manpower, and financial impacts and to ensure delivery ofinstallation support to common output level standards. The annual review will include theinformation collected and reported in the Cost and Performance Visibility Framework. The JBPCshall review the MOA in its entirety triennially. The supported or supporting Component maypropose additional reviews of the MOA at any time.Any proposed changes to the MOA affecting execution of service delivery or changes of anadministrative nature shall be resolved by the Joint Base Partnership Council. Any significantproposed changes to the MOA, including those regarding resourcing, manpower, or outputstandards will be reviewed and approved through the Joint Management Oversight Structure(JMOS) as directed by the Senior Installations Management Group (SIMG).PERIOD OF PERFORMANCEa. IOC: 31 January 2010 to 30 September 2010.b. FOC: 1 October 2010 until terminated by the signatories of this MOA.See site file for additional information.

Action Date: 10/30/1998
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter sent to Army (S. Swearingen) re: UST Remedial Investigation Building 772,35610, 35620, and 59000 Fort Richardson, Alaska Contract DACA85-95-D0008 Modification 0002 Letter Reportdated September 4, 1998. The Department of Environmental Conservation (DEC) has received on October 5, 1998 a copy of the above document. After reviewing the data it appears the contamination at the site is above cleanup criteria as defined in 18 AAC 78 and has impacted groundwater at building 59000 and upgradient of building 772.Building 772DEC concurs with the recommendation to further delineate contamination in the vicinity of 772.However, until [the horizontal and vertical] extent of contamination and its source can be characterized, it is premature to select long-term monitoring as a preferred remedial action at 772. DEC requests a workplan be submitted outlining what work will be done to further characterize the contamination at the site.Building 59000Per 18 AAC 78.220 Release Notification and Response, an owner/operator in response to aconfirmed release of petroleum from a UST or a suspected release under 18 AAC 78.200, shalltake immediate action to prevent any further release of the petroleum into the environment. Thisincludes removal of the petroleum from the UST and conducting initial abatement under 18AAC 78.220;1) Cease using the system and, if not already performed under 18 AAC 78.220(c)(2), withinseven [7] days remove the petroleum from the UST to prevent further release of the petroleum tothe environment. DEC requests the Army provide documentation that the UST at 59000 hasnot been refilled until the system is repaired, replaced, upgraded or shown not to be leaking(the UST and its associated piping) by a system test (18 AAC 78.210(b)). If the tank hasbeen removed since this report has been submitted, then please provide documentationshowing that it was removed and disposed of properly.DEC concurs with the recommendation to begin product recovery at AP-3875. However, DECwill require the installation, of at [least] a minimum three additional groundwater monitoring wells equidistant AP-3875 to determine local groundwater elevation, gradient, flow direction andfurther characterization of

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the groundwater plume at the site.

Action Date:	10/10/2011
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Doyon Utilities LLC UST Closure Report ADEC Facility ID 3547 Tank 113 Bldg. 772, JBER, AlaskaSeptember 2011 received. This report presents a summary of soil excavation activities and laboratory sample analytical data for soil samples collected during closure of UST 113 at ADEC- Facility 3547, JBER, Alaska. This project was conducted for Doyon Utilities LLC. Sampling and analyses were conducted in accordance with State of Alaska 18 AAC 75 Articles 3 & 9 and Draft Field Sampling Guidance (May 2010).UST 113 is a 20,000 gallon Diesel tank located at Building 772, JBER (former Ft. Richardson),Alaska. Building 772 includes the former Power Plant. UST 113 was removed on August 4, 2011. At that time the former Power Plant facility was undergoing demolition and site remediation which included a abatement, and PCB waste removal.The tank atmosphere was monitored periodically at throughout the removal process using acalibrated RAE 4-gas meter. All tank atmosphere measurements indicated a 0 LEL. The tank was transported to Emerald Services, Anchorage, Alaska - an ADEC and EPA approved disposal facility - for cleaning and metal recycling.The scope of work and objectives for this project included the following:??? Removal and decommissioning of Tank 113??? post-removal site assessment, soil sampling and analysis??? complete ADEC SARI and Site Assessment ReportThe tank was excavated using an excavator. Excavated soil was stockpiled onto a poly-linedstaging area adjacent to the excavation. Excavated soils were inspected periodically for indications of fuel contamination. No indications of fuel-impacted soils were noted in the excavated soils.Based on the depth of the excavation and concern for sloughing of excavation walls, allsamples were collected from the excavator bucket. A total of fourteen samples (12 plus 2 duplicates) were collected from soils at the bottomllower sides along the entire length and width of the tank. Each sample was collected from the excavator bucket using clean, disposable sampling spoons at each sampling location. Samples were placed directly into laboratory-suppliedjars and placed into a cooler with frozen gel packs for subsequent transportation and submittal to the laboratory. Samples were transferred under a chain-of-custody. A review of the sample data report indicates all samples were received intact and properly labeled. Samples were properly preserved and extracted/analyzed within required holding times.The RPD for Lab Sample 11H0044-MS1 was outside acceptance limits, Precision demonstrated using RPD for lab samples 11G0044 BS1/BSD1. The RPD for Lab Sample 11 H0044-DUP1 was outside acceptance limits, Precision demonstrated using RPD for lab samples 11 G0044 BS1/BSD1. The RPD for Lab Sample 11 H0050-MS 1 was outside acceptance limits, Precision demonstrated using RPD for lab samples 11 G0050 BS 1/BSD1. The data is determined to be valid and representative.Tank 113 at ADEC Facility 3547 was removed on August 4, 2011. The tank was used to store diesel fuel and had a capacity of 20,000 gallons. No indications of diesel-contaminated soil were noted during soil excavation and stockpiling. There were no signs of corrosion, punctures, gauges or tears in the tank body.The tank atmosphere was measured before during and after removal using a calibrated RAE 4-gas meter. All measurements indicated that the tank atmosphere was 0 LEL. The tank was transported to Emerald Services, Anchorage, Alaska for

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cleaning, and metal recycling.Fourteen representative soil samples (12 samples plus 2 duplicates) were collected fromthe excavation and analyzed for Diesel Range Organics (DRO) and Residual Range Organics (RRO). No RRO compounds were detected in any of the samples. DRO compounds were detetecd at low levels in 2 of the samples and were not detected in 12 of the excavation samples.Based on site observations and soil analytical data there are no indications that the tankexcavation area has been impacted by DRO/RRO.

Action Date: 10/1/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: USACE. 1998 (September). Modification No. 0002 Letter Report. UST Remedial Investigation, Buildings 772, 35610, 35620, and 59000, Fort Richardson, Alaska. Prepared by DOWL/Ogden Joint Venture: Twenty-nine soil samples were collected from four boreholes drilled near the former tank excavation to depths of 30, 35, 40, and 45 feet below ground surface (bgs) in 1997 (USACE 1998). Concentrations of DRO were present in 13 samples collected from the four boreholes at depths ranging from 5 to 40 feet bgs. DRO contamination was detected at concentrations above the ADEC cleanup level in samples collected from depths of 20 and 30 feet bgs (13,700 and 15,000 mg/kg, respectively). Low levels of toluene, ethylbenzene, xylenes, and various polycyclic aromatic hydrocarbons (PAHs) were identified in several samples but were less than cleanup levels.

Action Date: 1/31/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: USACE. 2011a (April). Memorandum. Report of Chemical Findings and Employee ExposureMonitoring, FTR271A (PN327741) Maneuver Enhancement Brigade-Phase II Battalion and Brigade Headquarters Facility, Joint Base Elmendorf-Richardson, Alaska. (11-022).In January 2011, USACE conducted a geotechnical investigation at the site and collected soilsamples from eight soil borings. The chemical data report (FTR271A/PN327741) indicatedthat high concentrations of DRO were detected in two borings at concentrations of 780 mg/kgand 8,800 mg/kg. The PCB Aroclor 1260 was detected, albeit at concentrations below ADECcleanup level

Action Date: 1/30/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Remedial Investigation/Interim Removal Action draft report received. The goals of this project were to characterize the environmental conditions, to define the nature & extent of contamination, & to conduct an interim removal of contaminated soil necessary to protect the safety of workers during construction activities. Surface soil samples 11HQF-SS01 & 11HQF-SS03 contained DRO at 6,900 mg/kg & 350 mg/kg, respectively; both of which exceeded the ADEC cleanup level of 250 mg/kg. Soil sample 11HQF-SS01 also exhibited RRO (36,000 mg/kg) that exceeded the ADEC cleanup level of 10,000 mg/kg. Concentrations of PCP, dieldrin, & mercury were exhibited by Sample 11HQF-SS02 at 0.22 mg/kg, 0.009 mg/kg, & 2.4 mg/kg, respectively; all of which exceeded their respective ADEC cleanup levels. In addition, levels of benzo(a)pyrene, exceeding or equal to the EPA screening level (0.21 mg/kg), were exhibited by soil samples 11HQF-SS02 & 11HQF-SS04 at

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0.31 mg/kg & 0.21 mg/kg, respectively. It is noted that the levels of benzo(a)pyrene exhibited by soil samples 11HQF-SS02 & 11HQF-SS04 were below the most conservative ADEC cleanup level (0.40 mg/kg) .GW samples from AP-3874 (11HQFAP-3874 & duplicate 11HQFAP-3874.9) exhibited DRO & carbon tetrachloride exceeding the ADEC Table C cleanup levels of 1.5 mg/L & 0.005 mg/L, respectively. DRO was detected at 2.5 mg/L & carbon tetrachloride was detected at 0.0096 mg/L; the highest levels from the duplicate pair are listed. Additionally, chromium was detected at 0.14 mg/L in AP-3874 & at 0.16 mg/L in AP-3914, exceeding the ADEC cleanup level of 0.1 mg/L. Arsenic (0.075 mg/L), lead (0.052 mg/L), chromium (3.5 mg/L), & carbon tetrachloride (0.008 mg/L) detected in sample 11HQFMW01-GW (AP-5689) exceeded respective ADEC cleanup levelsPCBs exceeded the ADEC cleanup level of 1 mg/kg were exhibited by 25 of the 44 primary & duplicate samples collected during drilling activities. 17 of these 25 samples were collected from 0 to 2.5 feet bgs & had levels from 1.3 to 9.3 mg/kg. The remaining 8 exceedances were collected from 2.5 to 5 feet bgs, with PCBs ranging from 1.5 to 26 mg/kg. Based on sample exceedances, the lateral extent of PCB contamination in the vicinity of HQF30 has NOT been defined. Although the precise lateral extent of PCB contamination was not defined in close proximity to HQF30, numerous soil samples collected in the general vicinity of the HQF30 investigation area did NOT exhibit concentrations of PCBs exceeding the ADEC cleanup level of 1 mg/kg.Summary & RecommendationsField activities in 2012 focused on the removal of the contaminated soil at the locations described above. During the IRA, approximately 1,464 tons of contaminated soil was excavated & transported to ASR for thermal remediation; additionally approximately 4.5 tons of contaminated soil was transported to CWMNW for disposal. Confirmation soil samples collected from the final HQF34 excavation boundaries exhibited elevated DRO exceeding the ADEC cleanup level indicating that the vertical & lateral (easterly) extent of contamination has yet to be defined. As described above, the contaminated soil previously identified within the proposed HQ Facility building footprint was removed up to a depth of 9' bgs. Subsurface contaminated soil does remain at the site in areas that will not be impacted by the proposed construction activities.Both the LOQ and LOD exceeded the ADEC cleanup levels for the following SW8260 and SW8270 analytes in multiple samples.1,2,3-Trichloropropane2, 6-DinitrotolueneChloromethaneMethylene chloride1,2-Dibromoethane4-ChloroanilineDieldrinNitrobenzene1, 2-Dichloroethanealpha-BHCgamma-BHC (Lindane)n-Nitrosodimethylamine2,4-Dinitrophenolbeta-BHCHeptachlor epoxiden-Nitrosodi-n-propylamine2,4-Dinitrotoluenebis-(2-Chloroethyl) etherHexachlorobenzenePentachlorophenolThe complete list of sample results with LODs greater than the ADEC cleanup level ispresented in Table C-1-1 (Attachment C-1). Future investigations at the site should includelow-level volatile organic compound (VOC) analysis of soil samples to determine whether theanalytes with LODs greater than the ADEC cleanup level are chemicals of potential concern.

Action Date: 1/30/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft HHRA work plan received.The risk assessment will be conducted in accordance with EPA Risk Assessment Procedures. The purpose of the

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risk assessment is to estimate & quantify any potential risks that site contamination could pose to human health following EPA risk assessment guidance established under the Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA). This process includes sufficiently characterizing the contaminants, potential exposure routes, & potentially exposed human populations to determine whether unacceptable risks exist at the site. The results of the risk assessment are intended to guide risk-management decisions at the JBER-Richardson HQ Facility.An ecological risk assessment is not being performed due to the current & future industrial nature of the site & the absence of ecological receptors.Risk-based screening for human health focuses the assessment on the chemicals that may contribute significantly to overall risk & to remove from quantification those chemicals whose contribution is clearly inconsequential. In this screening, the maximum detected concentration (MDC) is compared to the appropriate risk-based screening concentration (RBSC). The units of the MDC & RBSC are the same for each chemical in a given medium. The maximum reporting limit for analytes with no reported detections will be compared to the RBSC. If the maximum reporting limit exceeds the screening level, the analyte will be retained for qualitative evaluation in the HHRA. If the MDC of a chemical is less than or equal to its RBSC, then the chemical in this medium is not considered further in the HHRA because it is unlikely that chemical levels at or below the RBSC would contribute significantly to risk. An analyte is identified as a COPC if its MDC exceeds its RBSC. RBSCs used in this HHRA will be derived from EPA Regional Screening Levels (RSL) (EPA 2012) & ADEC Method Two cleanup levels. Contaminants that are considered to be related to past activities at the site may be retained as COPCs based on best professional judgment regardless of the results of screening.For cancer risk, the RSL values will be used directly as RBSCs in the HHRA because they are based on an ILCR of 1E-6; acceptable exposure levels are generally levels that represent an excess upper bound lifetime cancer risk to an individual of 1E-6 to 1E-4 (EPA 1990), referred to as the ???risk-management range.??? The ADEC ???risk-management range??? of 1E-5 will also be considered. Cancer risks associated with RBSC values represent the lower end of this range. For this HHRA, the RBSC for a chemical that elicits both cancer & noncancer health effects will be selected based on either a cancer risk of 1E-6 or an HQ of 0.1, whichever associated concentration is lower.Contaminants will be screened out as CO PCs if they are not detected in any sample, are detected only at levels less than the RBSC, or are detected only at levels below background levels. Although the ingestion of GW exposure pathway is technically complete, JBER does not allow the use of GW at this site nor is GW a current or likely future drinking water source. JBER controls GW use administratively through 673d Air Base Wing Instruction 32-7003. However, ADEC has not formally evaluated the GW per 18 AAC 75.350.To address direct contact through incidental soil ingestion, dermal absorption of contaminants from soil, inhalation of contaminants in fugitive dust, & inhalation of volatile contaminants in soil, soil data collected from 2010, 2011 & 2012 will be evaluated. Data for these years are presented in detail in the JBER Proposed Headquarters Facility RI/IRA Report (USAF 2013). Soil analysis results was compared to the cleanup levels provided in 18 AAC 341, Tables B1 & B2, Method Two, under 40-inch zone most stringent cleanup levels (ADEC 2012).To address vapor intrusion/inhalation of indoor air for

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workers within the future HQ Facility, GW data from AP-5690, AP-3874, AP-3914, & AP-5689 will be evaluated. Only volatile compounds identified in Appendix D of ADEC Policy Guidance for Developing Conceptual Site Models will be addressed (ADEC 2010). GW data addressing indoor VI will be initially compared to ADEC Target Levels for GW published in Appendix G of ADEC???s Draft VI Guidance for Contaminated Sites (ADEC 2012a). The EPA VI Screening Level Model will also be used to address volatile compounds in GW & subsurface soil (EPA 2012). The EPA model is based on the analytical solutions of the 1991 Johnson & Ettinger model for contaminant partitioning & subsurface vapor transport into buildings. Since that time (1991), revisions have been made & a series of new models have been added. Data for any chemical may be edited, new chemicals added, or existing chemicals deleted from the Lookup Table within the VLOOKUP worksheet.

Action Date: 1/27/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC received the Headquarters Facility 2012-2013 PCB-Contaminated Soil Removaland Well Decommissioning (Draft) for review and comment. This removal action was conducted to ensure worker safety by removing PCB-contaminatedsoil, which would otherwise have been excavated by the construction contractor. Theseefforts significantly reduced potential worker exposure by either removing the contaminatedsoil or covering the contaminated soil that was left in place. In the HQF30 area, where PCB-contaminated soil has been left in place; concentrations range from 1.3 to 26 mg/kg. In theHQF17 area, all of the excavation confirmation samples were less than 1 mg/kg, indicatingthat all of the PCB-contaminated soil was removed from this location.In addition, HQ03 (2.1 mg/kg), HQ14 (2.6 mg/kg), HQ15 (1.9 mg/kg), and HQF34-C56 (4.21 mg/kg) all have PCB concentrations greater than 1 mg/kg. Other contaminants of concern have also been identified at the site and are summarized in the TU117 Brigade Headquarters Facility (FTR271A) Remedial Investigation/Interim Removal Action Report (USAF 2013). This report details the recommendations for the site, which include the preparation of a human health risk assessment and feasibility study for both soil and groundwater contamination.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU117 Former Bldg 772 UST 130 FFA
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: Not reported
Control Details Description1: Not reported
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

R70
SW
1/4-1/2
0.477 mi.
2517 ft.

JBER-FT. RICH BLDG 39600 USTA 2 PARTY — **LUST** — **S108941519**
FTRS-84 SITE SUMMIT NIKE MISSILE SITE — **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 1 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

LUST:

Facility Name:	JBER-FT. RICH BLDG 39600 USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199721X004822
File ID:	2102.38.035
Oname:	U.S. Air Force
Lat/Lon:	61.25442 -149.6882
Lust Event ID:	485
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD27

R71
SW
1/4-1/2
0.477 mi.
2520 ft.

JBER-FT. RICH BLDG 39600 USTA 2 PARTY — **SHWS** — **S110144138**
FTRS-84 SITE SUMMIT NIKE MISSILE SITE, FORMERLY FORT RICHARD — **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

SHWS:

File Number:	2102.38.035
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.254426
Longitude:	-149.688233
Hazard ID:	23424
Problem:	Last staff assigned was Howard.Site FTRS-84. Building 39600, UST 57. Site entered by Shannon & Wilson. Mark Prieksat is the POC for the Army 384-3042 Incorporate into CS DB 199721X104803 Fort Rich NIKE Site & 39225 SFRERA for management purposes.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	3/25/1998
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Incorporate into CS DB 199721X104803 Fort Rich NIKE Site & 39225 SFRERA for management purposes.
Action Date:	2/17/1997
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	10/3/1995
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	Matrix closed.

72
WSW
1/4-1/2
0.478 mi.
2526 ft.

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2
5TH & D STS., SW CORNER CC-FTRS-05, FORMERLY FORT RICHARDSON
FORT RICHARDSON (JBER), AK 99505

SHWS **S107029076**
INST CONTROL **N/A**

Relative:
Lower

Actual:
308 ft.

SHWS:

File Number:	2102.26.008
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.258516
Longitude:	-149.692122
Hazard ID:	1483
Problem:	TU949 is a former motorpool located on the SW corner of D Street and 5th Street. The site consisted of former Building 770 and its three associated underground storage tanks (USTs): 21, 21A, and 21B. UST 21, a 1,500-gallon waste oil tank located directly adjacent to Building 770, was removed in 1989. 21A UST was removed in 1992. Cleanup levels not exceeded site closed out in 1993. 2003 construction activities discovered additional contamination at site and site was reopened. Excavation was conducted to maximum extent practicable, site conditionally closed with LUCs and LTM ongoing at site. Fac. ID 0-00788 Bldg 770 Site W002, 1990 RFA SWMU 30 UST used oil tank near bldg. 770, . LUST DB RECKEY 199221X022561 actions to be imported into this site. LTM result may CLOSE this site after review. EPA ID: AK6214522157

Actions:

Action Date:	9/30/2004
Action:	Conditional Closure Approved
DEC Staff:	Louis Howard
Action Description:	DUPLICATE LUST DB RECKEY 199221X022561 actions to be imported into this site. LTM result may CLOSE this site after review. The Army has removed the petroleum contaminated soils from the site to the maximum extent practicable and has land use controls in place and ongoing long term monitoring wells installed in 1998-1999.

Action Date:	9/30/2004
Action:	Institutional Control Record Established
DEC Staff:	Louis Howard
Action Description:	1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place. 2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites. 3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 PARTY (Continued) **S107029076**

other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites: a. will include specific limitations and controls on such work; b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements; c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources. 5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely. 6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 9/21/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft UFP-QAPP for priority sites which includes Bldg. 770 (TU949). Page 6Remediation ActivitiesThe text states: ???If a site poses unacceptable risk, remedial options that address the compounds and exposure routes that contribute most significantly to the cumulative risk will be evaluated.???ADEC requests JBER explain in the document what the term ???significantly??? means in the context of contaminants contributing to cumulative risk. If applying soil cleanup levels under methods two, three, or four found in 18 AAC 75.340 or applying groundwater cleanup levels found in 18 AAC 75.345, a responsible party must ensure that cumulative carcinogenic risk and hazard index standards

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are not exceeded. Under 18 AAC 75.325(g), if using method two or three for applicable soil cleanup levels or applying groundwater cleanup levels, a responsible person shall ensure that, ??????after completing site cleanup, the risk from hazardous substances does not exceed a cumulative carcinogenic riskstandard of 1 in 100,000 across all exposure pathways and a cumulative non-carcinogenic risk standard at a hazard index of 1 across all exposure pathways.???Therefore, the regulatory requirements for cumulative carcinogenic risk and hazard index standards are not strictly limited to data evaluation under method four or a site-specific risk assessment. Comment applies throughout the document. WS 10Land Use ConsiderationsThe text states: ???ICs include soil use restrictions based on agreements between the military services, EPA, and ADEC.???The Army???s 2008 Standard Operating Procedures (SOPs) state ???Institutional controls are established when contamination remains in soil or groundwater and a decision is made to restrict land use and access. Institutional controls include dig permits, signage, fences, and monitoring. IC areas are designated on the installation master plan and are regularly updated.??? JBER???s Land Use Controls (May 2011) states: ???LUCs were established at JBER to prevent exposure to contaminated soil and water, based on agreements between the military services and the US Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). LUCs are used to reduce the potential for exposure to hazardous substances or to enhance the protectiveness of a soil and/or water cleanup remedy.???Please state that ICs include both soil and groundwater use restrictions. Table 11-1DQO 4 - Characterization Possible Groundwater ContaminationDecision Rule 5AAppears that the decision rule should be labeled ???4A??? and not ???5A???. Same goes for the Results 5A1 and 5A2 which should be 4A1 and 4A2. Groundwater samples should be collected beneath source where the release occurred (not ???or downgradient???), and define source as point of release or suspected release.WS 14 and 16Waste Management Excavated SoilAfter excavation is complete, discrete confirmation soil samples will be collected from all of the ???clean??? and ???dirty??? stockpiles and submitted for analysis. Reuse of any stockpiled soil for any purpose (i.e. backfill material) will not be allowed until laboratory results confirm the soil is actually ???clean??? and meets regulatory cleanup levels. Absence of positive field screening results or those field screening results below an arbitrary threshold (i.e. less than or equal to a 20 ppm PID reading) cannot be used as justification for not taking the associated number of laboratory analytical samples from ???clean??? excavated soil.Page 56Project Tasks and ScheduleOther Risk Assessment ProceduresImplementation of a site-specific risk assessment, if considered appropriate for a site, would be conducted after ADEC and EPA review, comment and subsequent approval of conceptual site models and a risk assessment work plan.Table 15-1Comparison of Laboratory DLs and LOQs non-TPH Analytes in SoilIf a COC at any of the sites, please note perchlorate has a direct contact cleanup level of 71 mg/kg and a migration to groundwater cleanup level of 0.067 mg/kg. General Comment: For all the tables in section 15:a. Please correct all headers, as they all reference Direct Contact. b. The 1/10th screening criteria does not apply to Migration to Groundwater.c. Please clarify in the text why the EPA RSLs are included. These levels are only referenced if State cleanup levels are not present for specific contaminants. In most cases, the COCs are primarily petroleum or chlorinated solvents. The

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two sites where no cleanup level exists in 18 AAC 75 and then the EPA RSLs may be appropriate, are the two drum sites: SA034 and SA033.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/29/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.2586 N latitude -149.6924 W longitude

Action Date: 8/24/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP for PA/SIs at Sites SA034, SA033, AT035, and AT032 Site Characterization/Cleanup at Sites TA008, TU948, TU110, TU111, TU112, TU949, and SS001 Dated August 23, 2012 received. SA034 ??? TBD 2, Powerline Drum SiteTU949 Building 770 UST Site (CC-FTRS-05)SS001 - Building 796 (Battery Shop) (FTRS-01)SA033 ??? TBD 3, Otter Lake Road Drum SiteTA008 ???Biathlon Range Fuel Release (CC-FTRS-08)TU948 ???Building 57-428 UST Site (CC-FTRS-09)TU110 ???Building 47-431 Tanks E1 & E2 (CC-FTRS-10)TU111 ??? CC-FTRS-11, Tank E5TU112 ??? CC-FTRS-12, Tank E7AT035 ??? TBD 4 MEB Complex, COF (FTR269)AT032 ??? TBD 1, Airborne Training Facility (FTR255)Soil and groundwater petroleum hydrocarbon and volatile organic compound (VOC) data are required for input into the HRC. Because the source is unknown and a former waste oil tank (UST 21 at Building 770) was located in the vicinity of the site, samples will also be analyzed for PCB, metals, and pesticides. Soil and groundwater sampling and analysis will follow ADEC requirements for petroleum, oil, and lubricants (POL) sites (ADEC, 2010).Soil sampling and analytical approach??? Soil samples will be collected every 5 feet from ground surface to groundwater in six boreholes.??? Continuous logging of soil type and stratigraphy, moisture or groundwater, visual observations of staining or liquid phase petroleum, photoionization detector (PID) readings, and other observations will be performed.??? All soil samples collected (approximately 24, excluding quality control [QC]) will be analyzed for gasoline-range organics (GRO), DRO, residual-range organics (RRO), VOCs, PCBs, metal, and pesticides.??? A subset of soil samples (as described in Worksheet 17 of this appendix) will be collected for additional analyses to facilitate HRC calculations. These analyses include: polycyclic aromatic hydrocarbons (PAH), volatile petroleum hydrocarbon (VPH), extractable petroleum hydrocarbon (EPH), fraction of organic carbon (foc), bulk density, grain size distribution, specific gravity, and moisture content.Groundwater sampling and analytical approach??? HydroPunch

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groundwater samples will be collected from up to six borings and analyzed for GRO, DRO, RRO, VOCs,, PAHs, VPH, EPH, total organic carbon (TOC), PCBs, metals, and pesticides.Additional data to be collected for HRC analysis??? Soil source zone temperature (field measurement)??? Average precipitation/infiltration (estimate from available regional information)??? Aquifer hydraulic conductivity (estimate from historical aquifer testing data from nearby Site TU058)If unacceptable risk is indicated by the HRC and excavation is the selected remedial approach, then field screening and soil sampling will be performed in accordance with ADEC Field Sampling Guidance (ADEC, 2010).The project objective is to collect soil and groundwater samples to characterize risk to human health and the environment within the framework of ADEC???s site cleanup process (18 AAC 75 Sections 325 to 390 and 18 AAC 78 Section 600). If Method 1 and Method 2 criteria are exceeded, the HRC approach under Method 3 will be used to assess whether site conditions meet ADEC risk criteria (in which case a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case remediation, ICs, or both may be required).If unacceptable risk is indicated by the HRC, then remedial options that address the compounds and exposure routes which contribute most significantly to the cumulative risk will be evaluated.

Action Date: 7/8/1992
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: 10 cubic yards of petroleum contaminated soil were excavated and stockpiled during the removal of a waste oil tank in 1989. One soil sample was collected and analyzed from the excavation (only TPH analysis was run). ACOE installed 3 soil borings and 1 monitoring well in 1990. Soil samples were collected from the borings and analyzed by EPA 8020 and modified 8015(not clear how method 8015 was modified- no lab report, QA/QC, SOPs, or narrative submitted). Groundwater table was found to be 19 to 21' below ground surface. 0.65 ug/L benzene found in groundwater but no information on validity of sample. Did not analyze for TPH, chlorinated compounds or PCBs.

Action Date: 7/31/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Tank Removal UST 21A and 21B (1997): USTs 21A and 21B were removed in 1997. Presumably, no signs of contamination were observed.

Action Date: 7/31/1989
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The site consisted of former Building 770 and its three associated underground storage tanks (USTs): 21, 21A, and 21B. UST 21, a 1,500-gallon waste oil tank located directly adjacent to Building 770, was removed in 1989.

Action Date: 7/23/2004
Action: Offsite Soil or Groundwater Disposal Approved
DEC Staff: Louis Howard
Action Description: Staff received and reviewed the request to treat soils on 07/23/2004. After review of the confirmation sampling results, ADEC concurs with

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the plan to transport approximately 270 cubic yards of petroleum contaminated soil generated from a release near Building 770. Soil must be transported in covered loads from Fort Richardson to be thermally remediated at a local treatment facility. Please submit post-treatment sampling results and scale receipts showing the total amount of soils treated referencing Bldg. 770.ADEC???s review and concurrence on the request to thermally treat the POL contaminated soil is to ensure the proposed work is in accordance with State of Alaska environmental conservation laws and regulations. While ADEC may comment on other state and federal laws and regulations, our concurrence on the treatment does not relieve the United States Army or its consultants, contractors, or civilian personnel from complying with other applicable laws and regulations.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review and comment. Performance ObjectiveSite ClosurePerformance Indicators&183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by June 2013&183; Complete an approved Characterization/Cleanup Report by December 2013&183; Achieve RC by January 2014&183; Complete two years of annual LTM and reporting&183; Complete an approved Cleanup Complete Report and achieve SC in 2016Potential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installedto confirm upgradient FTRS-58 is the source. If it is determined that CC-FTRS-05 is thesource, groundwater contamination will be addressed with ORC??? injections as appropriateto the nature and extent of the plume to achieve SC. Based on the historically low levels ofbenzene, groundwater is not expected to be an issue.Date of Achieving Performance Objective4th Quarter 2016Planned ApproachPrepare an approved Characterization Workplan and coordinate, mobilize and execute Characterization by installing and sampling two soil borings and potentially collect hydropunch groundwater samples.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation, and include the Cleanup Plan and prepare and submit a request for Cleanup Complete with ICs. Perform two additional years of LTM and confirm site meets criteria for Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/16/2003
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Construction of light poles along the northern side of Building 653 in 2003 uncovered additional petroleum contamination at the site, and the site was re-opened. DRO was detected in soil between 582 and 5,640 mg/kg. Approximately 920 cubic yards of contaminated soil was excavated and thermally remediated at a local treatment facility.Staff received and reviewed the information faxed on 06/12 and 06/16/2003. After review of the confirmation sampling results,

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ADEC concurs with the plan to transport approximately 650 cubic yards of petroleum contaminated soil generated from a release near Building 770. Soil must be transported in covered loads from Fort Richardson to be thermally remediated at a local treatment facility. Please submit post-treatment sampling results and scale receipts showing the total amount of soils treated referencing Bldg. 770.ADEC???s review and concurrence on the request to thermally treat the POL contaminated soil is to ensure the proposed work is in accordance with State of Alaska environmental conservation laws and regulations. While ADEC may comment on other state and federal laws and regulations, our concurrence on the treatment does not relieve the United States Army or its consultants, contractors, or civilian personnel from complying with other applicable laws and regulations.

Action Date: 6/11/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72461 name: auto-generated pm edit Ft. Rich Bldg. 770 USTs 21A & 21B

Action Date: 5/15/1991
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: CENPA-EN-G-M (200-1c) May 15, 1991, MEMORANDUM FOR CENPA-EN-MB-A SUBJECT: Sampling Report, Underground Storage Tank Remediation, Fort Richardson, AK recieved. The objective of the project was to obtain data for closure of the UST sites in accordance with the requirements of Alaska Department of Environmental Conservation (ADEC). To close the sites, the ADEC has required soil borings to check for POL contamination and to determine if further excavation is. required for clean up where underground storage tanks (UST) were removed.Although there are no regulatory cleanup levels for metals in soils, the presence of high lead levels could indicate the presence of leaded motor fuel. In addition, there are restrictions on soils that are to be placed in landfills. TCLP MCLs are included in Table I for comparison with landfill restrictions. Because of test methodology and reporting parameters, TCLP metalresults cannot exceed limits unless total metals exceed 10 times TCLP limits. Enclosure 1 demonstrates the mathematical logic.Three borings were made and one monitoring well installed. Soil sample concentrations were all below limits from reference ld. A single monitoring well was installed&183;in BH-6 (AP-2976).

Action Date: 4/22/2014
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 4/18/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 PARTY (Continued) **S107029076**

Action Description: Staff assigned a cleanup complete determination for the site.Contaminants of ConcernDuring the 2013 site characterization at this site, no contaminants exceeded the most stringent cleanup levels under Method Two (applicable to the site TU949), therefore a Method Three risk evaluation or Method Four risk assessment is not necessary. Cleanup LevelsIn accordance with 18 AAC 75.380(d)(1), after reviewing the site characterization report submitted under this section, ADEC has determined TU949 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU949. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU949. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 4/1/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment. TU949 was adequately characterized and no COCs exceed soil or groundwater cleanup levels. In 2012, the AP-5000 and AP-5002 were sampled for DRO, BTEX, and PAHs. No analytes were detected at concentrations above the screening levels (Table 2-3). DRO has not been detected in groundwater since 2007, and BTEX has not been detected since monitoring began at the wells in 2000.ConclusionsThe following conclusions were made regarding TU949:??? TU949 has been adequately characterized to delineate the nature and extent of contamination and evaluate potential risks.??? No compounds are present in soil or groundwater above project screening levels or naturallyoccurring background concentrations.??? Because all current and future exposure pathways are incomplete or insignificant, a Method Three or Method Four risk assessment is not necessary.RecommendationsThe following are recommended for TU949:??? No further investigations and/or cleanup of soil.??? The LTM and assessment of TU949 as a part of the TU058 LTM program will be ceased.Both wells included in the LTM of TU949 are used for the TU058 LTM program, so they will not be

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 PARTY (Continued) **S107029076**

decommissioned.??? ???Cleanup Complete without ICs??? designation from ADEC because the site meets the criteria established for site closure

Action Date: 3/28/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Letter sent to Jennifer Roberts RE: Memorandum for the Record-UST Remediation Phase III. This memorandum references a meeting between Jennifer Roberts and John Halverson and Lori Tussy Lay, this office, March 13, 1990 regarding UST remediation. Seven USTs were removed in 1989. Excavation of soil was to proceed until the excavation site was free of contamination (less than 50 ppm TPH for fuel and less than 100 ppm for TPH for waste oil). However, in most cases, a clean reading could not be obtained. Due to contract obligations, the ADEC allowed the sites to be backfilled with the understanding the Army would further remediate at another time. ADEC required for Tank Nos. 21A and 21B at bldg. 770 2 borings be installed. Each boring will be screened and recorded every 5 ft. with a portable photoionization device. Each boring will be 11-12 ft. deep and a soil sample taken at this point.

Action Date: 2/5/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met: Tank21A & B- This is a used oil UST with an ILS-350 interstitialmonitor/overfill alarm system. The tank's spill control system consists of acatchement basin/floor drain system attached to an oil water separator. The tank isfilled through manually pouring oil into either one of the floor drains or into a oilsink. The system is non-pressurized, and gravity fed.

Action Date: 2/5/1993
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: ADEC Letter to Army RE: UST Remediation, Five Sites at Fort Richardson, Site Assessment/Release Investigation Report and Corrective Action Report received on January 28, 1993. Site 2 Bldg. 770 Motor Pool UST 21-A 1,500 gallon waste oil tank was removed from the ground in 1989. Contaminated soil was excavated and transferred to the Fort Richardson Landfill for storage and future treatment. It appears the work was conducted in accordance with the approved work plan and applicable guidance in effect during the summer of 1990. Based on the documentation submitted for tank closure and cleanup, the Department is not requesting further investigation or cleanup, other than proper treament of the excavated soil (now stockpiled at the landfill).* ADEC will require the proper treatment of the excavated soils.If in the future contaminated soil or ground water is identified at either site, it will need to be addressed in accordance with applicable state and federal regulations.*Site closure action withdrawn. June 2003 excavation during construction activities

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 PARTY (Continued) **S107029076**

uncovered additional petroleum contamination in soil and groundwater.

Action Date:	12/7/1992
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	UST Remediation Five Sites at Fort Richardson, AK. Site Assessment/Release Investigation Report and Corrective Action Report dated December 7, 1992. Executive Summary: Site 2: Building 770 Motor Pool, 106th MI Battalion-Regulated 1,500 gallon waste oil tank, Site 3: Building 702-Vehicle Storage, Gas Pump Bldg. Regulated 5,000 gallon MOGAS tank, Site 5: Building 908 South 1117th Signal Battalion Stockroom, non-regulated 1,000 gallon fuel oil tank, Site 6: Building 908 North, 1117th Signal Battalion Stockroom, non-regulated 1,000 gallon fuel oil tank and Site 7: Building 55804, Ammo Renovation Shop, Ammo Area A, non-regulated fuel oil tank. Five USTs were removed in 1989 and 1990. Excavation of soil was to proceed until the excavation site was free of contamination. However, in most cases, a clean reading could not be obtained. Due to contract obligations, the Alaska Department of Environmental Conservation (ADEC) allowed the sites to be backfilled with the understanding that Fort Richardson, Directorate of Public Works (DPW) would further remediate at another time. Soil samples from the UST removal excavations were taken and analyzed. At a meeting on June 13, 1990 attended by ADEC, DPW, and the Alaska District Corps of Engineers, the ADEC (John Halverson and Jennifer Roberts) recommended a drilling strategy. The ACOE drilled and sampled the sites in August and September 1990. Remaining contamination is limited to diesel range organics (DRO), and BTEX (benzene, toluene, ethylbenzene, and total xylenes), and at Site 5: o-Dichlorobenzene.

Action Date:	10/29/1999
Action:	Long Term Monitoring Established
DEC Staff:	Louis Howard
Action Description:	Three groundwater monitoring wells (AP-3921, 3922, and 3923) were installed at Site TU949 in 1998 and 1999. Benzene was detected in AP-3923 at 6.8 &181;g/L in 1998, but contamination was not detected in subsequent samples collected in 2000.

Action Date:	1/28/1993
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	UST 21 Release Investigation (1992)Three soil borings were drilled, and one monitoring well was installed in 1992. Soil samples were analyzed by EPA 8020 and modified 8015 (Alaska District Corps of Engineers [ADCOE], 1992). Groundwater was encountered at approximately 19 feet bgs, with a saturated thickness of about 2 feet. Benzene was detected in groundwater at 0.65 &181;g/L, but the validity of the sample was questioned. The release investigation determined that that over-excavation following the tank removal resulted in meeting acceptable cleanup levels.Release investigation results indicate that overexcavation following the tank removal resulted in meeting acceptable cleanup levels.

Action Date:	1/22/2003
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Laboratory (CT&E Environmental Services Inc.) work order 1030274

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 PARTY (Continued) **S107029076**

A30024 Barricks Renewal sample results received. Building 770 confirmation levels showed petroleum contamination present: client sample ID 03-NSP-001SC diesel range organics (DRO) 1,190 mg/kg, 03-SSP-002SC DRO 636 mg/kg, and sample ID 03-SSP-003SCD DRO 582 mg/kg.
Not reported

Action Date: 1/1/1992
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Not reported

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU949 Bldg 770 USTs 21A & 21B USTA 2
Contaminate Level Description1: < Method 2 Most Stringent
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 1483
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 9/30/2004
File Number: 2102.26.008

Hazard ID: 1483
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 4/22/2014
File Number: 2102.26.008

R73 **FTRS-003-R-01 GREZELKA MACHINE GUN RANGE** **UXO** **1018152028**
SW **5312 KENNEY AVE** **N/A**
1/4-1/2 **ANCHORAGE, AK**
0.479 mi.
2530 ft. **Site 3 of 8 in cluster R**

Relative: **Lower**
Actual: **302 ft.**

UXO:
DoD Component: Air Force
Installation Name: JBER-RICHARDSON
Facility Address 2: Not reported
Site ID: FR003
Site Type: Firing Range
Latitude: 61.254444
Longitude: -149.688333

R74
SW
1/4-1/2
0.479 mi.
2530 ft.

FTRS-005-R-01 MAHON MACHINE GUN RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Site 4 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

UXO **1018152036**
N/A

UXO:

DoD Component:	Air Force
Installation Name:	JBER-RICHARDSON
Facility Address 2:	Not reported
Site ID:	FR005
Site Type:	Firing Range
Latitude:	61.254444
Longitude:	-149.688333

R75
SW
1/4-1/2
0.479 mi.
2530 ft.

FTRS-009-R-01 MORTAR RANGE 1B
5312 KENNEY AVE
ANCHORAGE, AK

Site 5 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

UXO **1018152042**
N/A

UXO:

DoD Component:	Air Force
Installation Name:	JBER-RICHARDSON
Facility Address 2:	Not reported
Site ID:	FR008
Site Type:	Firing Range
Latitude:	61.254444
Longitude:	-149.688333

R76
SW
1/4-1/2
0.479 mi.
2530 ft.

FTRS-013-R-01 ANTI-AIRCRAFT RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Site 6 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

UXO **1018152048**
N/A

UXO:

DoD Component:	Air Force
Installation Name:	JBER-RICHARDSON
Facility Address 2:	Not reported
Site ID:	FR013
Site Type:	Firing Range
Latitude:	61.254444
Longitude:	-149.688333

R77
SW
1/4-1/2
0.479 mi.
2530 ft.

FTRS-013-R-01 ANTI-AIRCRAFT RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Site 7 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

UXO **1018152047**
N/A

UXO:

DoD Component:	Air Force
Installation Name:	JBER-RICHARDSON
Facility Address 2:	Not reported
Site ID:	FR013A
Site Type:	Firing Range

FTRS-013-R-01 ANTI-AIRCRAFT RANGE (Continued) **1018152047**

Latitude: 61.254444
Longitude: -149.688333

R78
SW
1/4-1/2
0.479 mi.
2530 ft.

FTRS-004-R-01 MCGEE MACHINE GUN RANGE **UXO** **1018152033**
5312 KENNEY AVE **N/A**
ANCHORAGE, AK

Site 8 of 8 in cluster R

Relative:
Lower

Actual:
302 ft.

UXO:

DoD Component:	Air Force
Installation Name:	JBER-RICHARDSON
Facility Address 2:	Not reported
Site ID:	FR004
Site Type:	Firing Range
Latitude:	61.254444
Longitude:	-149.688333

P79
West
1/4-1/2
0.480 mi.
2536 ft.

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY **LUST** **S108941718**
BLDG 975 **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 3 in cluster P

Relative:
Lower

Actual:
320 ft.

LUST:

Facility Name:	JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY
Facility Status:	Cleanup Complete - Institutional Controls
Record Key:	2000210010801
File ID:	2102.26.022
Oname:	U.S. Air Force
Lat/Lon:	61.26500 -149.6930
Lust Event ID:	2634
CS or Lust:	LUST
Borough:	Anchorage
Staff:	Louis Howard
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD83

80
West
1/4-1/2
0.482 mi.
2545 ft.

JBER-FT. RICH BLDG 796 UST 160 **LUST** **S122436118**
DAVIS HIGHWAY AND 5TH STREET BUILDING 796 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
317 ft.

LUST:

Facility Name:	JBER-FT. RICH BLDG 796 UST 160
Facility Status:	Cleanup Complete
Record Key:	Not reported
File ID:	2102.26.074
Oname:	U.S. Air Force
Lat/Lon:	61.26312 -149.6930
Lust Event ID:	Not reported
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned

JBER-FT. RICH BLDG 796 UST 160 (Continued) **S122436118**

Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

P81 **JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY** **SHWS** **S110144191**
West **BLDG 975, FORMERLY FORT RICHARDSON BEFORE 10/01/2010** **INST CONTROL** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.483 mi.
2551 ft. **Site 3 of 3 in cluster P**

Relative:
Lower

Actual:
320 ft.

SHWS:
File Number: 2102.26.022
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status: Cleanup Complete - Institutional Controls
Latitude: 61.265005
Longitude: -149.693083
Hazard ID: 23303
Problem: Closure of a 1,000 gallon wastewater UST used to store effluent from an oil/water separator. Soil contamination above most stringent level A criteria.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:
Action Date: 8/21/2002
Action: Update or Other Action
DEC Staff: Cynthia Pring-Ham
Action Description: RECKEY has automatically been generated.

Action Date: 7/6/2007
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 6/17/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 76150 name: autogenerated pm edit - Fort Richardson - Bldg 975 Tank 38A

Action Date: 4/7/2008
Action: Update or Other Action
DEC Staff: Nicole Hurt
Action Description: File number assigned: 2102.26.072

Action Date: 4/17/2000
Action: Site Added to Database
DEC Staff: * Not Assigned

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY (Continued) **S110144191**

Action Description: Not reported

Action Date: 4/17/2000
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 11/5/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA Letter to Colonel Timothy Prior. RE: Closures of Five Class V Injection Wells, Reclassification of One Motor Vehicle Waste Disposal Well, and Long-Term Monitoring of Moose Run Golf Course Stormwater Drainage Injection Wells, Fort Richardson, Alaska (UIC ID AK020F5-12-13347, AK020F5-12-13398, AK020F5-17-13406, and AK020F5-12-13346)Four Class V injection wells used for disposal of stormwater existed about 250 feet northeast of Building 975. The four injection wells were constructed as a cluster of drywells, each consisting of welded together sections of perforated 55-gallon drums that were buried underground. The drywells were approximately ten feet deep.On June 5, 2008, the drywells were excavated. Soil samples were collected from beneath the excavation, at approximately 11 feet below ground surface, and analyzed for gasoline range organics by Alaska Method 101, diesel range organics by Alaska Method 102, residual range organics by Alaska Method 103, metals by EPA Method. 6020, and mercury by EPA Method 7471 B.Analyses detected diesel range organics, arsenic, and chromium above State ofAlaska cleanup levels. The drywells were located approximately 100 feet southwest of a petroleum contaminated site that is the subject of a cleanup action under a Two Party Agreement between the Alaska Department ofEnvironmental Conservation (ADEC) and the U.S. Army. Fort Richardson is working with ADEC to determine appropriate next steps to respond to these analytical findings. The excavation was backfilled with rock imported from an offsite source.The UIC Program files for Fort Richardson have been updated to show that one stormwater injection well at Building 45-125 and four stormwater injection wells at Building 975 have been permanently removed. EPA understands that Fort Richardson is continuing to work with ADEC to address the diesel range organics, arsenic, and chromium found in samples collected at the Building 975 drywell excavation. If additional information becomes available indicating that the injection well closure activities at these sites were inadequate, Fort Richardson is required to provide the additional information to EPA, and further efforts may be required in the future. You are also advised that Fort Richardson is responsible for compliance with all other federal, state, or local laws and regulations.

Action Date: 10/31/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The U.S. Anny Garrison, Public Works (PW), Environmental Branch has tasked the UnitedStates Anny Corps of Engineers, Alaska District, with performing Remedial Investigations (RIs),at Buildings 47-203, 955, 975, 979, 45-070, and 28-008. This Remedial Investigation Reportdescribes those activities perfonned at these six sites. This report was prepared as authorized by Contract No. DACA85-95-D-0008, Delivery Order No. 0004 and addresses the scope of work(SOW)

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY (Continued) **S110144191**

submitted to the DOWL/Ogden Joint Venture (DOWL/Ogden) by the Alaska Districton behalf of the Fort Richardson, PW.A waiver has been o issued by ADEC exempting all work conducted during the Remedial Investigations from the analytical requirements specified in 18 AAC 78.090(e), 18 AAC 78.235(b), 18 AAC 78.300(c), 18 AAC 78.312(f)(2), and 18 AAC 78.315(d)(3).Building 975 is located near the intersection of the Davis Highway and Fifth Street. Vehicle maintenance is performed in Building 975.A 1,000-gallon UST (Tank 38) was placed on the North side of Building 975 to store waterwhich accumulated from vehicle washing. Tank 38 was six feet two inches long and five feettwo inches in diameter. It had a two-inch vent pipe and a four-inch fill pipe.This UST was installed approximately four feet below ground and had no surface dispensers.Information provided by Brown & Root Services Corporation stated Tank 38 contained oilywater from equipment washing. A sample of the tank contents was collected by Oil SpillConsultants on April 19, 1994. Laboratory analysis indicated this tank contained water withtrace quantities of benzene, toluene, ethylbenzene, xylene, (BTEX). No PCBs or halogenatedhydrocarbons were detected. The flash point was greater than 200&176;F.The 1,OOO-gallon UST was removed from Building 975 in May 1994. Five soil samples werecollected to determine if the soil was contaminated with petroleum hydrocarbons. Laboratoryresults indicated the maximum detected level of DRO in the soil was 2,430 mg/Kg and GRO andbenzene were detected at 0.585 mg/Kg and 0.02 mg/Kg, respectively. BTEX was detected at0.22 mg/Kg.Soil samples collected during the removal determined the soil surrounding the tank was contaminated with petroleum hydrocarbons. Therefore, soil samples collected during the RI were analyzed for VOCs, TRPH, GRO, DRO, metals, and P,CBs. Two samples were analyzed for TOC.A total of seven soil samples were collected and analyzed for grain size distribution.Borehole AP-3673 TRPH was detected in two soil samples at concentrations of 37.79 mg/Kg at 10 feet and 519.4 mg/Kg at the surface. Borehole AP-3674 TRPH was detected in one soil sample at a concentration of 584.2 mg/Kg at the surface. Borehole AP-3675 DRO was detected at a concentration of 960 mg/Kg at the surface. TRPH was detected in two soil samples at concentrations of 1,378 mg/Kg at the surface and 55.26 mg/Kg at 10 feet. Borehole AP-3676 DRO was detected at a concentration of 1,400 mg/Kg at the surface. TRPH was detected in one soil sample at a concentration of 8,524 mg/Kg at the surface. Borehole AP-3677 detected TRPH in two soil samples at concentrations 5,135 mg/Kg at the surface and 95.74 mg/Kg at five feet.RecommendationsThe contaminated soil present at this site is most likely due to the asphalt paving above it. It is recommended a letter be submitted to the ADEC requesting alternative clean-up levels and no further action at this site, since contaminant levels in access of clean-up criteria are only found immediately below the asphalt paving.

Action Date:	1/9/2001
Action:	Conditional Closure Approved
DEC Staff:	David Allen
Action Description:	Stockpile clean. Trip blank contaminated. Laboratory reported detection limits for ten (10) halogenated compounds are greater than the ADEC cleanup guidelines. According to the laboratory, the reason for the elevated detection limit for some compounds is due to field preservation with methanol. The methanol acts as an extractant and prevents the compounds from vaporizing in the matrix. If methanol

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY (Continued) **S110144191**

field preservation had not been used, the compounds may have volatilized and may not have been detected, but the laboratory may have been able to achieve a lower detection limit. Naturally occuring chromium. Conditionally closed out.

Inst Control:
Hazard ID: 23303
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 7/6/2007
File Number: 2102.26.022

S82 **JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS** **SHWS** **S111750322**
WNW **S OF LADUE RD; N OF CIRCLE DR; E OF RAILROAD CLASSIFICATION** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.489 mi.
2583 ft. **Site 1 of 2 in cluster S**

Relative: Lower
Actual: 328 ft.

SHWS:
File Number: 2102.38.063
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.272320
Longitude: -149.694890
Hazard ID: 25871
Problem: On November 1, 2011, during activities related to the FTR266 construction site, petroleum-contaminated soil was discovered. Remedial activities planned included excavation and stockpiling of approximately 50 to 75 cubic yards of soil, followed by analytical sampling.

Actions:
Action Date: 8/27/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER responses to ADEC's comments on the corrective action work plan for SS016 (formerly CC-FTRS-16)- Proposed Rapid Deployment Facility. The responses are acceptable. Please finalize the work plan.

Action Date: 8/19/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the work plan and has some general comments on the document. There were no statements in the work plan regarding whether or not the wells are needed for JBER Compliance Program or any other data need such as for future PFOS/PFOA evaluation of upgradient fire training areas/fire training pits or future 1,4-dioxane evaluation for TCE/TCA releases upgradient of SA015. ADEC requests JBER clarify whether or not these data needs exist. The work plan is approved if there are no such data needs, if this is the case; please finalize the document. ADEC???s review and comment on this work plan is to ensure that the work is done in accordance with State of Alaska environmental conservation laws and regulations. While ADEC may comment on other state and federal laws and regulations, our comments on the work plan does not relieve responsible persons from the need to comply with other applicable laws and regulations.

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS FACILITY (Continued) **S111750322**

Action Date: 7/24/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the responses to its comments on the draft SS015 UFP-QAPP work plan and finds the responses acceptable. Please finalize the document.

Action Date: 7/2/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SS016 Proposed Rapid Deployment Facility Corrective Action Work Plan received. The goals of this project are to characterize, remove, and dispose of or thermally treat soilcontaminated with diesel-range organics (DRO) identified at the site during an investigationconducted in fall 2011. The Corrective Action will remove the potential safety hazard toconstruction workers and future facility occupants posed by the surface contamination.This Work Plan is the primary planning document prepared to ensure that the project goals aremet for the site. This Work Plan also includes appendices that will be used to support theproject goals for the SA015 ??? Railhead Operations Facility, which is addressed under thesame contract.This site is the future location of an RDF that will be located adjacent to railroad siding. Thelocation is near the south side of JBER-Richardson???s closed solid waste landfill. The areaformerly housed warehouse facilities with railroad loading platforms and underground storagetanks (UST).Known contaminated soil is located beneath one of the two railroad switches in the immediate area. The contamination appears to be the result of small leaks or over-filling while lubricating the switch.2011 Sampling EffortOne surface soil sample collected directly under one of the railroad switches contained DROat a concentration of 550 milligrams per kilogram (mg/kg), exceeding the ADEC migration togroundwater cleanup level of 250 mg/kg.Excavation activities will begin at the location of the 2011 surface sample RDFSS02 and will be expanded as necessary based on visual and olfactory observations, field screening, and analytical sample results. Up to 34 tons of contaminated soil excavation is anticipated. JBER personnel will be consulted if any modification to the railroad system is required.Once the suspected contaminated soil has been removed, excavation confirmation samples will be collected for verification. Excavation confirmation sample locations will be based on the locations of the highest field screening results and will be collected at the frequencies specified in Table 2B of the ADEC Draft Field Sampling Guidance.

Action Date: 7/2/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft work plan for the site. Executive Summary3rd ParagraphThe text states: ???This Work Plan has been drafted in accordance with the U.S. Air Force (USAF); the Occupational Safety and Health Administration (OSHA); the Alaska Department of Environmental Conservation (ADEC) guidance and regulations; the U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (QSM) version 4.2 (DoD 2010); the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Manual (Intergovernmental Data Quality Task Force 2005); and Guidance for Conducting Remedial Investigations and Feasibility

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS FACILITY (Continued) **S111750322**

Studies Under CERCLA (U.S. Environmental Protection Agency [EPA] 1988).??? Although ADEC may accept OSHA air standards to evaluate indoor air when the site COCs are chemicals used in the workplace, ADEC will still require characterization of the vapor intrusion pathway for future unrestricted land use.There have been three sampling efforts at the site which did not detect CERCLA hazardous substances (e.g. non-POL).2010/2011 Foundation Study HTRW Survey and Geotechnical InvestigationAnalyses included: GRO, DRO, RRO, VOCs, PCBs, chlorinated pesticides, RCRA metals, hexavalent chromium, and PAHs. 2011/2012 Construction Sampling ActivitiesAnalytes included: GRO, DRO, RRO, VOCs, PCBs, PAHs, and RCRA metals. 2012 DRO-Contaminated Soil RemovalAnalytes included: GRO, DRO, RRO, and PCBs.Thus far, only diesel range organics (DRO) has been detected above cleanup levels. Arsenic was ruled out as being associated with background, bromomethane and methylene chloride were attributed to laboratory contamination. Petroleum hydrocarbons, PAHs, and VOCs are the only contaminants being analyzed for at the site in soil and groundwater samples. It is ADEC???s position that CERCLA RI/FS 1988 guidance need not apply to the site for the petroleum contamination unless chlorinated solvents are detected during investigation with Method 8260. Also this site meets the criteria for inclusion into the 1994 Two Party Agreement (aka Ft. Richardson Environmental Restoration Agreement). Should chlorinated solvents or other CERCLA substances be found, the site should be included in the Federal Facility Agreement Attachment A. Site DescriptionState whether or not there are occupied buildings within 30 feet of the contamination (horizontally and vertically) presently known at SA015. With additional site characterization this answer may or may not need to be updated in the draft report. Also state whether or not there is a groundwater well within &189; mile radius of the site, including, but not limited to, drinking, irrigation, fire control, dust control, or any other activity. How good do the data need to be in order to support the environmental decision?The text states: All results should have detection limits less than the associated cleanup level, if possible using the proposed methodology. Several analytes in the VOC list are known to have cleanup levels lower than the detection limits achievable by the SW8260 mid-level method.In cases where the cleanup level is less than the detection level, professional judgment will be used to determine if that analyte is a contaminant of potential concern at the site.???Be aware that EPA does not approve the use of methanol preserved soil samples for SW8260 VOC analysis. EPA requires that JBER instead use VOC/VOA vials with a water carrier. These samples will be in addition to the methanol-preserved SW8260 samples required by ADEC. EPA no longer recommends low-level analysis (SW8260) with sodium bisulfate preservative. This is applicable to all JBER-E and JBER-R sites using SW8260 to analyze for constituents (TCE, PCE, TCA, etc.) besides petroleum related volatile constituents (e.g. BTEX). Who will collect and generate the data?The test states: ???The subcontracted laboratory (EMAX) will analyze the samples, review, and generate the data.???JBER shall ensure and provide documentation that EMAX (UST-031) is both DoD-ELAP accredited AND Alaska approved. Any non-EPA and/or non-Alaska methods must be approved by ADEC prior to sample collection. ADEC is requesting JBER supply a copy of EMAX???s current ADEC approval letter. These letters detail the methods, matrices, and dates for which the lab has approval. Labs must renew their approval and pass performance evaluation samples annually. Failure to do so results in the

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS FACILITY (Continued) **S111750322**

revocation of a lab's approval.

Action Date: 7/11/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the draft SS016 Proposed RDF Corrective action WP.Overview-9Previous Investigations1st ParagraphThe text states: ???Soil gas sample results were compared to the lower explosive limit for methane gas listed in 18 AAC 60 (ADEC 2013).??? However, the follow-on discussion of results does not mention whether or not methane is of concern or what the levels of methane gas that were measured (i.e. does it or does it not exceed the lower explosive limit for methane gas listed in 18 AAC 60). The reader has to wait until WS 17 to read that ???An associated methane plume and grease pits were also associated with the landfill at the time of closure, however, recent soil gas sampling at the site indicates that no methane impacts are present.???Discovery of Munitions Non-training areas: See above comment regarding stop work and notification requirements to ADEC. Training area: While not unusual or unexpected, munitions being discovered shall be noted in the report (ADEC courtesy notification is requested) and any EOD response report shall be included as part of the reportWS 11Project Quality Objectives/Systematic Planning Process StatementsPage 11-2Who will collect and generate the data?The test states: ???The subcontracted laboratory (EMAX) will analyze the samples, review, and generate the data.???JBER shall ensure and provide documentation that EMAX (UST-031) is both DoD-ELAP accredited AND Alaska approved. Any non-EPA and/or non-Alaska methods must be approved by ADEC prior to sample collection. ADEC is requesting JBER supply a copy of EMAX???s current ADEC approval letter. These letters detail the methods, matrices, and dates for which the lab has approval. Labs must renew their approval and pass performance evaluation samples annually. Failure to do so results in the revocation of a lab's approval.

Action Date: 6/17/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC Work Plan received for review and comment.The goals of this project are to complete a subsurface soil and groundwater investigation tocomplete an SC and prepare both an SC Report and a Decision Document for SA015-ROF.The site location and vicinity are shown on Figure A-1 (Appendix A). In conjunction withmeeting these goals, the project will involve managing all investigation-derived waste (IDW)and restoring the site for expected future use.This Work Plan is the primary planning document prepared to ensure that the project goals aremet for the site. This Work Plan also includes appendices that will be used to support theproject goals for Site SS016, the Rapid Deployment Facility, under the same contract. This Work Plan has been drafted in accordance with the U.S. Air Force (USAF); the OccupationalSafety and Health Administration (OSHA); the Alaska Department of Environmental Conservation (ADEC) guidance and regulations; the U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (QSM) version 4.2 (DoD 2010); the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Manual (Intergovernmental Data Quality Task Force 2005); and Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. Environmental Protection Agency [EPA]

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1988).The primary objective of the 2013 SC is to determine and document the nature and extent ofsoil and groundwater contamination at the site. This will be achieved by installing andsampling soil borings and installing and sampling groundwater monitoring wells. The datagathered from the SC should provide the necessary information to provide the basis for aDecision Document for the site.

Action Date: 5/4/2012
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 5/18/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Analytical samples were collected beneath several railroad switches and in the drainageswales in 2012 and were analyzed for GRO, DRO, VOCs, PCBs, and PAHs. Several samplescontained DRO above the ADEC soil cleanup level.Jacobs removed approximately 80 tons of DRO-contaminated soil from the two stockpiles in2012. Two waste characterization samples were collected from the stockpiles prior to soilremoval and were analyzed for GRO, DRO, RRO, and PCBs. Analytical results were lessthan ADEC cleanup levels for all analytes. However, higher concentrations of DRO werepresumed to be present closer to the base of the stockpiles, which could not be sampled due tothe frozen soil in the stockpile. The stockpiled soil plus approximately 3 inches of soil from below the stockpiles were removed and transported to Alaska Soil Recycling for thermal treatment. Upon completion of the soil removal the site was returned to grade and the railroad ties that were used for the stockpile berms were stacked adjacent to the former stockpile locations.

Action Date: 5/1/2012
Action: Spill Transferred from Prevention Preparedness and Response Program
DEC Staff: Mitzi Read
Action Description: Spill transferred by PERP staff Michele Sherwood. Spill no. 11239931101; spill date = 11/7/11; substance = unknown (diesel suspected); quantity = unknown; description from spill report: Historical release. Based on analytical data the contamination is weathered diesel fuel (about 300 mg/kg). The amount of fuel released is unknown as is the date of the release. About 50 to 75 cubic yards of soil will be excavated and stockpiled pending complete analytical testing. Stockpile will meet requirements of 18 AAC 78 for long-term stockpiling pending availability of facility and funding to treat the soil.

Action Date: 4/28/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff granted a cleanup complete determination for SA015. Contaminants of ConcernDuring the 2013 investigations at SA015, the maximum detected levels of contamination for all contaminants of concern were all below the most stringent Tables B1 and B2 cleanup levels. Groundwater samples from monitoring wells were all below Table C cleanup levels. Cleanup CompleteIn accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined SA015 has been adequately

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characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil or groundwater from a site (SA015)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 4/15/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation (ADEC) has completed a review of the environmental records associated with the site SS016 (ADEC CS Database Hazard ID 25871) located on Joint Base Elmendorf-Richardson (the former Fort Richardson Army Post) in Anchorage, Alaska. Contaminants of ConcernDuring the 2013 investigations at this site, the maximum detected levels of contamination for all contaminants of concern were all below the most stringent Tables B1 and B2 cleanup levels. Cleanup CompleteIn accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined SS016 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil or groundwater from a site (SS016)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS FACILITY (Continued) **S111750322**

Action Date:	4/15/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Site Characterization report received for review and comment.None of the 61 primary soil samples collected from the 29 soil borings contained concentrations of contaminants that exceeded ADEC Method Two most stringent under 40-inch zone or migration to groundwater cleanup level. None of the water samples collected from the six monitoring wells contained concentrations of contaminants that exceeded their respective ADEC cleanup levels.During the 2013 SC activities, 61 primary soil samples were collected from 29 soil borings, and six primary groundwater samples were collected from six monitoring wells. All of the soil and groundwater samples collected during the field effort contained concentrations of contaminants below their respective ADEC cleanup levels (ADEC 2012). Based on these results, it appears that the removal activities, which were conducted during the Railhead Operations Facility construction, effectively removed the vast majority of contaminated soil from the site. For this reason, it is recommended that the site be granted a cleanup complete status and that a closure report be prepared for the site in accordance with 18 AAC 75.380.

Action Date:	4/1/2010
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	The USACE drilled 26 soil borings to collect geotechnical and chemical samples at the ROFsite from 14 to 28 September 2009 and from 31 March to 1 April 2010 to identify surface andsubsurface conditions, address geotechnical concerns, and obtain a historical perspective ofthe site. Fifty analytical soil samples, including six duplicates, from 22 of the soil borings were collected and analyzed for gasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO), volatile organic compounds (VOC), polychlorinated biphenyls (PCB), chlorinated pesticides, Resource Conservation and Recovery Act (RCRA) metals, hexavalent chromium, and polycyclic aromatic hydrocarbons (PAH). Three analytes exceeded ADEC soil cleanup levels; arsenic, bromomethane, and methylene chloride. Arsenic occurs naturally in higher concentrations in Alaska due to volcanic activity and the weathering of arsenic containing minerals and ores. Arsenic levels are only slightly above the background range determined for JBER soils, and is therefore not considered a contaminant of potential concern (USAF 1993). Bromomethane and methylene chloride were also present in associated trip blanks and are attributed to laboratory contamination (USACE 2010b, 2010c).During the investigation, a crushed, rusted drum covered in vegetation was observed at the site. Field screening samples collected with a photoionization detector (PID) around the drum were below 20 parts per million therefore, this soil was not segregated or removed.

Action Date:	3/25/2014
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	SS016 Proposed RDF Corrective Action Report received for review and comment.Contaminated soil excavation was conducted at SS016 to address DRO contamination, which was identified under a railroad track switch in 2011. Approximately 8 cubic yards (12.36 tons) of

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS FACILITY (Continued) **S111750322**

contaminated soil was excavated and thermally treated at a local facility. Field screening samples were analyzed using PetroFLAG test kits; excavation confirmation samples ??? which were analyzed for GRO; DRO; RRO; PAHs; and BTEX ??? were either nondetect or significantly less than the most stringent cleanup levels as per ADEC Method Two, under 40 inch zone, confirming that all contaminated soil was successfully removed. The excavation site was backfilled with clean material and contoured to match site conditions. The railroad track switch, which was the source of contamination at this site, was disconnected and delivered on 24 October 2013 to 773d Operations personnel.RecommendationsA ???Cleanup Complete??? categorization is recommended for SS016. Excavation confirmation samples for GRO, DRO, RRO, PAHs and BTEX were either nondetect or significantly less than the ADEC cleanup levels, which indicates that all contaminated soil was successfully removed. During the RI conducted in 2011, no other contamination was identified at the site (USAF 2012). It is recommended that closure documentation be drafted and that site be categorized as ???Cleanup Complete???.

Action Date: 11/30/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Historic DRO contamination was detected during construction activities in November 2011.Analytical samples were collected by Alaska Resources and Environmental Services from asmall excavation and analyzed for GRO, DRO, RRO, VOCs, PCBs, PAHs, and RCRA metals. Approximately 12 to 15 cubic yards of soil had already been excavated and placed at the end of a clean soil stockpile before a field screening sample indicated VOCs present in the soil. Concentrations of DRO exceeded the ADEC Method Two soil cleanup level in two samples, including one characterization sample collected from the excavation.

Action Date: 1/2/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79286 name: JBER-Ft. Rich FTR266

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich FTR266 SS016 RDF SA015 Railhead Ops
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

83
West
1/4-1/2
0.493 mi.
2602 ft.

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY
DAVIS HWY. & 5TH STREET FTRS-66 FAC ID 0-00788, FORMERLY FOR
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144177**
INST CONTROL **N/A**

Relative:
Lower

Actual:
320 ft.

SHWS:

File Number:	2102.26.022
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.265435
Longitude:	-149.693387
Hazard ID:	2755
Problem:	Soils contaminated with diesel range organics at depth from leaking underground storage tank. All petroleum contamination has been dealt with to the maximum extent practicable, no further action required or planned. Site FTRS-66. Building 975, UST 38. Last staff assigned was Howard. UST Facility ID 788. Site W018, 1990 RFA SWMU 50, 51, 52. EPA ID: AK6214522157USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/9/1996
Action:	Institutional Control Record Established
DEC Staff:	Louis Howard
Action Description:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. Area noted on Post Management plans and maps as an area requiring ICs and waste management and disposal at a permitted facility if soil were to be excavated at any time in the future.

Action Date:	9/9/1996
Action:	Conditional Closure Approved
DEC Staff:	Louis Howard
Action Description:	No further remedial action required since leaching assessment shows that petroleum will not migrate to groundwater and impact it. Based on a review of the information provided, ADEC agrees that buildings: 955, 975, 979 do not require further investigation or remedial action. Institutional controls on contaminated soils requires dig permits monitored by the Public Works department on Post. This action does not preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that previously undiscovered contamination or exposures lead to groundwater contamination above the applicable water quality criteria (18 AAC 70) or exposures which cause and unacceptable risk to human health, welfare or the environment, then future investigation and/or remedial actions will be required by ADEC.

Action Date:	9/21/1993
Action:	Enforcement Agreement or Order
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All

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petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/14/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Institutional controls report received for several sites which include this building. DRO was detected up to 1,400 mg/kg and TRPH at 8,500 mg/kg, a leachability study was used to obtain site closure (NFA actually). This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health or the environment. ADEC requests any monitoring wells installed as a part of the investigation be added to the Post-wide monitoring network established under the CERCLA Federal Facility Agreement. ICs tracked under Fort Richardson Master Plan (GIS).

Action Date: 8/30/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.265 N latitude -149.6931 W longitude

Action Date: 8/18/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Final Remedial Investigation Report for Buildings: 47-203, 955, 975, 979, 45-070, 28-008 received (DOWL/Ogden Joint Venture) for the USACE. Building 975 is located near the intersection of the Davis Highway and Fifth Street. Vehicle maintenance is performed in Building 975. A 1,000-gallon UST (Tank 38) was placed on the North side of Building 975 to store water which accumulated from vehicle washing. Tank 38 was six feet two inches long and five feet two inches in diameter. It had a two-inch vent pipe and a four-inch fill pipe. Both pipes extended two feet above the ground. This UST was installed approximately four feet belowground and had no surface dispensers.Information provided by Brown & Root Services Corporation stated Tank 38 contained oilywater from equipment washing. Soil samples collected during the removal detennined the soil surrounding the tank was contaminated with petroleum hydrocarbons. Therefore, soil samples collected during the RI were analyzed for VOCs, TRPH, GRO, DRO, metals, and PCBs.DRO was detected in one sample borehole AP-3675 at a concentration of 960 mg/Kg at thesurface. TRPH was detected in two soil samples at concentrations of 1,378 mg/Kg at the surface and 55.26 mg/Kg at 10 feet. DRO was detected in one sample in borehole AP-3676 at a concentration of 1,400 mg/Kg at the surface. TRPH was detected in one soil sample at a concentration of 8,524 mg/Kg at the surface. TRPH was detected in two soil samples at concentrations of 5,135 mg/Kg at the surface and 95.74 mg/Kg at five feet.The sampling results for Building 975 indicate soil contaminated with diesel range organics inexcess of 100 mglKg at all five sample locations. The results greater than 100 mglKg for DROwere only from the surface samples. The DRO and TRPH sampling results in excess of the clean-up criteria are most likely the result of sampling just below the asphalt. This soil could becontaminated with residue from the hot asphalt during paving. Also, in order to cut through

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

theasphalt it was necessary to heat the asphalt first, heating the asphalt would further contaminate the soil just below it. GRO levels were detected in five samples, all were less than 5 mg/Kg. The metals sampling results were near established background levels.The matrix score for Building 975 is 24, or Category C. This requires the following soil clean-up levels:DRO 1,000 mg/kgGRO 500 mg/kgTPH (TRPH) RRO: 2,000Benzene 0.5 mg/kgBTEX 50 mg/kgNo ground water was encountered at this site.The contaminated soil present at this site is most likely due to the asphalt paving above it. It is recommended a letter be submitted to the ADEC requesting alternative clean-up levels and no further action at this site, since contaminant levels in access of clean-up criteria are only found immediately below the asphalt paving.

Action Date: 7/26/1994
Action: Preliminary Assessment Approved
DEC Staff: Louis Howard
Action Description: Site assessment performed. Soil samples found to be above Level D criteria. The 1,000-gallon UST was removed from Building 975 in May 1994. Five soil samples were collected to determine if the soil was contaminated with petroleum hydrocarbons. Laboratory results indicated the maximum detected level of DRO in the soil was 2,430 mg/Kg and GRO and benzene were detected at 0.585 mg/Kg and 0.02 mg/Kg, respectively. BTEX was detected at 0.22 mg/Kg.

Action Date: 7/22/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the responses to its comments for the UFP-QAPP SC WP and finds the responses acceptable. Please finalize the document.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review and comment.Performance ObjectiveSite ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 500 yd3) to achieve SC. Monitoring wells will be installed,and groundwater contamination will be addressed with a technology that is appropriate to thenature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling four soil borings, collect one hydropunch groundwater sample and collect groundwater sample from one existing monitoring well. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

Action Description: Staff commented on the draft PMP.2.3Quality Control DocumentsPlease be aware that the federal facility agreements and Ft. Richardson Environmental Restoration Agreement require submittal of laboratory data to the agencies for review as follows: The Parties shall make available to each other quality-assured results of sampling, tests, or other data generated by or on behalf of any Party under this Agreement within sixty (60) days of field testing or the submittal of data to the laboratory. If quality assurance is not completed within sixty (60) days, preliminary data or results shall be made available within the sixty (60) day period and quality assured data or results shall be submitted as they become available but in no event later than one hundred (100) days after testing or the submittal of data to the laboratory. These periods can be extended upon mutual agreement among the Project Managers.Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). Table 6-3JBER-ElmendorfGeneral commentsRisk mitigation: In general, vadose zone soils shall not exceed maximum allowable levels for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide???), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.7.1.2Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific

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terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date: 6/13/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73731 name: auto-generated pm edit Ft. Rich Bldg. 975 UST 38

Action Date: 5/14/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Sampling Design & RationalePage 33The text states: ???If Method One & Method Two criteria are exceeded, the HRC approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, remediation, ICs, or both may be required).???Please note that vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination exceeding Table C criteria. See comment 1 above regarding ADEC???s position on when ICs would be applied at JBER sites.2nd BulletThe text states: ???The soil exposure point concentrations used as input to the HRC will be either the 95 percent upper confidence limit (UCL) of the samples collected from the contaminated soil source area, or the maximum value of samples collected from the contaminated soil source area.??? Section 5.1 Page 4 of ADEC's Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator February 25, 2011 states: ???ADEC recommends a minimum of 10 data points be used to calculate the 95 UCL. However, responsible parties should bear in mind that even 10 data points may not yield a stable UCL if there is higher than normal heterogeneity in contaminant levels.Be aware that EPA's ProUCL Version 4.1.00 Technical Guide, Chapter 1 Use of Statistical Methods as Incorporated in ProUCL 4.0 & Associated Minimum Sample Size Requirements states: Decisions based upon statistics obtained using data sets of small sizes (e.g., 4 to 6 detected observations) cannot be considered reliable enough to make a remediation decision that affects human health & the environment.Also see 1.7.4 Minimum Sample Sizes for Hypothesis Testing.Page 352nd BulletThe text states: ???Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for fraction of organic carbon (foc).???JBER may collect one foc soil sample for whatever purpose it desires, however, the results for the foc may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected & analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection & Data

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

Reduction for Method Three & Method Four. If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 Technical Memorandum 08-002 Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four states:TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.TU066-SB03The text states: ???In the event underground utilities or structures cannot be definitively identified, an air knife & vacuum truck may be used to clear the upper 6 feet of the proposed drilling location prior to drilling or conducting other invasive activities. Once clearance activities have been completed in the upper 6 feet of the soil column, soil removed during utility clearance will be placed back into the hole from which it was removed. Drilling or other invasive activities.???Please note that the 6 ft. interval that has been proposed in other UFP-QAPPs for the air knife shall not be excluded from field screening & sampling requirements due to it being previously removed & replaced during utility investigation activities. ADEC expects in most cases that the U.S. Air Force can definitively identify & locate the utilities at most of the PBR sites for the contractor & the use of the air knife & vacuum truck will be used very infrequent.

Action Date: 5/1/2014
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 4/5/1991
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: Resource Conservation and Recovery Act (RCRA) Federal Facility Compliance Agreement signed. It was based on initiated by a Notice of Non-compliance (NON) dated June 19, 1990. Also the Army failed to mark containers of hazardous waste which has accumulated at Building 975 with the words hazardous waste (HW) during an 4/19/88 inspection resulted in a NON. Also the Army failed to mark containers of HW accumulated at 975 with an accumulation date.

Action Date: 4/30/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff assigned a cleanup complete designation for TU066. Contaminants of ConcernDuring the 2013 investigation at TU066, the maximum detected levels of diesel range organics (DRO) was 429 (J) mg/kg at 10’ to 15’ bgs from boring TU066-SB01. This was collected from within the footprint of the former tank excavation at 10 to 15 feet bgs. Groundwater was not encountered and therefore not sampled as part of this investigation. Groundwater occurs at approximately 120 feet bgs.Cleanup LevelsIn accordance with 18 AAC 75.341 (d), Table B2, the cleanup level for DRO at TU066 is based on the ingestion pathway for the under 40 Zone at 10,250 mg/kg.In accordance with 18 AAC

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

75.380(d), after reviewing the final cleanup report submitted under this section, ADEC has determined TU066 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules3 for a cleanup complete designation. The designation shall be noted in the CS Database.This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup4 if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment.In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (TU066)(1) that is subject to the site cleanup rules, or(2) for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1). Movement or use of contaminated material in a manner that res11lls in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review /work clearance request process for TU066.Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185, informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby A venue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15. 185. If a hearing is not requested within 30 days, the right to appeal is waived

Action Date: 4/24/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Characterization report (draft) received for review and comment. ConclusionsThe following conclusions were made regarding TU066:??? DRO is present in soil above the project screening level at the former wastewater UST sourcearea and has been adequately characterized to delineate the nature and extent of soilcontamination.??? Groundwater was not encountered during the investigation.??? Concentrations of all detected non-hydrocarbon analytes were below their most stringent 18 AAC 75.341 Method Two, Table B1 cleanup levels; therefore, the site meets the vapor intrusion guidance, and the indoor air pathway is considered incomplete.??? The estimated carcinogenic cumulative risks, assuming industrial and hypothetical residentialland use scenarios are below the ADEC risk standard of 1E-05.??? The cumulative noncancer HI estimates for the future industrial and hypothetical residentialexposure scenarios are below the regulatory risk standard of 1.??? The ADEC risk criteria for bulk hydrocarbons are met.??? Estimated total GRO, DRO, and RRO concentrations in groundwater beneath TU066 are predicted to be below their respective 18 AAC 75.345 Table C cleanup levels.??? No potential risks to ecological receptors were observed for TU066, and potentially completeecological exposure pathways at TU066 are considered insignificant.RecommendationsThe following are recommended for

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

TU066:??? No further investigation and/or cleanup of soil and groundwater.??? ???Cleanup Complete??? designation because TU066 meets the criteria established for site closure (ADEC, 2012a).

Action Date: 4/22/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP work plan received for review and comment. The overall objective for the site is to meet ???unrestricted or residential site use??? criteria andachieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet thisobjective, soil and groundwater samples will be collected to characterize risk to human healthand the environment within the framework of the ADEC site cleanup process (Title 18Chapter 75 of the Alaska Administrative Code [18 AAC 75] Sections 325 to 390 and 18 AAC 78Section 600) (ADEC, 2012a; ADEC, 2012b). If ADEC Method Two cleanup criteria asestablished under 18 AAC 75 are exceeded, the Hydrocarbon Risk Calculator (HRC) approachunder Method Three will be used to assess whether site conditions meet ADEC risk criteria (inwhich case, a ???cleanup complete without ICs??? determination will be requested) or whether thesite poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowableconcentrations, remedial options will be evaluated that address the contaminants of concern andassociated exposure routes that contribute enough risk to cause the cumulative risk estimate toexceed the risk standard.One boring will be drilled near former sample 94-975-BE to resample the soil at the locationand depth where previous sampling showed exceedances of the ???migration to groundwater???criteria for DRO and to collect source area soil samples for polycyclic aromatic hydrocarbons(PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH) analysis. The proposed boring is located where historical data indicate the vadose zone is the most contaminated.One soil boring will be drilled east of former sample 94-975-BE to assess the lateral extent of residual contamination.Two soil borings will be drilled to assess current DRO concentrations at historical boringsAP-3675 and AP-3676 where previous sampling showed exceedances of the ???migration togroundwater??? criteria for DRO in surface soil.Up to approximately 26 new primary soil samples will be collected and analyzed for gasolinerangeorganics (GRO), DRO, residual-range organics (RRO), and volatile organic compounds(VOCs) (petroleum-related). Three of those soil samples will also be analyzed for PAHs, EPH,and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 4/19/1994
Action: Update or Other Action

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

DEC Staff: Louis Howard
Action Description: A sample of the tank contents was collected by Oil Spill Consultants on April 19, 1994. Laboratory analysis indicated this tank contained water with trace quantities of benzene, toluene, ethylbenzene, xylene, (BTEX). No PCBs or halogenated hydrocarbons were detected. The flash point was greater than 200&176;F.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Diesel.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at

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the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/5/2009
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: EPA Letter to Colonel Timothy Prior. RE: Closures of Five Class V Injection Wells, Reclassification of One Motor Vehicle Waste Disposal Well, and Long-Term Monitoring of Moose Run Golf Course Stormwater Drainage Injection Wells, Fort Richardson, Alaska (UIC ID AK020F5-12-13347, AK020F5-12-13398, AK020F5-17-13406, and AK020F5-12-13346)Four Class V injection wells used for disposal of stormwater existed about 250 feet northeast of Building 975. The four injection wells were constructed as a cluster of drywells, each consisting ofwelded-together sections ofperforated 55-gallon drums that were buried underground. The drywells were approximately ten feet deep.On June 5, 2008, the drywells were excavated. Soil samples were collected from beneath the excavation, at approximately 11 feet below ground surface, and analyzed for gasoline range organics by Alaska Method 101, diesel range organics by Alaska Method 102, residual range organics by Alaska Method 103, metals by EPA Method. 6020, and mercury by EPA Method 7471 B.Analyses detected diesel range organics, arsenic, and chromium above State ofAlaska cleanup levels. The drywells were located approximately 100 feet southwest ofa petroleum contaminated site that is the subject of a cleanup action under a Two Party Agreement between the Alaska Department ofEnvironmental Conservation (ADEC) and the U.S. Army. Fort Richardson is working with ADEC to determine appropriate next steps to respond to these analytical findings. The excavation was backfilled with rock imported from an offsite source.The UIC Program files for Fort Richardson have been updated to show that one stormwater injection well at Building 45-125 and four stormwater injection wells at Building 975 have been permanently removed. EPA understands that Fort Richardson is continuing to work with ADEC to address the diesel range organics, arsenic, and chromium found in samples collected at the Building 975 drywell excavation. If additional information becomes available indicating that the injection well closure activities at these sites were inadequate, Fort Richardson is required to provide the additional information to

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY (Continued) **S110144177**

EPA, and further efforts may be required in the future. You are also advised that Fort Richardson is responsible for compliance with all other federal, state, or local laws and regulations.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair Regional Administrator-Southcentral Office) and U.S. Army. The purpose of the agreement is to bring Fort Richardson into compliance with the Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding Alaska Department of Military and Veterans Affairs and Army National Guard USTs). All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.Site Assessment or Svstem Tightness Test29. The Army shall conduct a site assessment* or a system tightness test, as required by AS 46.03.380(b) and 18 AAC 78.01S(i)(3), on all USTs located at Ft. Richardson, or permanently close the USTs in accordance with 40 CFR 280 and 18 AAC 78. If site assessments or system tests have been conducted, the Army shall submit proof of compliance by the deadlines set forth in the USTMP. Site Assessments or System Tightness Tests shall be conducted under the schedules in 18 AAC 78.015(i)(3) or, in order to come into compliance, as scheduled in the USTMP. All tightness testing work will be conducted by a certified UST worker as required by 18 AAC 78.400. Site Assessment work will be conducted pursuant to 18 AAC 78 and an ADEC-approved Quality Assurance Program Plan (QAPP). With respect to UST recordkeeping requirements, the Army shall compile all required records by the date set forth in the USTMP and shall thereafter maintain and update those records as required by 18 AAC 78 and 40 CFR 280.Release Investigation Reports31. The Army shall submit to ADEC a Release Investigation* report for each UST site having a documented release* of petroleum products or hazardous substances. These reports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b), 18 AAC 78.240(c) and the following: 1) a detailed written or, if applicable, visual description of all work performed and summary of all pertinent data prepared by the Army and its consultants, 2) monitoring well construction data and3) soil boring logs; 4) site maps detailing existing improvements and (if known) 5) the location of former fuel dispensing equipment, 6) water table elevation maps, 7) petroleum-product level and thickness (isoplot) maps, 8) organic-contaminant concentration maps, 9) aquifer interpretations, 10) other potential source areas within 1/4 mile, 11) data deliverables as outlined in 18 AAC 78, 12) interpretations of field observations and analytical data, 13) a completed Site Assessment/Release Investigation Summary Form, and 14) recommendations for any follow up work. 32. If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the

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ADEC concluded that additional assessment is required.111. Site shall mean a distinct area of contamination or potential contamination.112. Site assessment shall mean the investigation of suspected contamination resulting from an unpermitted release of oil or hazardous substance as further defined in 18 AAC 78.090 (Site characterization and assessment). 110. Release shall have the meaning in AS 46.03.826 [(9) release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance.]Listed on Attachment D as either requiring an upgrade or closure for UST 38.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU066 Bldg 975 UST 38 USTA 2 Party
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 2755
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 9/9/1996
File Number: 2102.26.022

Hazard ID: 2755
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 5/1/2014
File Number: 2102.26.022

S84 **JBER-FT. RICH BLDG 934 TU070** **SHWS** **S113929811**
WNW **NEAR NORTH WAREHOUSE STREET AND CIRCLE DRIVE INTERSECTION** **N/A**
1/4-1/2 **FORT RICHARDSON (JBER), AK 99505**
0.499 mi.
2636 ft. **Site 2 of 2 in cluster S**

Relative: **Lower**
Actual: **327 ft.**

SHWS:
File Number: 2102.38.042
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.272154
Longitude: -149.695200
Hazard ID: 26050
Problem: On June 17, 1994, underground heating oil tank (Tank 98) was removed. Five (5) project samples and one (1) quality control sample were collected after the tank was removed. Laboratory results show that

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the maximum detected level of diesel range organics (DRO) in the project soil was 5,700 ppm. These results suggest that petroleum hydrocarbons may have been released to the environment from Tank 98 at Building 934.

Actions:

Action Date:	7/22/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC has reviewed the RTCs to its comments on the UFP-QAPP for TU070-Bldg 934 SC WP. The responses are acceptable. Finalize the work plan
Action Date:	7/12/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 79456 name: Tank 98 - Heating Oil UST
Action Date:	6/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan received for review and comment.Performance Objective Site ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed,and groundwater contamination will be addressed with a technology that is appropriate to thenature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.
Action Date:	6/30/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Under Work Release R30213/550 issued by Brown & Root Service Corporation, Oil SpillConsultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (UST) at Building 934 at Ft. Richardson, Alaska. The UST (Tank98) was removed by Nessco Environmental on June 17, 1994.Two confirmation soil samples were collected from the completed excavation at depths of 10 feet bgs to assess the extent of contamination remaining in the vicinity of the former tank (Oil Spill Consultants, 1994). 94-934-BC. This sample was taken 10 feet below grade at the center of the tank impression to comply with the requirements cited by 18 AAC 78.090. 94-934-BE. This sample was taken 10 feet below grade at the north end of the tank impression to comply with the requirements cited by 18 AAC 78.090.A DRO concentration of 5,700 milligrams per kilogram (mg/kg) (using United States

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Environmental Protection Agency [EPA] Method 8100M) was reported in the sample collected from the center of the bottom of the excavation (94-9340-BC) and 94-934-BE reported 510 mg/kg DRO from 10' bgs from the north end of the tank.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided reveiw comments on the draft PMP. General commentsRisk mitigation: In general, vadose zone soils shall not exceed maximum allowable levels for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide???), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers and contracting staff:???Coordinate schedules with ADEC in advance and throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad and other Technical Project Planning team meetings, etc.). ???Plan and maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version and a final review and approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review and Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both interim and final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment and Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state and federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date: 5/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft UFP-QAPP for Bldg. 934 (TU070).Executive Summary2nd ParagraphADEC???s Implementing Guidance for the Method 3 HRC, February. February 2011 states: ???The HRC is an alternative, peer reviewed model for calculating site-specific risks to human health under ADEC???s Method 3 (18 AAC 75.340(e) & 18 AAC 78.600 (d)) & Method 4 (18 AAC 75.340(f) & 18 AAC 78.600(e)). When used under Method 4, responsible parties must follow the ADEC???s Risk Assessment Procedures Manual. Method 3 [which includes the HRC] may be used to propose petroleum hydrocarbon alternative soil cleanup levels for the [1] ???migration to GW??? or [2] ???inhalation??? pathways based on site specific soil data, or alternative soil cleanup levels for the [3] ???direct contact/ingestion??? or [4] ???inhalation??? pathways based on an approved industrial land use scenario. The Method 2 soil cleanup levels for the ???direct contact/ingestion??? pathway are not changed under Method 3 except by using an approved industrial land use scenario.??? It is ADEC???s position that ICs would be applied at JBER sites when:??? The GW under a site or downgradient of a site is contaminated with POL constituents at concentrations exceeding or MCLs or Table C; or??? POL contaminants in the soil were above the maximum allowable concentrations (MAC) in Table B2 of 18 AAC 75 are left in place after evaluation or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs.If soil that was above MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil & the statistics for the site could be rerun. The ProUCL checks for outliers & the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO , GRO , RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination (i.e. exceeding MCLs or Table C cleanup levels). In addition, sites with existing GW contamination above Table C cleanup levels will require that migration to GW cleanup levels be used for soil & ICs will be required. Once GW is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, & 6 September 2003)??? two rounds of annual GW monitoring), MAC may become the cleanup levels as determined by ADEC on a case by case

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

basis.

Action Date: 5/14/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 4/4/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SC report (draft) received for review and comment. GRO was detected at a concentration of 311 mg/kg in boring TU070-SB01 at 10 to 15 feet bgs (Table 4-3). The VOC 1,2,4-trimethylbenzene was detected at a concentration of 5.91 mg/kg, which is above the project screening level of 4.9 mg/kg in the same soil sample as the GRO exceedance. Naphthalene was detected in two samples at concentrations above the project screening level (2.8 mg/kg) in soil collected from boring TU070-SB01 at depths of 10 to 15 feet bgs (5.52 mg/kg) and 15 to 20 feet bgs (3.78 mg/kg). No other contaminants were detected in soil at concentrations above the project screening levels. The lateral and vertical extent of the GRO, 1,2,4-trimethylbenzene, and naphthalene soil contamination has been defined, is present within the extent of the DRO soil contamination, and is limited to the area around TU070-SB01, where high concentrations of DRO have been detected.ConclusionsThe following conclusions were made regarding TU070:??? DRO, GRO, 1,2,4-trimethlbenzene, and naphthalene have been detected in soil at concentrations above project screening levels. DRO was the most frequently detected contaminant with the highest concentrations and the largest lateral and vertical extent.??? The COPCs DRO, GRO, 1,2,4-trimethylbenzene, and naphthalene have been adequately characterized to delineate the nature and extent of soil contamination.??? The area of soil contamination is approximately 75 long and 40 feet wide. The soil contamination extends vertically to approximately 45 feet bgs. Groundwater was not encountered during this investigation.??? No buildings are present within 30 feet of the site, and concentrations of all volatilecompounds were below their respective 18 AAC 75.341, Method 2 Table B1 cleanup levels; therefore, the vapor intrusion pathway is considered incomplete for current industrial and potential future residential exposure scenarios.??? Using the HRC for contaminated soil, the cumulative carcinogenic risk and noncarcinogenic HI estimates, based on both industrial and hypothetical residential exposure scenarios, are below the regulatory risk standards.??? Using the HRC for contaminated soil, the site meets the ADEC risk criteria for bulk hydrocarbons within the source area.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant.RecommendationsThe following are recommended for TU070:??? No further investigation and/or cleanup of soil and groundwater.??? ???Cleanup Complete??? designation because TU070 meets the criteria established for site closure (ADEC, 2012d).

Action Date: 4/23/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: TU070 UFP-QAPP Draft Site Characterization Work Plan received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18, Chapter 75 of the Alaska Administrative Code [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If ADEC 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard. Two borings will be drilled near former borings AP-3559 and AP-3560 to resample the soil at the location and depth where previous sampling showed exceedances of the migration to groundwater criteria for DRO and to collect source area soil samples for volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH) analysis. If a boring is advanced to groundwater, groundwater samples will be collected and analyzed for DRO, gasoline-range organics (GRO), residual-range organics (RRO), volatile organic compounds(VOCs) (excluding chlorinated compounds), polycyclic aromatic hydrocarbons (PAHs), EPH, and VPH. Two borings will be drilled around the former tank to assess the lateral extent of soil contamination. At least approximately 36 new primary soil samples will be collected and analyzed for GRO, DRO, RRO, PAHs, and VOCs (petroleum-related only).Three of those soil samples will also be analyzed for EPH and VPH. One soil sample will beanalyzed for soil bulk density, grain size distribution, specific gravity, and soil moisturecontent. All the samples analyzed for VOCs (petroleum-related), GRO, DRO, RRO, PAHs,EPH, VPH, and other soil properties will be from the interpreted extent of the nonaqueous phase liquid (NAPL) contaminated soil source. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).

Action Date: 4/22/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for TU070.Contaminants of ConcernDuring the 2013 investigations at TU070, the maximum detected levels of diesel range organics (DRO) was 6,640 mg/kg and GRO was 311 mg/kg both at 20 to 25??? bgs and 6,560 mg/kg DRO at 10 to 15??? bgs. The maximum detected 1,2,4-Trimethylbenzene was 5.91 mg/kg (J) and naphthalene at 5.52 mg/kg at 10 to 15??? bgs (13Q3TU070-SB0103-SO-1). ADEC does not recognize the Table 5-6 2013 Site Characterization???s modeled concentrations for aromatics and aliphatics as alternative groundwater cleanup levels under Method Three for TU070. Current regulations do not list aromatic and aliphatic cleanup levels for groundwater in Table C. However, since groundwater was not sampled at this site and depth to groundwater is approximately 138??? bgs, it is not an issue at TU070.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for GRO at TU070 is based on the inhalation , ingestion

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

pathways for the under 40??? Zone and the maximum allowable concentration, all of which refer to 1,400 mg/kg. The cleanup level for DRO is based on the ingestion pathway at 10,250 mg/kg. The cleanup level for 1,2,4-Trimethylbenzene is based on outdoor inhalation pathway at 49 mg/kg at 11 mg/kg. The cleanup level for naphthalene is based on outdoor inhalation pathway 28 mg/kg. In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined TU070 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (TU070)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU070. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 3/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: SUBJECT: DECISION DOCUMENT, NO FURTHER REMEDIAL ACTION PLANNEDAT THE CIRCLE LOOP ROAD WAREHOUSES USTS.This decision document describes the rationale for No Further Remedial Action Planned (NFRAP) at the Circle Loop Road Warehouses, Fort Richardson, Alaska.This action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.The sites addressed by this document include Bldg 914 underground storage tank (UST) 137, Bldg 926 UST 96, Bldg 932 UST 97, Bldg 934 UST 98, Bldg 936 UST 99, Bldg 944 UST 100, Bldg 946 UST 101, Bldg 950 UST 102, Bldg 962 UST 105, and Bldg 968 UST 34. These USTs were removed during the summer 1994 to meet the requirements of the Fort Richardson-State of Alaska, Department ofEnvironmental Conservation (ADEC) UST Compliance Agreement. During removal, soil contamination was found at each site

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

at levels exceeding the State of Alaska level D clean-up standards, 2000 parts per million (ppm) Diesel Range Organics (DRO) and 2000 ppm residual range organics (RRO), specified in 18 Alaska Administrative Code (AAC}78.A release investigation was conducted which averaged 4 soil borings per site. The borings were drilled to approximately 50 feet below ground surface (bgs), and found DRO concentrations ranging from 3,010 ppm to 16,000 ppm. The Directorate of Public Works, Environmental Compliance and Restoration Branch developed this decision document. Attached is a letter of concurrence from the Alaska Department of Environmental Conservation (ADEC) South-Central Regional Office, Contaminated Site Program Defense Facilities Oversight Office. 2. SUMMARY OF SITE RISKCircle Loop Road warehoused is an industrial complex. Due to limited acess it is not expected to pose a risk to the general public or other pathways. Contamination is not expected to impact groundwater, based up on a soil leaching potential assessment conducted during the release investigation. Therefore, contamination poses no risk to the potential drinking water supply in the area.3. SUMMARY OF REMEDIAL ALTERNATIVESAn evaluation of remedial alternatives was not conducted for this site. Previous experience indicated that these sites could be closed through development of alternative clean-up levels(ACL) using a soil leaching potential assessment. This work was conducted concurrently with the release investigation. 4. PUBLIC/COMMUNITY INVOLVEMENTInformation concerning investigations and remediation of underground storage tank sites is incorporated in both fact sheets and public meetings developed for Fort Richardson's on-going community relations program. 5. DECLARATIONBecause this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years (2001, 2006, 2011, 2016) to ensure that there is adequate protection of human health and the environment.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 934 TU070
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported
Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 934 TU070
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported

JBER-FT. RICH BLDG 934 TU070 (Continued) **S113929811**

Comments: Not reported

Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 934 TU070
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

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85 WSW 1/2-1 0.552 mi. 2914 ft. **JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007** **SHWS S110144189**
DAVIS HIGHWAY & 5TH ST. FTRS-07, FORMERLY FORT RICHARDSON BE **INST CONTROL N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower
Actual: 312 ft.

SHWS:
File Number: 2102.38.008
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.262083
Longitude: -149.695071
Hazard ID: 2792
Problem: The site includes Building 794 and a 150-foot by 250 foot, open area. It was once a vehicle cannibalization yard where usable parts were removed from otherwise unserviceable vehicles. The period of use is unknown. Soil contamination has been dealt with to the maximum extent practicable and no further remedial action will be required. Site FTRS-07 Site N096 (Cannibillization Yard). EPA ID: AK6214522157

Actions:
Action Date: 9/28/2001
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the ICs report which included this site. ADEC concurred with the proposed cleanup level if 430 mg/kg for lead soil contamination on August 3, 1998. As an alternative cleanup level, ADEC expects the Army to impose institutional controls upon the contaminated soils at the site to reduce exposure of workers to contamination at the site.Also, ADEC expects any excavated soils, which are contaminated to be treated and disposed of in accordance with 18 AAC 75 Contaminated Sites regulations. Hazardous substances remain at the site above levels, which would allow for unlimited use and unrestricted exposure. A review will need to be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/14/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Institutional control report received from Army which includes Building 794. 8/3/1998 letter from ADEC states that base on a review of the data and additional statistical analysis provided by the Army, the significance of one soil sample exceeding the residential cleanup level for lead by 32 mg/kg to 432 mg/kg does not preclude granting a No Further Action status for the site. As a result of this information referenced above, ADEC will require no further investigative, remedial, or groundwater monitoring actions at the site. The decision is based upon the information presented in the April 1998 report which documents the lead contamination present in the soils at 432 mg/kg does not pose a risk to humans and ecological receptors.

Action Date: 8/5/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: MEMORANDUM from the Army (D. Johnson) received. SUBJECT: Institutional Controls for Soil and Groundwater at Building 7941. Attached find a map delineating the area covered by institutional controls at Bldg 794, the Decision Document for Bldg 794, and the State of Alaska, Department of Environmental Conservation (ADEC) concurrence with using institutional controls to control contaminated soils and groundwater at Bldg 794.2. Bldg 794 was incorporated in the Fort Richardson-ADEC UST Compliance Agreement in 1993, making investigation and corrective action at this site enforceable under 18 Alaska Administrative Code (AAC) 75. Any excavation, required for facility maintenance, within the area indicated on the above referenced map shall be coordinated with the Fort Richardson Environmental Coordinator. The Environmental Coordinator shall ensure proper worker personnel protective equipment selection. Further, the Environmental Coordinator shall ensure that any contaminated soils encountered are properly managed and, if necessary, disposed of in accordance with all relevant and appropriate regulations.3. Both carbon tetrachloride and chloroform have been detected in groundwater monitoring wells in the vicinity of Bldg 796. Groundwater wells, other than for environmental monitoring purposes, shall not be drilled at Bldg 794. Failure to inform the Environmental Coordinator may result in violation of 18 AAC 75, the FRA-ADEC Petroleum, Oil and Lubricant Agreement, resulting in fines already stipulated in the Agreement.

Action Date: 8/3/1998
Action: Cleanup Level(s) Approved
DEC Staff: Lynn Kent

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

Action Description:	Site closure letter sent on 8/3/98 by Lynn Kent approving ACL with ICs for lead contaminated soils at 438 mg/kg in surface soils at site. Site to be recorded on Post-wide planning documents and maps as an area of contamination above residential cleanup levels which precludes use of land as industrial uses only. Deadline for submitting proof of recording is September 4, 1998 to the Department.
Action Date:	8/3/1998
Action:	Conditional Closure Approved
DEC Staff:	Louis Howard
Action Description:	Lead contamination of 432 mg/kg is above the 400 mg/kg unlimited use (residential) value but is in an industrial setting. After briefing management, site closure approved with institutional controls be placed on site. No further remedial action is required, however, ADEC reserved its rights under title 46 of the Alaska statutes and 18 AAC 75 to request additional activities in the future if it is necessary to address any unforeseen risks to human health or the environment.Because this remedy will result in hazardous substances remaining on site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.
Action Date:	8/3/1998
Action:	Institutional Control Record Established
DEC Staff:	Louis Howard
Action Description:	Per 8/3/98 letter and receipt of map from Army uses in land planning. The map delineates the area covered by institutional controls at Bldg. 794 for control of contaminated soil. Building 794 was incorporated in the Fort Richardson-ADEC UST Compliance Agreement in 1993, making investigation and corrective action at this site enforceable under 18 Alaska Administrative Code (AAC) 75. Any excavation, required for facility maintenance, within the area indicated on the above referenced map shall be coordinated with the Fort Richardson Environmental Coordinator. The Environmental Coordinator shall ensure proper worker personnel protective equipment selection. Further, the Environmental Coordinator shall ensure that any contaminated soils encountered are properly managed and, if necessary, disposed of in accordance with all relevant and appropriate regulations.The site has institutional controls placed on it until such a time lead levels are below those which allow for unlimited access and use. Failure to inform the Environmental Coordinator may result in violation of 18 AAC 75, the FRA-ADEC Petroleum, Oil and Lubricant Agreement, resulting in fines already stipulated in the Agreement.
Action Date:	6/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan receieved. Performance Objective: Site closure.Performance Indicators: &183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by July 2013&183; Complete an approved Characterization/Cleanup Report by January 2014&183; Achieve SC in 2014Potential Risk:Soil contamination extends beyond 5 feet bgs. Contaminant concentrations are greater than anticipated.Risk

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

Mitigation:Boring depths will be extended, as necessary (estimate to 25 feet bgs). For petroleum contamination, the final boring depth will be based on field screening results. If analytical results show lead is present above the cleanup level at 5 feet bgs, sampling crews will beremobilized to the site to collect deeper samples. will excavate soil as needed (estimate 250yd3) to achieve SC.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). 7.1.2Document Preparation and Version ControlDraft and Draft Final Versions of documentsFor petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers and contracting staff:???Coordinate schedules with ADEC in advance and throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad and other Technical Project Planning team meetings, etc.). ???Plan and maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version and a final review and approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review and Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both interim and final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment and Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state and federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date: 5/6/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the UFP-QAPP SC Work Plan for SA007 Bldg. 794 ADEC CS DB Hazard ID 2792 on JBER-Richardson on April 18, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

Action Date: 5/1/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff assigned a cleanup complete determination for this site. Contaminants of ConcernDuring the 2013 investigation at SA007, the maximum detected level of benzene was 0.0252 mg/kg at SA007-SB04 from 3 to 5 feet bgs. Groundwater was not encountered during the investigation. Because groundwater occurs approximately 85 to 90 feet below ground surface, it is not likely that groundwater has been impacted.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for benzene at SA007 is based on the outdoor inhalation pathway for the under 40??? Zone at 11 mg/kg.In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined SA007 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (SA007)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for SA007. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

is not requested within 30 days, the right to appeal is waived.

Action Date: 5/1/2014
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 4/4/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved JBER's responses to comments on SA007.

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked. Suspected S&W oversight.

Action Date: 4/15/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A Conceptual Site Model/Risk Assessment (Draft Conceptual Site Model, Risk Assessment Various Sites-Building 794, Fort Richardson, Alaska April 1998) was conducted during the Fall 1997/Spring 1998 and indicated a limited potential for risk to personnel working on the site. While diesel range organics (DRO), total petroleum hydrocarbons (TPH) and lead contamination at this site exceeds ADEC clean-up standards specified in 18 AAC 75, the potential for exposure to contamination at the site is limited. Residual contamination levels at the site did not require development of a corrective action plan based upon the information provided by the potential soil leachability assessment. The completed exposure pathways that could exist at this site, due to the surficial contamination, include direct dermal contact and ingestion, and dust inhalation. However, the area of concern around Bldg 794 is fenced and has restricted access limiting potential exposure to on-site workers and trespassers. Not reported

Action Date: 3/4/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft UFP-QAPP.General Comments for JBER-E and JBER-R sitesADEC requests JBER provide the following location information for each site will be provided for in the Executive Summary text:Please provide latitude and longitude coordinates for the site location in decimal degree format with a precision of six decimal places (dd.dddddd). Also include the following:1. Date of collection,2. Method of collection (i.e. GPS, hardcopy map, air photo),3. Scale of the map used to acquire coordinates (if applicable),4. Estimated accuracy and associated unit of measure,5.Reference point for which the coordinates were established (i.e. center of property, entrance gate),6.Horizontal datum (NAD 1983 is strongly preferred) and7. Comments for additional information regarding acquistion of coordinates (if necessary).Executive Summary2nd ParagraphThe text states: ???If ADEC Method 2 criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method 3 will be used to assess whether site

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated.??? It is ADEC???s position that ICs would be applied at JBER sites when:??? The groundwater under or downgradient of a site was contaminated with POL constituents at concentrations exceeding risk criteria or MCLs; or??? POL contaminants in the soil were above the maximum allowable contaminant concentration [MAC] given in Table B2 of 18 AAC 75 or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs (June 14, 2012 meeting minutes ???Use of Hydrocarbon Risk Calculator??? with AFCEE, JBER, PBC and ADEC).If soil that was above the MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil and the statistics for the site could be rerun. The ProUCL checks for outliers and the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, and 6 September 2003)??? two rounds annual groundwater monitoring), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.

Action Date:	3/14/2014
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided comments on the draft Site characterization form. Summary of 2013 Site Characterization ActivitiesThe text states: ???Thirty-three soil samples were collected and submittedto Applied Sciences Laboratory for analysis of GRO, DRO, residual-range organics (RRO), VOCs, extractable petroleum hydrocarbons, volatile petroleum hydrocarbons, PAHs, lead, ??????Please state here and elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.Nature and ExtentThe text states: ???Benzene (at 0.0252 J mg/kg) and methylene chloride (at 0.0219 J mg/kg) were detected above the project screening levels?????? Please state in the text that the screening levels are based on migration to groundwater cleanup levels listed in Table B1. The reader may not know what the basis of the project screening levels are and if they are either the migration to groundwater, direct contact, or the outdoor inhalation cleanup levels. Environmental/Ecological Risk EvalutionThe text states: ???The following summarizes the results

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from the environmental/ecological risk evaluations:??? No potential risks to the environment or ecological receptors were observed.??? Petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).???Please provide the results of the completed ecological scoping evaluation (Appendix C Ecoscoping Form from ADEC???s January 2012 Ecoscoping Guidance) with preliminary screening which shows that exposure pathways and routes for ecological receptors are incomplete. ADEC has developed a scoping document designed to quickly eliminate sites that are unlikely to pose a risk to the environment. Such sites would exit the ERA process without further evaluation. NOTE: This needs to be done for every site on JBER not under the Fort Richardson Federal Facility Agreement or the Elmendorf Federal Facility Agreement. The results from the Ecoscoping form may be added as an appendix to the document/report. Regulatory FrameworkThe text states: ???The HRC (version 1.1), a peer reviewed Microsoft Excel spreadsheet model, approved by ADEC as a Method Three and Four tool, is available at http://www.dec.alaska.gov/spar/csp/guidance/hrc/ Hydrocarbon20Risk20Calculator.xls (1.9MB)???ADEC has not approved the use of the HRC for use as a Method Four tool by itself. The HRC can only be used for Method Four if it is part of the risk assessment performed under ADEC???s Risk Assessment Procedures Manual. Otherwise the HRC is merely a risk evaluation allowed for by ADEC under Method Three. The revised text shall state: ???The HRC (Version 1.1), a peer-reviewed Microsoft Excel??? (Excel???) spreadsheet model approved by the ADEC as a Method Three tool, is available at: Hydrocarbon Risk Calculator (Ver. 1.1) - Excel 1.9MB. When the HRC is used under Method Four, it is to support alternative groundwater cleanup levels derived as part of a risk assessment, responsible parties must follow the ADEC???s Risk Assessment Procedures Manual.??? There is ADEC???s February 25, 2011 ???Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator??? ??? which gives the reader some insight that the HRC is a Method Three approach to cleanup. The guidance explicitly states: ???The HRC is an alternative, peer reviewed model for calculating site-specific risks to human health under ADEC???s Method 3 (18 AAC 75.340(e) and 18 AAC 78.600 (d)) and Method 4 (18 AAC 75.340(f) and 18 AAC 78.600(e)). WHEN used under Method 4, responsible parties MUST follow the ADEC???s Risk Assessment Procedures Manual.??? It does not state that the HRC is a Method Four approach to risk-based cleanup levels by itself. Page 2-5The text states: ???Under Method Four and 18 AAC 75.325(h), an alternate risk standard consistent with the range acceptable under 40 Code of Federal Regulations (CFR) 300.430 (10-6 to 10-4) may be considered??????The text shall state: ???If proposing an alternative cleanup level for soil or groundwater, based on a site specific risk assessment under method four in 18 AAC 75.340(f) or under the provisions of 18 AAC 75.345(b)(2), ADEC may consider a risk standard consistent with the range ??????

Action Date: 2/21/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft site characterization report received for review and comment. Site characterization activities were performed at SA007 between June 3, 2013 and June 4, 2013,to fill the data gaps identified in Section 2.3.2. Activities were conducted in accordance with the SA007 Work Plan.During the 2013 investigation, soil samples were collected in

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the vicinity of these previous DRO exceedance locations, and DRO was not detected at concentrations above project screening levels at any 2013 sample location. Therefore, data suggest that the DRO detected in 1995 has mostly degraded, and DRO is no longer considered a COPC at SA007.During the 2013 investigation, soil samples were collected in the vicinity of the historical sample location, and lead was not detected at concentrations above screening levels. The highest concentration of lead in 2013 was detected at a concentration of 66.1 mg/kg, well below the screening level. Therefore, lead is no longer considered a COPC at SA007.Benzene (at 0.0252 J mg/kg) and methylene chloride (at 0.0219 J mg/kg) were detected abovethe project screening levels (0.025 mg/kg and 0.016 mg/kg, respectively) in two soil samplescollected in 2013. Benzene and methylene chloride were not detected above project screeninglevels in samples from 1995. Benzene and methylene chloride in soil at concentrations aboveproject screening levels were isolated detections and therefore are not indicative of a large source area. All other analytes were below the project screening levels.In 2013, benzene and methylene chloride were detected in soil at concentrations slightlyabove project screening levels in two isolated borings and therefore are not indicative of alarge source area.??? Benzene was detected in soil at concentrations above the screening level (0.025 mg/kg) in one sample from boring SA007-SB04 from approximately 3 to 5 feet bgs.??? Methylene chloride was detected in soil at concentrations above the screening level(0.016 mg/kg) in one boring (SA007-SB05) at the surface from approximately 0 to 2 feet bgs.??? Groundwater was not encountered during the investigation.??? Cumulative carcinogenic risk and noncarcinogenic HI estimates are below the regulatory riskstandards.??? No hydrocarbons were detected at concentrations above the screening levels in 2013 soil samples, indicating that concentrations detected during the 1995 site investigation have mostly degraded and are no longer present.??? No potential risks to the environment or ecological receptors were observed, and potentiallycomplete ecological exposure pathways are considered insignificant.Recommendations for SA007 are as follows:??? No further investigations or cleanup of soil or groundwater.??? ADEC designation of unlimited use and unrestricted exposure or ???Cleanup Complete without ICs??? because the site meets the criteria established for site closure.

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: S&W-Miner
Action Description: Site added by Shannon and Wilson, Inc.

Action Date: 2/12/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP Site Characterization Plan received for comment. At SA007, up to 13 new soil borings will be drilled as shown on Figure 2 and discussed below:? Three borings will be drilled to 15 feet bgs near former sample locations CY-12, CY-14, andCY-17 to resample the soil at the location and depth where previous sampling showedexceedances for DRO and lead, and to collect source area soil samples for polycyclic aromatichydrocarbons (PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleumhydrocarbons (EPH) analysis.? Ten borings will be drilled to 5 feet bgs to assess

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the lateral extent of contamination at former sample locations CY-12, CY-14, and CY-17.? Up to approximately 36 new primary soil samples will be collected and analyzed forgasoline-range organics (GRO), diesel-range organics (DRO), residual-range organics (RRO),petroleum-related volatile organic compounds (VOCs), and lead. Three of those soil sampleswill also be analyzed for PAHs, EPH, and VPH. One of the soil samples will be analyzed forsoil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).SOIL EXCAVATION (IF REQUIRED)If potential risk is indicated by the HRC, if petroleum concentrations exceed maximum allowableconcentrations, or if concentrations of lead exceed cleanup levels, then remedial options thataddress the contaminants of concern and associated exposure routes that contribute enough riskto cause the cumulative risk estimate to exceed the risk standard will be evaluated. If excavation is the selected alternative, the contaminated soil will be excavated up to a depth of 25 feet bgs, where possible. Petroleum-contaminated soil will be thermally treated at Alaska Soil Recycling, Inc. (ASR); lead contaminated soil will be disposed of at an appropriate disposal facility. The following decision rules will be used to determine whether excavation is necessary:? DRO soil contamination in the upper 15 feet bgs with concentrations greater thanapproximately 10,250 mg/kg will be the target of excavation.? Lead soil contamination in the upper 15 feet bgs with concentrations greater than 400 mg/kgwill be the target of excavation.? Soil contamination creating unacceptable vapor intrusion or migration-to-groundwater riskup to 25 feet bgs will be excavated if soil contamination below 25 feet bgs does not createunacceptable risk.
Not reported

Action Date: 12/29/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The Preliminary Assessment/Site Investigation (PA/SI) was conducted during November 1995 and indicated that soils in the Cannibalization Yard contained diesel range organics ranging from 8.9 to 1,540 mg/kg, total petroleum hydrocarbons (TPH) from 18 to 3,150 mg/kg, acetone at 0.014 mg/kg and methylene chloride at 0.0059 to 0.0072 mg/kg. Also of concern is a single total lead sample result of 432 mg/kg, found at sampling point CY-14. These analytes were detected in surface soil samples and exceeded allowable contaminant levels found in 18 Alaska Administrative Code (AAC) 75.

Action Date: 12/22/2000
Action: Site Number Identifier Changed
DEC Staff: No Longer Assigned
Action Description: Changed Workplan from X1 to X9 to reflect metals contamination.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007 (Continued) **S110144189**

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 794 FRSERA 2 Party SA007
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Inst Control:
Hazard ID: 2792
Facility Status: Cleanup Complete
Action: Institutional Control Record Established
Action Date: 8/3/1998
File Number: 2102.38.008

Hazard ID: 2792
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 5/1/2014
File Number: 2102.38.008

86
WNW
1/2-1
0.627 mi.
3311 ft.

JBER-FT. RICH TU075 BLDG 932 UST 97 **SHWS S113929823**
CIRCLE DRIVE AND NORTH WAREHOUSE STREET, FORMERLY KNOWN AS F **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
325 ft.

SHWS:
File Number: 2102.38.043
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.273545
Longitude: -149.698818
Hazard ID: 26069
Problem: A site assessment was conducted during the removal of a 1,000-gallon underground storage tank (UST) at Building 932 (formerly FTRS-75). Laboratory results show that the maximum detected level of diesel range organics (DRO) in the project soil was 10,000 ppm. These results show that petroleum hydrocarbons have been released to the environment from Tank 97 at Building 932.

Actions:
Action Date: 9/12/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment report received. A 1000-gallon UST (Tank 97) was installed on the South side of Building 932. Tank 97 was 9 feet 1 inch long and 4 feet 2 inches in diameter. It had a 2 inch vent pipe and a 4 inch fill pipe. Both pipes extended 3 feet above the ground. This UST was installed approximately 5 feet below ground and had no

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

surface dispensers.Information provided by Brown & Root Service Corporation and DPW stated that Tank 97contained fuel oil. Laboratory analysis of the tank contents indicated that it contained petroleum hydrocarbons with a flashpoint of 170&176;F.94-932-BC from excavation at 10' bgs HNU field screening reading of 5 ppm had diesel range organics result of 430 mg/kg.94-932-BE from excavation at 10' bgs HNU field screening reading of 6 ppm had a higher DRO sample result of 10,000 mg/kg. NOTE TO FILE: Using a 10, 15, 20, 25 or even 50 ppm for field screening clean vs. dirty soil would not have caught this 6 ppm dirty sample result without laboratory analysis.The visual screening of the project soil supported by laboratory data indicates that release mayhave occurred from Tank 97. The maximum detected level of DRO (10,000 ppm) was found in the soil under the end of the tank. Since the detected levels of DRO in the soil over and around the tank are higher than the Level C Cleanup level, it is reasonable to conclude that Tank 97 has leaked. A remedial investigation is required in accordance with 18 AAC 78. The report of this investigation must include a recommendation for site cleanup.Further action is required for site closure. The overburden removed during site excavation cannot be used for backfill at the project site.

Action Date: 8/5/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP WP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet theobjective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulativerisk estimate to exceed the risk standard.One boring will be drilled at former boring AP-3553 to resample the soil at the location anddepths where previous sampling showed exceedances of the migration to groundwater criteria for DRO and to collect source area soil samples for polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH) analysis.One boring will be drilled northwest of the former tank to assess the lateral extent of contamination. Samples will be analyzed for gasoline-range organics (GRO), DRO, residual-range organics (RRO), PAHs, and petroleum-related volatile organic compounds (VOCs) (benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]).Up to approximately 12 primary soil samples will be collected (from two borings) and analyzed for GRO, DRO, RRO, PAHs, and petroleum-related VOCs (BTEXN). One of the soil samples will also be analyzed for EPH and VPH. Three of the soil samples will be analyzed for soil bulk

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon.If any of the borings are drilled to groundwater, a groundwater sample will be collected andanalyzed for GRO, DRO, RRO, petroleum-related VOCs, PAHs, VPH, and EPH.

Action Date: 8/26/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER's responses to its comments on the UFP-QAPPs for TU077 and TU075. The responses to comments are acceptable. Please finalize the documents

Action Date: 8/13/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft UFP-QAPP.WS 17Sampling Design and RationaleSite Specific Sampling PlanPage 34The text states: ???If underground utilities or structures cannot be definitively identified, then an air knife and vacuum truck may be used to clear the upper 6 feet of the proposed drilling location prior to drilling or conducting other invasive activities. Once clearance activities have been completed in the upper 6 feet of the soil column, soil removed during utility clearance will be placed back into the hole from which it was removed. Drilling or other invasive activities will be conducted after utility clearance has been completed and the soil has been replaced.???This 6 ft. interval shall not be excluded from field screening and sampling requirements due to it being previously removed and replaced during utility investigation activities. ADEC expects in most cases that the U.S. Air Force can definitively identify the utilities at most of the PBR sites for the contractor and the use of the air knife and vacuum truck will be used very infrequently. Page 31JBER may collect one foc soil sample for whatever purpose it desires; however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected and analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection and Data Reduction for Method Three and Method Four (ADEC, 2008). If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 ADEC Guidelines for TOC Sample Collection must be followed. For example: 4) TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.Please refer to the TOC sampling guidance for additional requirements. Page 32Soil Excavation (If Required)The text states: ???If potential risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

exceed the risk standard will be evaluated.???Not necessarily correct, remedial options that address the contaminants of concern which exceed maximum allowable concentrations (MAC) will be also evaluated regardless of HRC risk calculation results. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. The text states: ???During excavation, the PID will be used to screen soil using a level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-16 (Appendix B of the Basewide UFP-QAPP) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles and submitted for laboratory analysis of GRO, DRO, RRO, petroleum-related VOCs (BTEXN), and PAHs at a rate of two for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards.???20 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold and does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both stockpiles (???clean??? < 20 ppm PID reading and ???dirty??? 20 ppm and higher PID reading) for definitive laboratory testing. At previous investigations at other DoD installations there have been instances where diesel range organics in soil have been well above 10,250 mg/kg and the arbitrary field screening level of 10 ppm on the PID was used at that time for ???clean??? vs. ???dirty??? soil: PID reading (DRO laboratory result)6 ppm (11,600 mg/kg), 10 ppm (35,800 mg/kg), 12 ppm (28,200 mg/kg), 17 ppm (67,200 mg/kg), and 19 ppm (17,300 mg/kg).

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79477 name: 1,000-Gal UST 97

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review.Potential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 500 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the Period of Performance.Date of Achieving performance objective of Site Closure2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

provide documentation to AFCEE.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft project management plan.2.3Quality Control DocumentsPage 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). General commentsRisk mitigation: In general, vadose zone soils shall not exceed maximum allowable levels for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide???), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.7.1.2Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements. Page 7-6The text states: ???Our Technical

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Site Managers and Project Chemists will ensure that, prior to sampling activities, full service analytical laboratories to be used are, at a minimum, DoD ELAP accredited and in good standing based on standard business information sources (e.g., Dunn & Bradstreet). In addition to DoD ELAP, the Project Chemist will also ensure that the supporting laboratories are approved for work in the State of Alaska, when required. Analytical methods used will beAlaska and EPA standard methods, unless technically impractical.???ADEC disagrees. The full service analytical laboratories have to be both DoD-ELAP accredited AND Alaska approved. Any non-EPA and/or Alaska methods must be approved by the department prior to sample collection.

Action Date: 6/12/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 6/1/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for the site. The HRC was used to evaluate risk from petroleum contamination at TU075. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, and other compounds dissolved in petroleum???with the intention and purpose of assessing human health risk from this type of contamination. Subsequent to the 2013 site investigation, soil gas sampling for 1-Methylnaphthalene and 2-Methylnaphthalene was conducted. Concentrations of soil gas at 8 feet bgs are below the ADEC shallow soil gas target levels for these contaminants of concern and soil screening results show that the subsurface is well-oxygenated. Soil gas does not pose a risk to future building occupants.Based on a review of the environmental records, ADEC has determined that TU075 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU075 in the Contaminated Sites Database.

Action Date: 5/21/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Additional site characterization work plan addendum received for comment.The proposed soil gas probe location is shown on Figure 1. Table 1 presents a summary ofsamples, analysis, and rationale for collection.The soil gas probe (TU075-SV01) will be installed to 8 feet bgs in the footprint of the former UST, near the location of soil boring TU075-SB01, where concentrations of 1-MN and 2-MN were detected above their most conservative Table B1 screening criteria (Figure 1). One soil gas sample will be collected from the probe for analysis of 1-MN and 2-MN by U. S. Environmental Protection Agency (EPA) Method TO-17 (Table 1) using the procedures outlined in SOP-5 in the Soil Gas Sampling Work Plan Addendum to the Basewide UFP-QAPP (USAF, 2013b). Soil gas samples will be analyzed by Eurofins Air Toxics laboratory in Folsom, California. Soil gas results will be

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

compared to the target levels for shallow soil gas in Appendix E of the Vapor Intrusion Guidance for Contaminated Sites (ADEC, 2012).Quality Control (QC) samples will include field duplicates, which will be collected on a project wide basis at a minimum rate of 10 percent for each analyte by each method (i.e., TO-15 andTO-17). Soil gas samples are being collected for TO-17 analysis at four sites (TU074, TU075,TU085, and TU101) during the 2014 field investigation event to be performed in June 2014. Aspart of that event, 10 primary soil gas samples are currently proposed. One field duplicate samplewill be collected at TU101 and analyzed for benzene, 1-MN, 2-MN, and naphthalene.

Action Date: 4/30/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the draft SC report. ADEC concurs with the recommendations to conduct soil gas sampling to determine whether those compounds are present in soil gas at concentrations that could pose a potential indoor air risk to future buildings. Sampling will be conducted in accordance with the Soil Gas Sampling Plan Addendum to the Final 2013 Basewide UFP-QAPP. At a minimum, the sample will be collected from within the former tank location (near soil boring TU075-SB01) at a depth of 8 feet bgs to assess the worst-case future scenario (a building with a basement is constructed onsite). Soil gas concentrations would be compared to ADEC???s most stringent (i.e. residential) shallow soil gas target concentrations (ADEC VI Guidance Appendix E October 2012) to determine whether further action is necessary to achieve ???Cleanup Complete??? or unlimited use and unrestricted exposure and to estimate a soil target area that requires further action, if necessary. Finalize the draft site characterization report.

Action Date: 4/25/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC Report received for review and comment. Borings were terminated after collecting two samples beyond the last evidence of contamination. No additional step-out borings were required.No groundwater samples were collected because groundwater was not encountered during theinvestigationNo groundwater samples were collected from TU075. However, data indicated that soil contamination had not reached groundwater, at approximately 151 feet below ground surface (bgs).Maximum Detected concentrationsDRO 8,790 mg/kg 5-10’ bgsGRO 414 mg/kg 10-15’ bgs1-Methylnaphthalene 11.2 mg/kg 5-10’ bgs2-Methylnaphthalene 15 mg/kg 10-15’ bgsNaphthalene 16.6 mg/kg 10-15’ bgsConclusionsThe following conclusions were made regarding TU075:Leaks from the former heating oil UST are the source of the subsurface soil contamination at the site.DRO is present in soil above the project screening levels and is the most frequently detected and widely distributed COPC. The area of DRO contamination is estimated to cover a lateral area approximately 25 feet long by 20 feet wide reaching a total depth of approximately 45 feet bgs (for a total volume of approximately 830 cubic yards). Five other COPCs (including GRO, 1-MN, 2-MN, naph, and total xylenes) were detected at concentrations above project screening levels in the 2013 data. These COPCs are collocated with the DRO contamination, but impact a smaller volume of soil (estimated to be in an area with a 10-foot diameter

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

from 5 to 10 feet bgs).Direct contact/ingestion and outdoor inhalation pathways are considered potentially complete at the present time because contaminant concentrations of petroleum-related compounds are present above 18 AAC 75 Table B1 and B2 Method Two Cleanup levels at depths less than 15 feet bgs.The vapor intrusion and groundwater ingestion exposure pathways are considered incomplete at the present time because there are no buildings or groundwater wells onsite. Concentrations of detected petroleum-related compounds were below their respective 18 AAC 75.345 Table B1 cleanup levels with the exception of 1-MN and 2-MN. As a result of those concentrations above the screening level occurring within 30 feet of the ground surface, the vapor intrusion pathway is considered potentially complete for future industrial and hypothetical residential scenarios.Using the HRC for contaminated soil within the source area, the cumulative carcinogenic risk and noncarcinogenic HI estimates???based on both industrial and hypothetical residential exposure scenarios for direct contact/ingestion, outdoor air inhalation, and groundwater ingestion pathways???are below the regulatory risk standards.Using the HRC for contaminated soil within the former UST source area, the ADEC risk criteria for bulk hydrocarbons are met for the direct contact/ingestion, outdoor air inhalation, and groundwater ingestion pathways.The migration to groundwater criteria are attained in surface and subsurface soils in accordance with 18 AAC 75.340, supporting a Cleanup Complete determination.No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant (less than 0.5 acre). See completed Ecoscoping form in Appendix D.RecommendationsBecause concentrations of 1-MN and 2-MN are above their most conservative Table B1 screening criteria within 30 feet of the ground surface, a soil gas sample should be collected to determine whether those compounds are present in soil gas at concentrations that could pose a potential indoor air risk to future buildings. The sample should be collected from within the former tank location (near soil boring TU075-SB01) at a depth of approximately 8 feet bgs to assess the reasonable worst-case future scenario (a building with a basement is constructed onsite). Sampling would be conducted in accordance with the Soil Gas Sampling Plan Addendum to the Basewide UFP-QAPP (WESTON, 2013). Soil gas concentrations would then be compared to ADEC shallow soil gas target concentrations (ADEC, 2012d) to determine whether further action is necessary to achieve ???Cleanup Complete??? or unlimited use and unrestricted exposure (UU/UE) and to estimate a soil target area that requires further action, if necessary.

Action Date: 4/19/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Final Statement of Objectives received.Achieve Site Closure within timeframe stated from Notice to Proceed for the following sites which includes Bldg. 932:??? TU057 - FTRS-57 - Building 47662??? TU060 - FTRS-60 - Building 712??? TU066 - FTRS-66 - Building 975??? TU069 - FTRS-69 - Building 47203??? TU070 - FTRS-70 - Building 934??? TU07J - FTRS-71 - Building 962??? TU072 - FTRS-72 - Building 908 South??? TU073 - FTRS-73 - Building 936??? TU073 - FTRS-73 - Building 944??? TU075 - FTRS-75 - Building 932??? TU076 - FTRS-76 - Building 946??? TU077 - FTRS-77 - Building 926??? TU082 - FTRS-82 - Building 968??? TU083 - FTRS-83 -Building 914??? TUOSS - FTRS-85 - Building 972???

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S0030 - Site ID TBD 12 - Building 974??? S0031 - Site ID TBD 13 -Building 979??? SS045 - FTRS-45 - Building 726??? 88054 - FTRS-54 - Building 955Within 2.5 years from NTP:??? AT032 - Site ID TBD 1 - Airborne Training Facility FTR255??? SSOOl - FTRS-01 - Building 796Air Force approval through the COR and Regulator approval (e.g., written confimrntion of acceptance of SC documentation) in compliance with the appropriate regulatory authority.

Action Date: 3/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: DECISION DOCUMENT FOR NO FURTHER REMEDIAL ACTION PLANNED AT THE CIRCLE LOOP ROAD WAREHOUSES,HEATING OIL UNDERGROUND STORAGE TANKS, FORT RICHARDSON, ALASKA 1. PURPOSE OF REMEDIAL ACTIONThis decision document describes the rationale forNo Further Remedial Action Planned (NFRAP) at the Circle Loop Road Warehouses, Fort Richardson, Alaska. This action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.The sites addressed by this document include Bldg 914 underground storage tank (UST) 137, Bldg 926 UST 96, Bldg 932 UST 97, Bldg 934 UST 98, Bldg 936 UST 99, Bldg 944 UST 100, Bldg 946 UST 101, Bldg 950 UST 102, Bldg 962 UST 105, and Bldg 968 UST 34. These USTs were removed during the summer 1994 to meet the requirements of the Fort Richardson-State of Alaska, Department ofEnvironmental Conservation (ADEC) UST Compliance Agreement. During removal, soil contamination was found at each site at levels exceeding the State of Alaska level D clean-up standards, 2000 parts per million (ppm) Diesel Range Organics (DRO) and 2000 ppm residual range organics (RRO), specified in 18 Alaska Administrative Code (AAC) 78.A release investigation was conducted which averaged 4 soil borings per site. The borings were drilled to approximately 50 feet below ground surface (bgs), and found DRO concentrations ranging from 3,010 ppm to 16,000 ppm. The Directorate of Public Works, Environmental Compliance and Restoration Branch developed this decision document. Attached is a letter of concurrence from the Alaska Department of Environmental Conservation (ADEC) South-Central Regional Office, Contaminated Site Program Defense Facilities Oversight Office2. SUMMARY OF SITE RISKCircle Loop Road warehouses is an industrial complex. Due to limited acess it is not expected to pose a risk to the general public or other pathways. Contamination is not expected to impact groundwater, based up on a soil leaching potential assessment conducted during the release investigation. Therefore, contamination poses no risk to the potential drinking water supply in the area.3. SUMMARY OF REMEDIAL ALTERNATIVESAn evaluation of remedial alternatives was not conducted forthis site. Previous experience indicated that these sites could be closed through development of alternative clean-up levels(ACL) using a soil leaching potential assessment. This work was conducted concurrently with the release investigation.4. PUBLIC/COMMUNITY INVOLVEMENTInformation concerning investigations and remediation of underground storage tank sites is incorporated in both fact sheets and public meetings developed for Fort Richardson's on-going community relations program.5. DECLARATIONBecause this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

unrestricted exposure, a review will be conducted within five years (2001, 2006, 2011, 2016, 2021) to ensure that there is adequate protection of human health and the environment.

Action Date: 2/4/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent Air Force email regarding soil gas sampling. *Sites TU075, TU085, and TU074 at JBER-Richardson [currently ADEC has received the SC Report addendum for TU074 and will not provide any comments on it until the leak check test is performed at a predetermined site of the contractor's (CH2MHILL) choosing as agreed upon below from the November 25, 2014 meeting notes.] AND*Sites CG702, SO552, ST048, SO525, TU091 at JBER-Elmendorf *please do not submit any SC reports/SC report addendums to ADEC for review from these sites if there is a Cleanup Complete request since they are being held up until such time that ADEC has observed and the leak checks performed by the contractor at the selected site have passed. If they include a CC with ICs request, they may not be dependent the leak check results. It will have to be determined on a case by case basis. There will be a helium leak check on JBER-Elmendorf this week (Thursday at 11 a.m. at SO552) which will determine the fate for the 2014 soil gas sites (e.g. CG702, SO552, ST048, SO525, TU091). The path forward was outlined as follows: * At each site with a site closure objective, inspect soil gas probes for obvious damage that may have compromised the surface seal since the probe was last sampled. o Sites TU075, TU085, and TU074 at JBER-Richardson o Sites CG702, SO552, ST048, SO525, TU091 at JBER-Elmendorf * Select a site at each installation (JBER-Elmendorf and JBER-Richardson) for additional helium leak checks of all probes at that site. * Provide ADEC 48 hours advance notice of the helium leak check/shroud measurements, so ADEC staff can observe field procedures, any necessary repairs, and testing and measurements (helium concentrations in the port and under the shroud). * If a leak test fails at a specific probe, the seal will be repaired, the leak test performed again at that probe, and soil gas resampled for all probes at the site. * If all leak tests pass for all of the probes at the site, no resampling of the soil gas at the site will be required. * If ADEC notes a systematic problem (absent noticeable damage, leak checks fail for all probes at a site and multiple attempts to seal/repair the probes fail), then ADEC will require the 2014 soil gas data for those sites to be rejected. Following this occurrence of systemic failure (i.e. failure to get a leak check to pass at multiple sites and multiple soil gas probes even after remedies are attempted), JBER, ADEC, Weston, and CH2MHILL will meet to discuss to remedy the situation.

Action Date: 2/21/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Circle Loop Road Release Investigation for Building 932 UST 97 received. The primary objective of the release investigation was to define the horizontal and vertical extent of petroleum hydrocarbon contamination at each of the eleven tank sites. Information obtained from the release investigation was incorporated into leachability assessments in order to evaluate the potential for the hydrocarbons to impact the sites' groundwater. A total of four soil borings were drilled at the Building 932 location.Soil DRO results (PID

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

result)AP-3553 252SL 10-12' bgs3,890 mg/kg (280 PPM)254SL 20-22' bgs2,910 mg/kg (210 PPM)255SL2,060 mg/kg (140 PPM)Site-specific ACLs are also proposed as a tool to develop cleanup criteria for potential futuresitework. The ACLs reflect the maximum estimated contaminant concentrations in the soil whichwill not result in groundwater concentrations .above the corresponding MCLs. Although toluenewas not detected at this site, a toluene ACL was developed since it is expected to migrate at a faster rate than xylene and is often associated with diesel fuel releases. ACLs of 5 ppm toluene, 41 ppm xylene, and 9 ppm ethylbenzene are recommended based on the SESOIL modelling. No ACL is proposed for naphthalene since modelling indicated the naphthalene plume will not reach groundwater irrespective of initial load concentration. Similarly, an ACL is not proposed for DRO since a correlation was not identified between the present DRO and surrogate concentrations in the soil. The lateral extent of soil contamination exceeding the Level C cleanup guideline of I ,000 ppmDRO measures approximately 20 feet in diameter for a total of about 300 square feet. The DROcontaminant plume appears to have migrated to a depth of about 34 feet directly beneath the former Tank 97 excavation with minimal lateral migration. The condition of the subsurface soils to the northwest of the former tank, however, were not assessed due to the presence of Building 932.From the estimated horizontal and vertical extent of soil contamination and the apparent plume configuration, approximately 300 cubic yards of soil exceeding the applicable DRO cleanup guideline are present in the subsurface.

Action Date: 11/25/2014
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Soil Gas Sampling JBER Nov. 25, 2014 meetingObjectives of the meeting were to (1) discuss Alaska Department of Environmental Conservation (ADEC) comments (dated October 13, 2014 and November 18, 2014) on the Draft Site Characterization Addendum for Sites TU075 and TU085 regarding soil gas sampling field documentation and (2) the path forward to achieve ADEC concurrence with Cleanup Complete (Site Closure) for those sites and others where soil gas sampling was conducted during the 2014 field season.ADEC comments regarding additional documentation of the helium leak check that is conducted prior to soil gas sampling are noted below.??? ???ADEC requests the Air Force describe in detail where the documentation that helium underneath the shroud was greater than ten percent (10). It appears that this section is the only place where this statement is documented. This information must also be documented in field notes and/or soil gas sampling log.??? Without documentation required supporting a helium leak check, ADEC does not have full confidence in the soil gas data to support a closure determination at this time and the report addendum and initial Site Characterization report for TU085 cannot and will not be approved.??? The concentration of helium gas under the shroud is not reported on soil gas sampling logs or in the field notes; ADEC will require that a leak check be conducted again by the Air Force and at least a three day notice provided to ADEC???s project manager so technical staff can be on site and observe the procedure from start to finish.???ADEC commented that without documentation that the helium concentration beneath the shroud was greater than 10 percent, either on the sampling log or in the field notes, ADEC will not concur with site closure and will

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

require that leak checks be conducted again for all soil gas probes present at one site on each installation (JBER-Elmendorf and JBER-Richardson). ADEC will also require that a representative(s) is on site to observe these additional helium leak checks from start to finish. There was discussion regarding the potential for the soil gas probes to be compromised due to Base operations and weather since initial installation and sampling (dating back to June 2014) and what additional action would be required if a leak check fails.The path forward was outlined as follows:??? At each site with a site closure objective, inspect soil gas probes for obvious damage that may have compromised the surface seal since the probe was last sampled.o Sites TU075, TU085, and TU074 at JBER-Richardsono Sites CG702, SO552, ST048, SO525, TU091 at JBER-Elmendorf??? Select a site at each installation (JBER-Elmendorf and JBER-Richardson) for additional helium leak checks of all probes at that site.??? Provide ADEC 48 hours advance notice of the helium leak check/shroud measurements, so ADEC staff can observe field procedures, any necessary repairs, and testing and measurements (helium concentrations in the port and under the shroud).??? If a leak test fails at a specific probe, the seal will be repaired, the leak test performed again at that probe, and soil gas resampled for all probes at the site.??? If all leak tests pass for all of the probes at the site, no resampling of the soil gas at the site will be required.??? If ADEC notes a systematic problem (absent noticeable damage, leak checks fail for all probes at a site and multiple attempts to seal/repair the probes fail), then ADEC will require the 2014 soil gas data for those sites to be rejected. Following this occurrence of systemic failure (i.e. failure to get a leak check to pass at multiple sites and multiple soil gas probes even after remedies are attempted), JBER, ADEC, Weston, and CH2MHILL will meet to discuss to remedy the situation.

Action Date: 10/8/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report addendum received for review and comment. Soil gas screening indicated that the soil is well oxygenated (12.8 percent), with relatively lowconcentrations of carbon dioxide and methane. Soil gas screening results are included in Table 1and can be found in the field sampling logs (Appendix A-1).Results of the TO-17 analysis for 1-MN and 2-MN are included in Table 2 and are shown onFigure 1, along with select soil sample results from 2013. Concentrations of 1-MN and 2-MN insoil gas at 8 feet bgs (the approximate depth of a potential future basement) are below ADEC???sshallow soil gas target levels. 1-MN and 2-MN were both detected up to an estimated concentrationof 3.7 micrograms per cubic meters (&181;g/m3), below the corresponding shallow soil gas target levelsof 29 &181;g/m3 and 150 &181;g/m3, respectively (Table 2).A review of the data quality evaluation (Appendix B-1) indicates that overall precision andaccuracy of the data are sufficient for project objectives. The ambient air blank was free ofcontamination, and all other examined criteria were met with the exception of the field duplicaterelative percent difference, which exceeded JBER QAPP criteria and resulted in J (estimated) dataflags.Multiple lines of evidence indicate that the potential future vapor intrusion exposure pathway forboth residential and industrial scenarios is insignificant at TU075. Specifically, concentrations of 1-MN and 2-MN in soil gas at 8 feet bgs are below ADEC???s shallow soil gas target levels, andwell-oxygenated soil

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

(Table 1 and Appendix A-1) indicates that the subsurface conditions aresufficient to support biodegradation and attenuation of 1-MN and 2-MN. Based on this evidence,it is recommended that no further investigation is performed, and the site is granted a designation of ???Cleanup Complete??? by ADEC.

Action Date: 10/13/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the Draft SC Report Addendum for TU075, JBER-Richardson, Alaska dated October 2013. 4.0 2014 Field ActivitiesADEC recommends that procedures to install soil gas probes and leak detection be included in this section. It???s not clear in the document where leak detection results are presented. ADEC requests clarification on where the two soil gas samples collected to be analyzed for oxygen, carbon dioxide and methane. Please clarify if this occurred in this section. 6.0 Conclusions and RecommendationsThe text states: ???Multiple lines of evidence indicate that the potential future vapor intrusion exposure pathway for both residential and industrial scenarios is insignificant at TU075.???ADEC requests JBER clarify whether there are other lines of evidence besides the two suggested here to suggest no vapor intrusion risk. If so, please include them in this section. For instance, low carbon dioxide and methane are additional lines of evidence.Table 2Summary of Chemicals Detected in Soil Gas at TU075Please identify all compounds that were detected in the TU075 samples not just 1-methylnaphthalane and 2-methylnaphthalane. Soil Gas Probe Installation and Sampling LogThe helium leak check was marked as not applicable. There was no indication what the helium concentrations were under the shroud and what the helium concentration is at the sample port. Was this helium leak check test conducted? Failure to conduct a leak check would be grounds for ADEC to reject the soil vapor data and this report addendum. 06/05/2014 Field NotesThe field notes do not document level of helium under the shroud and what was detected at sample port to confirm leak checked passed (i.e. helium levels at sample port less than 10 of concentrations under shroud). Additionally, there is no discussion in the field notes that the gas meter was calibrated before the sampling event and therefore the field readings are suspect and grounds for ADEC to reject the data and report addendum.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich TU075 Bldg 932 UST 97
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

Staff: Not reported

JBER-FT. RICH TU075 BLDG 932 UST 97 (Continued) **S113929823**

Contaminate Name1: JBER-Ft. Rich TU075 Bldg 932 UST 97
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Movement or use of contaminated material (including on site) in a manner that res
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

T87
West
1/2-1
0.630 mi.
3329 ft.

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK **SHWS** **S113929778**
BLDG 962; N WAREHOUSE STREET & CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 1 of 2 in cluster T

Relative:
Lower

Actual:
315 ft.

SHWS:
File Number: 2102.38.036
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.264707
Longitude: -149.697516
Hazard ID: 25998
Problem: A site assessment conducted during the removal of a 1,000-gallon heating oil underground storage tank (UST) at Building 962 detected petroleum contamination in the soil at least 10 ft. below ground surface. Building 962 was previously used as a warehouse.

Actions:
Action Date: 9/28/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on September 12, 1994 a copy of the above referenced report. Below are ADEC'scomments.5.3 Conclusion and Recommendations page 11The text states levels detected in the soil under the tank indicated tank 105 has leaked and themaximum detected level of DRO is 3.600 ppm. This level is in excess of level C cleanup criteria.Further action is still required by the Army to delineate the vertical and horizontal level and extent of petroleum hydrocarbon contamination in soil and groundwater at each site. ADEC looks forward to receiving the draft release investigation work plan with schedules of action for review and comment by January 1995.

Action Date: 9/12/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site assesment for Bldg. 962 UST tank 105 received. Under Work Release R30213/550 issued by Brown & Root Service Corporation, Oil Spill Consultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (UST) at Building 962 at Ft. Richardson, Alaska. The UST (Tank 105) was removed by Nessco Environmental on June 14, 1994. It was taken to a storage area behind Building 955 for cutting and cleaning. Following this, the tank was given to the Defense Reutilization and Marketing

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

organization for disposal.Five (5) project samples and one (1) quality control sample were collected to determine if the soil over and around the UST was contaminated with petroleum hydrocarbons. Additionally, the tank contents were sampled to assess which contaminants would likely be in the soil if a releaseoccurred. Samples were taken to Analytical Technologies, Inc., in Anchorage, Alaska foranalysis.HNU PID 2 ppm Lab result DRO 1,200 mg/kg, HNU PID 2 ppm Lab result DRO 1,300 mg/kg, HNU 1 ppm Lab result DRO 880 mg/kg, HNU 4 ppm Lab result DRO 1,000 mg/kg, HNU 8 ppm Lab Result DRO 3,600 mg/kg. NOTE TO FILE: 2 ppm is TOO HIGH for field screening at DRO UST sites, use 1 ppm or ANY positive deflection as an indication that the site is contaminated. Laboratory results show that the maximum detected level of diesel range organics (DRO) in theproject soil was 3,600 ppm. These results suggest that petroleum hydrocarbons may have beenreleased to the environment from Tank 105 at Building 962.Based on guidelines provided in 18 MC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 962 qualifies for Level C cleanup which sets the maximum DROconcentration at 1,000 ppm. Since the detected levels for DRO at Building 962 exceeds this level, further action is required for site closure. As required by the State of Alaska, a remedial site investigation is required to quantify the area affected by the tank release. The report containing this investigation must includerecommendations for site cleanup. Soil excavated during tank removal cannot be used for backfill.

Action Date: 7/23/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed the responses to its comments on the UFP-QAPP for Bldg. 962 (TU071) and finds the responses acceptable. Please finalize the document.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received for review and comment.Performance ObjectiveSite ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed,and groundwater contamination will be addressed with a technology that is appropriate to thenature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd quarter FY2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 5/6/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

Action Description: Initial ranking with ETM completed for source area id: 79398 name: Heating Oil Tank 105

Action Date: 5/17/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC reviewed and commented on the draft UFP-QAPP work plan for Bldg. 962.It is ADEC???s position that ICs would be applied at JBER sites when:??? The groundwater under a site or downgradient of a site is contaminated with POL constituents at concentrations exceeding or MCLs or Table C; or??? POL contaminants in the soil were above the maximum allowable concentrations (MAC) in Table B2 of 18 AAC 75 are left in place after evaluation or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs.If soil that was above MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil and the statistics for the site could be rerun. The ProUCL checks for outliers and the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO , GRO , RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination (i.e. exceeding MCLs or Table C cleanup levels). In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, and 6 September 2003)??? two rounds of annual groundwater monitoring), MAC may become the cleanup levels as determined by ADEC on a case by case basis.Page ES-3The text states: ???If groundwater is encountered before the interpreted extent of the NAPL-contaminated soil is reached at these locations, source area groundwater samples will be collected and analyzed for DRO, GRO, RRO, VOCs (petroleum-related), PAHs, EPH, and VPH.??? The Site Cleanup Rules for Method Three do not allow for changes to Table C groundwater cleanup levels or calculation of risk-based groundwater cleanup levels. ADEC will not recognize the use of HRC for calculation of risk of groundwater contamination at TU071 or any site on JBER-E or JBER-R, except through the use of Method Four [risk assessment as allowed by 18 AAC 75.325(h)]. Therefore, Table C Groundwater Cleanup levels will apply at all JBER sites with no allowance for alternative or ???risk-based??? groundwater cleanup levels allowed via Method Three (e.g. HRC). Where the HRC guidance and user manual conflict with existing promulgated regulations regarding the regulations will be applicable and supersede or override any guidance, manuals or technical memoranda.

Action Date: 4/23/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: UFP-QAPP SC Work PlanThe overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18, Chapter 75 of the Alaska Administrative Code [18 AAC 75], Sections 325 to 390 and 18 AAC 78 Section 600). If ADEC 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.At TU071, up to six new soil borings will be drilled as shown on Figure 2 and discussed below:Two borings will be drilled near the location of former UST 105 to investigate residualcontamination in the source area and to collect soil samples for volatile petroleumhydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) analysis.Up to approximately 30 primary soil samples will be collected and analyzed forgasoline-range organics (GRO), DRO, residual-range organics (RRO), the volatile organiccompounds (VOCs) benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEXN),and polycyclic aromatic hydrocarbons (PAHs). Three of those soil samples will also beanalyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density,grain size distribution, specific gravity, and soil moisture content. All the samples analyzedfor VOCs (BTEXN), GRO, DRO, RRO, PAHs, EPH, VPH, and other soil properties will befrom the interpreted extent of the nonaqueous phase liquid (NAPL) contaminated soil sourceOne of the soil samples will be collected from below the contaminated soil source andanalyzed for fraction of organic carbon (foc).If groundwater is encountered before the interpreted extent of the NAPL-contaminated soil isreached at these locations, source area groundwater samples will be collected and analyzedfor DRO, GRO, RRO, VOCs (BTEXN), PAHs, EPH, and VPH.Four borings will be drilled around the former tank location to delineate the extent of residualcontamination. Up to approximately 20 primary samples will be collected and analyzed forGRO, DRO, RRO, VOCs (BTEXN), and PAHs.If groundwater monitoring well AP-3591 is still serviceable, a groundwater sample will becollected and analyzed for DRO, GRO, RRO, VOCs (BTEXN), PAHs, EPH, and VPH.

Action Date: 4/22/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP work plan received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18, Chapter 75 of the Alaska Administrative Code [18 AAC 75], Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If ADEC 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

(HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.Two borings will be drilled near the location of former UST 105 to investigate residual contamination in the source area and to collect soil samples for volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH) analysis. Up to approximately 30 primary soil samples will be collected and analyzed for gasoline-range organics (GRO), DRO, residual-range organics (RRO), volatile organic compounds (VOCs) (petroleum-related), and polycyclic aromatic hydrocarbons (PAHs). Three of those soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. All the samples analyzed for VOCs (petroleum-related), GRO, DRO, RRO, PAHs, EPH, VPH, and other soil properties will be from the interpreted extent of the nonaqueous phase liquid (NAPL) contaminated soil source. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).If groundwater is encountered before the interpreted extent of the NAPL-contaminated soil isreached at these locations, source area groundwater samples will be collected and analyzedfor DRO, GRO, RRO, VOCs (petroleum-related), PAHs, EPH, and VPH.Four borings will be drilled around the former tank location to delineate the extent of residualcontamination. Up to approximately 20 primary samples will be collected and analyzed forGRO, DRO, RRO, VOCs (petroleum-related), and PAHs.If groundwater monitoring well AP-3591 is still serviceable, a groundwater sample will becollected and analyzed for DRO, GRO, RRO, VOCs (petroleum-related), PAHs, EPH, andVPH.

Action Date: 4/15/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for TU071.Contaminants of ConcernDuring the 2013 site characterization at this site, the maximum DRO of 4,890 mg/kg was detected at13Q3TU071-SB0104-SO-1 at 15 to 20??? bgs and 4,200 mg/kg at 10 to 15??? bgs. ADEC does not recognize the Table 5-6a and 5-6b 2013 Site Characterization???s modeled concentrations for aromatics and aliphatics as groundwater cleanup levels under Method Three for TU071. Current regulations do not list aromatic and aliphatic cleanup levels for groundwater in Table C. However, since groundwater is not contaminated above Table C levels at this site, it is not an issue at TU071. Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU071 is based on the ingestion pathway for the under 40??? Zone which is 10,250 mg/kg. In accordance with 18 AAC 75.380(d)(1), after reviewing the site characterization report submitted under this section, ADEC has determined TU071 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): the Air Force shall obtain ADEC approval before moving or disposing of soil from TU071. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU071. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 3/28/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Site Characterization Report received for review and comment. A soil sample collected in 2013 just southwest of the former UST 105 at 15 to 20 feet bgs detected DRO at an estimated concentration of 4,890J mg/kg. The DRO-contaminated soil is limited vertically to approximately 32 feet bgs. DRO was reported in the groundwater at a concentration of 28.7 B &181;g/L (Figure 4-2), which is well below the screening level of 150 &181;g/L. The DRO result was qualified (B flagged) because of contamination reported within the laboratory blank.ConclusionsThe following conclusions were made regarding TU071:??? Based on previous investigations and the 2013 site characterization field investigation, DROwas the only contaminant detected in soil at concentrations above project screening levels.??? DRO in soil at concentrations above the screening level (250 mg/kg) covers an area approximately 120 feet long and 40 feet wide centered on the former UST???s location and extending to a depth of up to 32 feet bgs.??? No buildings are present within 30 feet, and all analyte concentrations were below theirrespective 18 AAC 75.345 Method Two, Table B1 and Table C cleanup levels. Therefore, the vapor intrusion pathway is considered incomplete for current industrial and potential future residential exposure scenarios.??? The cumulative carcinogenic risk and noncarcinogenic HI estimates for each source area atTU071 (using the HRC) based on both industrial and hypothetical residential exposurescenarios were calculated to be below the regulatory risk standards.??? Using the HRC for contaminated soil, the source area at the site meets the ADEC risk criteria for bulk hydrocarbons.??? GRO, DRO, and RRO were not detected above project screening levels in groundwater samples collected from the site in 1995 and 2013.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

insignificant.RecommendationsThe following are recommended for TU071:??? No further investigation or cleanup of soil and groundwater.??? ???Cleanup Complete without ICs??? designation because TU071 meets the criteria established for site closure (ADEC, 2012a).??? Abandonment of monitoring well AP-3591 following ADEC???s Monitoring Well Guidance (ADEC, 2013).

Action Date: 3/22/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Release Investigation for bldgs: 914UST 37, 920UST.95,926 UST96, 932 UST 97, 934 UST 98, 936 UST 99, 944.UST 100,946 UST 101,950 UST102, 962 UST105,968 UST 34 at Fort Richardson, Alaska, February 21, 1996.The Department of Environmental Conservation (DEC) has received the above documents on March6,1996.Based upon a review of the information submitted no further assessment or remediation of the sites is requested at this time, These closures do not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated; DEC reserves all of its rights under Title 46 of Alaska Statutes and 18 AAC 78 to request additional activities in the future if necessary to address these risks. DEC requests any monitoring wells installed as a part of these investigations be added to the Postwide monitoring network established under the CERCLA FFA.

Action Date: 2/28/1999
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: This decision document describes the rationale forNo Further Remedial Action Planned (NFRAP) at the Circle Loop Road Warehouses, Fort Richardson, Alaska. This action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.The sites addressed by this document include Bldg 914 underground storage tank (UST) 137, Bldg 926 UST 96, Bldg 932UST 97, Bldg 934 UST 98, Bldg 936 UST 99, Bldg 944 UST 100, Bldg 946 UST 101, Bldg 950 UST 102, Bldg 962 UST 105, and Bldg 968 UST 34. These USTs were removed during the summer 1994 to meet the requirements of the Fort Richardson-State of Alaska, Department ofEnvironmental Conservation (ADEC) UST Compliance Agreement. During removal, soil contamination was found at each site at levels exceeding the State of Alaska level clean-up standards, 2000 parts per million (ppm) Diesel Range Organics (DRO) and 2000 ppm residual range organics (RRO), specified in 18 Alaska Administrative Code (AAC) 78.A release investigation was conducted which averaged 4 soil borings per site. The borings were drilled to approximately 50 feet below ground surface (bgs), and found DRO concentrations ranging from 3,010 ppm to 16,000 ppm.Circle Loop Road warehoused isan industrial complex. Due to limited acess it is not expected to pose a risk to the general public or other pathways. Contamination is not expected to impact groundwater, based up on a soil leaching potential

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK 105 HOT (Continued) **S113929778**

assessment conducted during the release investigation. Therefore, contamination poses no risk to the potential drinking water supply in the area.Because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years to ensure that there is adequate protection of human health and the environment.

Action Date: 2/11/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 11/9/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the October 21, 1994 Site Work Plan, Sampling Analysis Plan, QC/QA Plan, and Health and Safety Plan, Circle Rd. Heating Oil Tanks Project DACA8594DOOO9The Alaska Department of Environmental Conservation (ADEC) has received, on November 4, 1994, a copy of the above documents. Here are our comments regarding the documents. Task 3 Implement Release Investigation Plan Soil Borings page 5 last para. The text states after receipt of lab data one soil boring will be completed as a monitoringwell in the area where the highest concentrations and deepest contaminant impact occur. ADEC requests two monitoring wells be installed instead of one to characterize the potential impacts to groundwater at the 12 different project sites. One well will be placed at each of the two project sites that have the highest concentrations and deepest impacts to soil. Health and Safety PlanADEC does not review health and safety plans, but will keep a copy on fIle in its records.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Bldg 962 Warehouse TU071 USTCA Tank
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

T88 **JBER-FT. RICH SS120** **SHWS** **S120900064**
West **SOUTH SIDE OF CIRCLE LOOP ROAD, FORMERLY FORT RICHARDSON BEF** **N/A**
1/2-1 **FORT RICHARDSON (JBER), AK 99505**
0.647 mi.
3415 ft. **Site 2 of 2 in cluster T**

Relative:
Lower

Actual:
315 ft.

SHWS:

File Number:	2102.38.075
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Active
Latitude:	61.264148
Longitude:	-149.697989
Hazard ID:	26747
Problem:	Trichloroethene (TCE) and cis-1,2-Dichloroethene (DCE) were discovered in soil during characterization of SO030 in 2013. TCE source is unknown. The nature and extent of contamination are also unknown.

Actions:

Action Date:	8/9/2017
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 80107 name: SS120

Action Date:	8/8/2017
Action:	Site Added to Database
DEC Staff:	Mitzi Read
Action Description:	A new site has been added to the database

Action Date:	7/31/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	SO030 Bldg. 974 Site Characterization Report received. Trichloroethene (TCE) concentrations in all samples collected in 2013 were above the project screening level of 0.02 mg/kg. As a result of the ubiquitous distribution of TCE in all soil borings, it does not appear that the exceedances are related to the former tank, and delineation has not been achieved. Further action will be required for TCE. Area Outside Former OWS UST Excavation: Designation of a new site to further characterize the nature and extent of TCE and DRO in soil.The limit of detection (LOD) for 15 VOCs in soil (2-hexanone, 1,2,3-trichloropropane,1,2,3-trichlorobenzene, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,2-dichloropropane,1,3-butadiene, vinyl chloride, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane,1,1,2-trichloroethane, bromochloromethane, carbon tetrachloride, methylene chloride, andethylene dibromide [EDB]) exceeded their respective screening levels.See site file for additional information.

Action Date:	3/13/1991
Action:	Enforcement Agreement or Order
DEC Staff:	Louis Howard
Action Description:	EPA Federal Facility Compliance Agreement (RCRA). Fort Richardson had failed to determine if its waste was a hazardous waste, as required by 40 C.F.R. &167;262.11, at the following buildings: 986, 955, 704, 740, 974, 798, A Co. 813 Bat., 7~6, 27641, and 950. Fort Richardson had failed to mark containers of hazardous waste accumulated in Buildings 975 and 974 with the words hazardous waste, in violation of

JBER-FT. RICH SS120 (Continued) **S120900064**

40 C.F.R. &167;262.34(a)(3).Immediately upon effective date of this Agreement, Fort Richardson shall comply with the following: A. Fort Richardson shall determine if its waste located at Buildings 986, 955, 704, 740, 974,798, A Co 813 Bat., 726, 27641, and 950 is a hazardous waste and comply with 40 C.F.R. &167;262.11. Fort Richardson shall obtain a detailed chemical and physical analysis of a representative sample of waste or use knowledge of the waste to determine if wastes are hazardous wastes, as required by 40 C.F.R. &167;262.11 and comply with 40 C.F.R. &167;265.13(a) (1) and 40 C.F.R. &167;268.

Action Date: 2/14/2018
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed the UFP-QAPP and had the following comments: Staff requested that a meeting with ADEC be included in the schedule after the building surveys and prior to conducting indoor air, outdoor air, and subslab soil gas sampling. Staff requested the analysis and reporting of the following per 8270C-SIM (in addition to PAHs): 3,3-dicholorbenzidine, 4-chloroaniline, bis(2-chloroethyl)ether, hexachlorobeznene, hexachlorobutadiene, hexachloroethane, nitrobenzene, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodiphenylamine, and pentachlorophenol. Surrogates should be pointed out in the work plan so there is agreement on what they will be in the work plan. Please note the following do not contain toxicity values in RSL below. However, ADEC has assigned a surrogate and incorporated them in regulation (18 AAC 75. See Notes to Tables B1 and B2). -Pyrene is a toxicity surrogate for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene -1,2-dichlorobenzene is a toxicity surrogate for 1,3-dichlorobenzene-The IRIS oral RfD for 2,4-Dinitrotoluene is used as a surrogate for 2-Amino-4,6-Dinitrotoluene and 4-Amino-2,6-Dinitrotoluene. Finally for risk estimates of TPH compounds: It is also required that the risk from bulk hydrocarbons be evaluated separately from the individual indicator compounds as mentioned in the ADEC RAPM section 3.3.4.2 ???Risk From Bulk Hydrocarbons??? (October 2015). See site file for additional information.

Action Date: 12/29/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Uniform Federal Policy???Quality Assurance Project Plan (UFP-QAPP) presents the proposed objectives, methods, and procedures for limited field investigations of Sites AT029, DP009, SS019, and SS120 received for review and comment.The project objectives for this SS120 PSE 2 are to (1) delineate the nature and extent of soilcontamination, (2) determine if groundwater has been impacted, and ultimately (3) determine if further response under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is necessary.Four soil borings will be installed to the east and west of SO030-SB08, where TCE exceeded the current PSLs, to delineate the horizontal and vertical extent of VOC (TCE) contamination. Three borings will be installed to 90 feet bgs, and one boring will be installed to 45 feet bgs.Three new monitoring wells, SS120-MW01 through SS120-MW03, will be installed to assess whetherTCE has migrated to groundwater at SS120. SS120-MW01 and SS120-MW02 will be installed northwestand north (downgradient) of

JBER-FT. RICH SS120 (Continued) **S120900064**

former boring SO030-SB08. SS120-MW03 will be installed southeast(upgradient) of SO030-SB08, on the other side of Building 974, to determine if VOC contamination may be present upgradient of the identified area of contamination.See site file for additional information.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich SS120
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	Not reported
Control Details Description1:	Not reported
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

U89 **JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PAR** **SHWS** **S104892991**
WSW **2ND & D STS., NW CORNER FTRS-46 FAC ID 0-00788, FORMERLY FOR** **INST CONTROL** **N/A**
1/2-1 **FORT RICHARDSON (JBER), AK 99505**
0.670 mi.
3538 ft. **Site 1 of 3 in cluster U**

Relative: **Lower**

Actual: **304 ft.**

SHWS:

File Number:	2102.26.048
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.259720
Longitude:	-149.698400
Hazard ID:	1233
Problem:	Building 750, located at the intersection of Richardson Drive and Second Street, is the Motor Pool for 1st/501st Airborne. 10/31/91 Jane Smith Fort Richardson reported a petroleum release from an UST 250 gallon capacity. Also known as Site B, Motor Pool. Further investigation showed no cleanup levels exceeded site closed out. FTRS-046 Bldg 750 UST 15 & 16. Site W018, 1990 RFA SWMU 20 WA Area near bldg. 750, O/W Separator 1 near bldg 750 21, OWS 2 near bldg 750 22, UST Waste Oil tank 1 near bldg 750 23, UST Waste Oil tank 2 near bldg 750 24. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach. B Sites Requiring Investigation and Possible Corrective Action-Bldg. 750 MOTOR POOL Tank 108 20 SEP 1993 USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure Tank s 15 & 16 expected completion date 30 SEP 1994USTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill-Soil Pile (SP) 15 completion date 30 SEP 1994. Any additional stockpiles of petroleum contaminated soil placed on the landfill will be contained in accordance with the Guidance Manual for Underground Storage Tank Regulations &183;18 AAC 78. Treatment of any additional stockpiles placed in the landfill will be initiated within one year of placement at landfill.

Actions:

Action Date:	9/4/1992
Action:	Site Added to Database
DEC Staff:	Louis Howard

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Action Description: Petroleum contaminant.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date: 9/10/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: Site Assessment Report UST Removal Fort Richardson, Alaska Building 750 - Tank 16A. Under Work Release No. R70088/182, issued by Brown & Root Services Corporation. Oil Spill Consultants, Inc. collected samples and performed a site assessment during the removal of Tank 16A at Building 750 on Fort Richardson, Alaska.Tank 16A is a 1,000 gallon underground storage tank which was installed at Building 750to collect waste oil. It was 7'2&176; long, and 5'4 in diameter. This UST was installedapproximately 4' below ground and had no surface dispensers. The soil removed to access Tank 16A was used to backfill the excavation. About six cubic yards of clean soil were imported and used to raise the excavated area to grade. An analysis of the contents revealed that Tank 16A contained oily water. After being removed, Tank 16A was taken to Newell Recycling Alaska for disposal. Four quality control samples and six project samples were collected to determine if the soil over and around Tank 16A was contaminated with petroleum hydrocarbons.Since no PID readings were obtained during field screening, stockpile samples were collected from the 5th cubic yard of soil and the 15th cubic yard of soil that was excavated. Following State of Alaska guidelines, samples were collected from the soil which was 1 ft. below the center of the tank and the soil 1 ft. below the end of the tank closest to the fill pipe. Pipe trench sample was collected from the soil 4 ft. below the

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

surface at a distance of 8 ft. from Tank 16A.Lab analyses was for GRO (none detected), DRO (11.4 mg/kg), RRO (57.7 mg/kg), benzene (ND), Total BTEX (ND). PCB (ND), Metals: Arsenic 3.98 mg/kg, cadmium 1.13 mg/kg, chromium 45 mg/kg, lead 89.7 mg/kg. No further work is required for site closure. All overburden excavated during tank removal was used for backfill at the project site.

Action Date: 8/8/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent letters to the Army re: Site Assessments for UST 15 (750E) and 16 (750W) received on July 25, 1994.Based on the data presented in the documents, ADEC concurs with the recommendations for site closure. The sites closures will be considered final contingent upon the additional sampling that will confirm the presence or absence of soil contamination above level C criteria.

Action Date: 8/19/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Results From Additional UST Soil PID Screening! Analyses comment letter sent to Army (S. Swearingen). The Department of Environmental Conservation, Defense Facilities Oversight group,(ADEC) has received a fax of the document listed above on August 19, 1994. The analyticalresults for bldgs. 750E, 750W, 778, 784, 812, 980, 45726, and 55295 show levels wellbelow the most stringent cleanup criteria. ADEC considers the UST sites closed out.However, closing out these sites does not limit nor preclude ADEC from requesting futureremediation or site investigation at a later date. If new information indicates that there ispreviously undiscovered contamination or exposures that causes an increased risk to humanhealth or the environment, then future investigation and/or remedial actions will be required.

Action Date: 7/25/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Soil samples collected during removal of the USTs 15 and 16 were found to be below Level C criteria (500 mg/kg GRO, 1000 mg/kg DRO, 50 mg/kg BTEX).

Action Date: 7/2/1997
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: US Army Environmental Hygiene Agency, Groundwater Quality Survey number 38-26-K986-91, evaluation of which solid waste management units (SWMUs) identifed in the RCRA Facility Assessment (RFA), 120 are listed, require further sampling, investigation, or corrective action; and to identify and evaluate any SWMU's not previously documented. This includes SWMU 21 - Oil/Water Separator 1 near Bldg. 750, SWMU 22 - Oil/Water Separator 2 near Bldg. 750, SWMU 23 underground waste oil tank 1 near bldg. 750, and SWMU 24 underground waste oil tank 2 near bldg. 750.A SWMU is considered any unit intended for waste management or receiving routine systemic, and deliberate discharge of wastes. Typical SWMUs include landfills, waste impoundments, waste tanks, waste storage areas, wastewater and sewage treatment plants (STPs), and incinerators.

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Action Date: 7/2/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Groundwater Quality Survey No. 38-26-K986-91 Fort Richardson, AK June 24-July 2, 1991. 1. PURPOSE. This survey was performed to evaluate and update the Solid Waste Management Unit (SWMU) information contained in Fort Richardson's RCRA Facility Assessment (RFA); to determinewhich Sm's require further sampling, investigation, or corrective action; and to identify and evaluate any SWMU's not previously documented.2. CONCLUSIONS. Four of the 120 previously-identified SWMU's require sampling and analysis to verify environmental release, and 14 sites are being investigated under separate programs.Thirty-one SWMU's are Waste Accumulation Areas (WAA's), some of which require improvements to identify, prevent, or control environmental releases. Eighteen underground storage tanks(UST's) require no actions other than continued documentation of efforts. The two SWMSl's located at Camp Carroll should not be addressed under Fort Richardson's corrective action requirements. Based on a low potential for release and/or a lack of a susceptible migration pathway, 51 SWMU's require no further action. Six new SWMU's were identified, five of which haveongoing or planned investigations. The remaining new SWMU requires no further action.3. RECOMMENDATIONS. Provide the information contained in this report, along with supporting documentation for all SWMU's, to the permitting agency when issuance of the Part B RCRA permitbecomes imminent. Initiate investigative actions recommended at SWMU's 15/120, 37, and 41 to determine whether environmental releases have occurred. Implement the improvements recommendedfor specific WAA's to identify, prevent, or control environmental releases. analysis, Maintain complete documentation of all sampling and remedial action, construction/removal, or investigation work associated with every SWMU. Continue with ongoing or planned investigations -at 14 original SWMUs and five new SWMUs.SWMU Identitified in the RFA SWMU 20 Waste Accummulation Area Near Bldg. 750, SWMU 21 Oil/Water Separator 1 Near Bldg. 750, and SWMU 22 Oil/Water Separator 2 near Bldg. 750. 23 Underground Waste Oil Tank 1 near Bldg. 750 and SWMU 22 Underground Waste OIl Tank 2 near Bldg. 750.

Action Date: 7/19/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment report received for 750W. Under Work Release R30206/514 issued by Brown & Root Service Corporation, Oil SpillConsultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (UST) at Building 750W on Ft. Richardson, Alaska. The USTwas removed by South Fork Construction on May 10, 1994. It was taken to a storage areabehind Building 955 for cutting and cleaning. Following this, it will be given to the DefenseReutilization and Marketing organization for disposal.Seven sets of samples were collected to determine if the soil over and around the UST wascontaminated with petroleum hydrocarbons. Additionally, the tank contents were sample~ toassess which contaminants would likely be in the soil if a release occurred. Samples were takento Commercial Testing & Engineering Co. and Analytical Technologies in Anchorage, Alaska foranalysis.Laboratory results show that the maximum detected level of diesel range organics (ORO) in thesoil under the storage tank was 22.7 ppm. The DRO level

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

in the overburden was 96 ppm.Gasoline range organics (GRO) and benzene were detected at 10.6 ppm and 0.02. ppm,respectively. The BTEX level was detected at a high of 0.195 ppm. These results stronglysuggest that no significant quantities of petroleum hydrocarbons were released to theenvironment from Tank 16 at Building 750W.Based on guidelines provided in 18 AAC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 750W qualifies for Level C cleanup which sets the maximum OROconcentration at 1,000 ppm and the maximum GRO concentration at 500 ppm. Since thedetected levels for ORO and GRO at Building 750W are significantly less than these levels, nofurther action is required for site closure. All soil excavated during tank removal can be used for backfill pending confirmation from the Alaska Department of Environmental Conservation USTProgram.A 1,OOO-galion UST (Tank 16) was stored on the North side of Building 750W to collect water fromvehicle washing. Tank 16 was 6 feet 1 inch long and 5 feet and 3 inches in diameter. It had a2 inch vent pipe and a 4 inch fill pipe. Both pipes extended 3 feet above the ground. This USTwas installed approximately 4 feet below ground and had no surface dispensers.Information provided by Brown and Root stated that Tank 16 contained water and detergents. Toverify this information a composite sample from the USTs at Buildings 750E and 750W was takenby Oil Spill Consultants on April 18, 1994. Laboratory analysis showed that this tank containedwater with trace quantities of BTEX. No PCBs or halogenated hydrocarbons were detected. Theflash point was greater than 200 of. (This tank was emptied by a vacuum truck prior to projectstartup.)There was no stressed vegetation or other surface conditions which would indicate previoussurface spills near the USTs.On May 10, 1994, Tank 16 was removed by South Fork Construction. It was placed on a linerprior to being taken to the storage area next to Building 955 for cleaning. Following this, it will be turned in to DRMO for disposal.Tank 16 did not have hold-down pads or anchoring devices. It was in good condition. There wasno corrosion or damage which would indicate that fluid had leaked from this tank.Approximately 20 cubic yards of overburden were excavated prior to removing the tank. Althoughpetroleum stains were found in the soil around the tank's fill pipe, a detailed inspection of the overburden and the soil remaining in the excavated area by Oil Spill Consultants' Environmental Engineer revealed no other signs of petroleum contamination. No moisture or liquids entered the excavation after the tank was removed.Analyses was GRO 8015M, DRO 8100M, TPH 418.1 and BTEX 8020.

Action Date: 7/18/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: July 18, 1994 UST Site Assessment Report received (OSC). For Building 750E, field screening was limited to visual inspection of the soil at the project site. Additional samples were collected to increase the potentialfor identifying petroleum contaminationthat may have been released by Tank 15 at Building 750E.Under Work Release R30206/514 issued by Brown & Root Service Corporation, Oil SpillConsultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (US1) at Building 750E on Ft. Richardson, Alaska. The USTwasremoved by South Fork Construction on May 10, 1994. It was taken to a storage area behindBuilding 955 for cutting and cleaning. It then will be given to the Defense

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Reutilization andMarketing organization for disposal. Seven sets of samples were collected to determine if the soil over and around the UST wascontaminated with petroleum hydrocarbons. Additionally, the tank contents were sampled toassess which contaminants would likely be in the soil if a release occurred. Samples were takento Commercial Testing & Engineering Co. and Analytical Technologies in Anchorage, Alaska foranalysis.Laboratory results show that the maximum detected level of diesel range organics (ORO) in theproject soil was 104 ppm. Gasoline range organics (GRO) and benzene were detected at 1.6ppm and 0.02 ppm, respectively. The BTEX level was detected at a high of 0.11 ppm. Theseresults strongly suggest that no petroleum hydrocarbons were released to the environment fromTank 15 at Building 750E.Based on guidelines provided in 18 AAC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 750E qualifies for Level C cleanup which sets the maximum OROconcentration at 1,000 ppm and the maximum GRO concentration at 500 ppm. Since thedetected levels for ORO and GRO at Building 750E are significantly lower than these levels, nofurther action is required for site closure. All soil excavated during tank removal can be used for backfill pending confirmation from the Alaska Department of Environmental Conservation USTProgram.A 1,OOO-gallon UST (Tank 15) was stored on the side of Building 750E to store water whichaccumulated during vehicle washing. Tank 15 was 6 feet 2 inches long and 5 feet and 2 inchesin diameter. It had a 2 inch vent pipe and a 4 inch fill pipe. Both pipes extended 3 feet abovethe ground. This UST was installed approximately 4 feet below ground and had no surfacedispensers.On May 10, 1994, Tank 15 was removed by South Fork Construction. It was placed on a linerprior to being taken to the storage area next to Building 955 for cleaning. Following cleaning, the tank will be turned in to DRMO for disposal. Tank 15 did not have hold-down pads or anchoring devices. It was in good condition. There was no corrosion or damage which would indicate that fluid had leaked from this tank.Approximately 22 cubic yards of overburden were excavated prior to removing the tank. Althoughpetroleum stains were found in the soil around the tank's fill pipe, a detailed inspection of the overburden and the soil remaining in the excavated area by Oil Spill Consultants' Environmental Engineer revealed no other signs of petroleum contamination. No moisture or liquids entered the excavation after the tank was removed.Analyses: GRO 8015M, DRO 8100M, TPH 418.1 and BTEX 8020. Maximum benzene and GRO levels were detected at 0.02 ppm and 1.6 ppm for the soil samplesfor Tank 15. BTEX was detected at 0.11 ppm. The ORO level for the background sample was104 ppm. By comparison, the ORO level ranged from a low of 4.0 ppm to a high of 68 ppm forthe soil over and around Tank 15. As discussed in Section 2.2, the liquid in Tank 15 was sampled by Oil Spill Consultants on May10, 1994. This liquid was determined to be water with trace quantities of petroleum hydrocarbons.The flash pOint for the liquid In this tank was greater than 200&176;F.The visual screening of the project soil supported by laboratory data indicates that no releaseshave occurred from Tank 15. Since the maximum detected level of ORO in the soil under thetank was only 13.6 ppm, it is reasonable to conclude that the tank 15 has not leaked. HigherORO level in the background sample probably indicates that surface spills might have occurredin the soil around Building 750E. No further action is required for site closure. The overburden removed during site excavation can be used for backfill at the project site.

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Action Date:	6/16/1995
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date:	6/10/2013
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Initial ranking with ETM completed for source area id: 72212 name: auto-generated pm edit Ft. Rich Bldg. 750 UST 108

Action Date:	5/8/1990
Action:	Report or Workplan Review - Other
DEC Staff:	Ron Klein
Action Description:	ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection). Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date:	4/8/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft site closure report received for review and comment.The purpose of this Site Closure Report is to document that TU046 ??? Building 750 (FTRS-46)(CS DB Hazard ID 1233) at Joint Base Elmendorf-Richardson (JBER)-Richardson (JBER-R), Alaska, meets the following objectives and requirements:Is protective of human health and the environment in accordance with the Alaska Department of

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Environmental Conservation (ADEC) contaminated sites (18 Alaska Administrative Code [AAC] 75) and underground storage tank (UST) regulations (18 AAC 78) (ADEC, 2012a and 2012b);Meets state requirements that are applicable or relevant and appropriate;Is suitable for unrestricted use; andMeets site closeout requirements as defined by the United States Air Force.With the approval from ADEC and agreement that levels of contamination no longer present asignificant threat to human health and the environment, TU046 is therefore eligible for siteclosure.This report was developed in accordance with Department of Defense Environmental Restoration Program site closeout protocol and in accordance with 18 AAC 75.380 final reporting requirements for site closure.Cleanup Complete without institutional controls is being requested based on the determination by ADEC that there is no unacceptable risk or threat to human health and the environment. Concentrations of petroleum hydrocarbons detected in soils after the excavation and removal ofUSTs 15 and 16 are below the ADEC Method Two criteria. No further action for soil was granted by ADEC on August 8, 1994. Groundwater was not encountered during UST removal and excavation, and the soil confirmation sample results are below the ADEC Method Two migration to groundwater cleanup levels.Therefore, TU046 has been adequately characterized and addressed under 18 AAC 75 and 18 AAC 78, and Cleanup Complete with site closure is appropriate

Action Date: 4/19/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation (ADEC) has received the above document on April 8, 2013, via electronic mail, for review and comment. ADEC has completed a review of the document and file information associated with Building 750 CS DB Hazard ID 1233 at JBER-Richardson. Based on the information provided to date, ADEC has determined the site has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules. One minor comment: 2.1 Site Location, please add latitude and longitude coordinates for the TU046 in decimal degree format with a precision of six decimal places (dd.dddddd).Based on the information available, ADEC has determined that cleanup is complete, subject to a future ADEC determination that the cleanup is not protective of human health, safety, or welfare or of the environment.ADEC approval is required for off-site soil disposal in accordance with 18 AAC 75.325(i). It should be noted that movement or use of potentially contaminated soil in a manner that results in a violation of 18 AAC 70 water quality standards is unlawful. Upon incorporation of the requested location information, the document can be finalized for signature.

Action Date: 3/10/1999
Action: Conditional Closure Approved
DEC Staff: Tim Stevens
Action Description: ADEC sent letter to Army RE: The May 13, 1998, closure of Underground Storage Tank (UST), Alternate ID 16A, located on the north side of building 750, Fort Richardson, Alaska. Facility ID 0-000788, ADEC tank 153. Event Id 2274. The report was received on August 13, 1998, documenting the closure of the above mentioned underground storage tank (UST). It summarizes the information collected during closure of the 1000-gallon UST that was used to store used oil at Building 750.

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

Since, both the UST closure and the site assessment report were completed prior to the adoption of the January 22, 1999 regulations, ADEC conducted its review of the site assessment report using the November 3, 1995 regulations, in effect at the time of the closure. Based on the information and laboratory data presented in the site assessment document, no further action is required by ADEC. Please note, ADEC believes the consultant errored in determining the matrix score of 26 for this site. Based on the volume of excavated contaminated overburden (20 cy later used to backfill the UST excavation), and the unknown volume of contaminated soil left in place at the bottom of the UST excavation, 31 is a more appropriate matrix score. A matrix score of 31 equates to a category ???B??? site, which has more stringent cleanup standards than a category ???C??? site. However, since the levels of contamination found were below category ???B??? cleanup standards, the change in the matrix score does not alter ADEC???s decision for no further action required.In the future, should contaminated soil or groundwater be discovered on site that exceeds State cleanup standards, appropriate site assessment and cleanup would be required of the Army in accordance with applicable State regulations.

Action Date: 2/5/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from the Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met:Tank 108A-This is a used oil UST with an ILS-350 interstitial monitor/overfill alarm system. The tank's spill control is a catchement basin(s)lfloor drain system attached to an oil water separator. The tank is filled through manually pouring oil into either one of the floor drains or into an oil sink. The system is nonpressurized, and gravity fed.

Action Date: 12/12/2001
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on Post are responsible for complying with established institutional controls (ICs). They are applicable to all known or suspected contaminated sites where contamination has been left in place above those which do not allow for unrestricted use. 2. ICs such as limitations on access, excavations, and property transfers will supplement engineering controls as appropriate for short and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 3. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

suspected hazardous waste site or ???clean??? site) of a work location. ECRs for work in known or suspected hazardous waste sites: a. will include specific limitations and controls on such work; b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements; c. may include procedures for management, characterization, and disposal of any soil encountered or removed; d. will identify project managers for both the unit/contractor requesting the work and DPW Environment Resources. 4. DPW will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met.

Action Date: 1/10/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army provides a decision document discusses and records the rationale for No Further Remedial Action Planned (NFRAP) at Bldg 750, Fort Richardson. Removal of the underground storage tanks at this site was required by the FRA UST Compliance Agreement. The levels of contamination found at the site during removal were all below current acceptable standards (Level B).Building 750, located at the intersection of Richardson Drive and Second Street, is the Motor Pool for 1st/501st Airborne. Underground storage tanks (UST) 15 and 16 were removed and replaced with new double walled tanks in May 1994. Soil samples taken during the tank removal were found to contain low levels of petroleum products (above level A but below level B). Evaluation of remedial alternatives was not conducted for this site. Residual contamination levels at the site did not require a release investigation, development of human health risk based closure levels, or a corrective action plan.

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU046 Bldg 750 USTs 15 16 USTA 2 Par
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: The Army has established Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: Currently, all contracts that include intrusive activities require a Work Authorization Permit. The Permit was recently updated to clearly alert the user on procedures to follow when potential contamination is encountered. Post maps are regularly updated to show all areas affected by ICs. Copies are provided to each directorate, activity and tenant organization. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PARTY (Continued) **S104892991**

groundwater in effect at the Post.

Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich TU046 Bldg 750 USTs 15 16 USTA 2 Par
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: When Contaminated Soil is Accessible, Remediation Should Occur
Contaminant CTD: The Army has established Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: Institutional controls on soil contamination left in place at depths greater than 15 feet. Soils excavated by any party at the site that are above Level A criteria will require treatment to be remediated to these levels. All units and tenants are informed annually of ICs on contaminated soils in effect at the Post.
Comments: Not reported

Inst Control:
Hazard ID: 1233
Facility Status: Cleanup Complete - Institutional Controls
Action: Institutional Control Record Established
Action Date: 12/12/2001
File Number: 2102.26.048

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90 West 1/2-1 0.678 mi. 3581 ft.

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR **SHWS** **S110144163**
DAVIS HWY., 5TH STREET & CIRCLE, LOOP RD., FORMERLY FORT RIC **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Actual: 312 ft.

SHWS:
File Number: 2102.26.021
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.263597
Longitude: -149.698920
Hazard ID: 1232
Problem: Located on Circle Loop Road, Building 974 is the Directorate of Logistics (DOL) Special Equipment Repair Shop (SPERS). Also known as site E, Special Purpose Equipment Repair Shop. A 1,200 gallon underground storage waste oil tank leaked and soil was excavated. Possible contaminated soil remains beneath crib. Additional tanks on other side of building scheduled for closure in 1993. Cleanup levels not exceeded site closed out. ER,A Eligible Response Complete FTRS-07 Bldg 974 Cannibalization Yard NE1/4 Section 31. Site R091, 1990 RFA SWMU 46, 47. Site R062, 1990 RFA SWMU 45. 44 Waste Accumulation Areas

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

Near Bldg. 97445 Waste Solvent Accumulation Area Near Bldg. 97446 Fuel Blivet Cleanirig Area Near Bldg. 97447 Oil/Water Separator at Fuel Blivet Cleaning Area48 Underground Waste Oil Tank Near Bldg. 974The site was originally reckey 199821X011001, UST Facility ID 788, Event ID 2282, UST 211, but not covered by 18 AAC 78 since it was an oil water separator hooked to stormwater system.EPA ID: AK6214522157.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or ClosureUSTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:

Action Date: 9/28/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Site Assessment Report for Facility No. 0-00788 Building 974Fort Richardson, AK August 14, 1994The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on September 12, 1994, a copy of the above referenced report. The text states the site is recommended for closure. Based on the data presented in the report, ADEC concurs with the recommendation.

Action Date: 9/28/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Soil samples taken during a July 1994 removal of the two underground storage tank systems (USTs) showed levels of petroleum contamination below Level C criteria (500 mg/kg GRO, 1000 mg/kg DRO, 2000 mg/kg RRO, and 50 mg/kg BTEX). No further action requested and approved.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

Site K, Building 955, Used POL Holding Facility

Action Date:	8/9/1995
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC's comments and requests for further information regarding the most recent submittal on the USTMP quarterly report. Please send FY 97,98,99,2000 budget regarding LUST work anticipated at Fort Richardson so ADEC can budget man hours for review periods.Page 3Bldg. 974 ust 35 has been closed out after review of August 14, 1994 site assessement received by ADEC on 09/12/94 refer to 9/28/94 letter from ADEC. Bldg. 27054 tank 50 no record of site assessment ever received here and no comments in files. Please resubmit SA for review by ADEC.
Action Date:	8/7/1998
Action:	Update or Other Action
DEC Staff:	Tim Stevens
Action Description:	Tim Stevens received the Tank Closure Report Building 974 Oil Water Separator which is 2000 gallons in capacity. 120 cubic yards were screened and not shown to be impacted with soil. No soil samples from excavation were shown to be above level C criteria. The site was backfilled due to the excavation endangering the adjacent building foundation. Confirmation soil samples were not taken from the stockpile. If tank is not connected to the sewer system it would be regulated under 18 AAC 78, if not then it is overseen by contaminated sites (storm water or waste water collection system-which an o/w separator hooked up to sewer or stormwater outfall is considered). This excludes from UST regulations any wastewater treatment tank system that is part of a wastewater treatment facility regulated under section 402 or 307(b) of the Clean Water Act (40 CFR 280.10 Applicability).
Action Date:	8/30/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2645 N latitude -149.6961 W longitude
Action Date:	8/14/1994
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Site Assessment received. Under Work Release R3021 0/513 issued by Brown & Root Service Corporation, Oil Spill Consultants collected samples and performed a site assessment during the removal of a 1,500-gallon underground storage tank (USl) at Building 974 at Ft. Richardson, Alaska. The UST (Tank 35) was removed by Alcan Environmental on July 14, 1994. It was taken to a storage area behind Building 955 for cutting and cleaning. Following this, the tank was given to the Defense Reutilization and Marketing organization for disposal. Five (5) project samples and one (1) quality control sample were collected to determine if the soil over and around the UST was contaminated with petroleum hydrocarbons. Additionally, the tank contents were sampled to assess which contaminants would likely be in the soil if a release occurred. Samples were taken to Analytical Technologies, Inc., in Anchorage, Alaska, for analysis.Laboratory results show that the diesel range organics for the soil over and around Tank 35 ranged from < 11 ppm to a maximum of 210 ppm. The

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

gasoline range organics were consistently less than 5 ppm. The maximum benzene level was less than 0.027 ppm. The maximum BTEX level was 0.061 ppm. By comparison, the DRO level for the background sample was 240 ppm. No GRO or benzene was detected in the background samples. The BTEX results for the background sample was 0.122 ppm.Based on the laboratory analysis, it is apparent that Tank 35 did not release petroleum hydrocarbons to the environment. This assertion is supported by the following observations at the project site: 1) the UST was in excellent condition, 2) the soil appeared to be clean and did not have a petroleum odor, and 3) no significant readings were obtained while soil screening using a calibrated HNU photoionization detection instrument.The State of Alaska's regulations for underground storage tanks are published in 18 AAC 78. Under the most stringent criteria 'established by the state, the maximum allowable levels for DRO, GRO, benzene and BTEX contamination for underground storage tanks are 100 ppm, 50' ppm,0.1 ppm, and 10 ppm respectively. Since the detected levels of petroleum hydrocarbons for Tank 35 were significantly below this regulatory threshold, no further action is required for site closure. Soil excavated during tank removal can be used for backfill at the project site.

Action Date: 7/31/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The underground storage tank (UST) was removed in July 1991. Soil samples taken during the removal contained gasoline range organics, residual range organics (RRO) and benzene, toluene, ethyl benzene and xylene (BTEX) above the ADEC level C clean-up standards specified in 18 Alaska Administrative Code 78.

Action Date: 7/2/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: US Army Environmental Hygiene Agency GW Quality Survey No. 38-26-K986-91 Evaluation of Solid Waste Management Units Fort Richardson AK 24 June to 2 July 1991. This survey was performed to evaluate and update the Solid Waste Management Unit (SWMU) information contained in Fort Richardson's RCRA Facility Assessment (RFA); to determine which SWMU's require further sampling, investigation, or corrective action; and to identify and evaluate any SWMU's not previously documented. 44 Waste Accumulation Areas Near Bldg. 97445 Waste Solvent Accumulation Area Near Bldg. 97446 Fuel Blivet Cleanirig Area Near Bldg. 974 (required no further action)47 Oil/Water Separator at Fuel Blivet Cleaning Area (required no further action)48 Underground Waste Oil Tank Near Bldg. 97449 Oil/Water Separator near Bldg. 974The WAA at Building 974 (SWMU 45) is used to store waste trichloroethane solvent prior to transfer and disposal. During the site visit, as has been noted in the past, the drumswere stored on a concrete platform several feet high which was filled in with-gravel and soil. There were no noticeable releases to soil around the solvent drums. The site was well organized and well-labelled. The only potential problem is that the integrity of the concrete platform is unknown. It could not be determined whether the platform did in fact have a bottom to it. Spillage has been noted in the past (reference 2); it should be determined whether this setup is conducive to ground-water contamination through the bottom of the platform. Facility drawings or interviews with past employees may

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help make this determination. 2) RCRA Facility Assessment PR/VSI Report, U.S. Army Fort Richardson, Anchorage, Alaska, Prepared for the U.S. Environmental Protection Agency, Region X, by Science Applications International Corporation, Bothell, Washington, January 1990.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft project management plan received. Performance ObjectiveSite ClosurePerformance Indicators&183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by September 2013&183; Complete an approved Characterization/Cleanup Report by March 2014&183; Achieve SC in 2014Potential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/28/2004
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: Proper soil management required for any soil excavated from this area. Land use controls noted Postwide IC tracking map for dig permit reviews.

Action Date: 6/28/2004
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Site closure approved for Level C criteria and however, confirmation sampling showed 400 mg/kg DRO (*6,347 mg/kg (TRPH) also noted).

Action Date: 6/28/2004
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The 5 March 1999 letter from ADEC requested that the Army provide additional information regarding the closure of an unregulated oil/water separator (OWS) at Building 974 on Fort Richardson. The OWS was unregulated and the Army was under no regulatory obligation to submit a closure notification or closure report for this tank. However, in response to the Department's request for information, the following information is provided.1. The Department requested that the Army reevaluate the ADEC Matrix Score Sheet for the site based on the assumption that the entire 120 cubic yards (cyds) of excavated

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soil was contaminated: The Army has reevaluated the matrix score and determined that the contractor was in error concerning several applicable items. The new score, including the assumption that the entire 120 cyds of soil were contaminated, now totals to 24. The revised Matrix Score Sheet is provided as an attachment to this email. The Category C cleanup levels are still applicable to the site.2. The Department requested information concerning the effluent discharge point for the OWS: The report clearly states that the OWS discharged into a 6-inch diameter sanitary sewer line located at the west end of the tank. The Army has confirmed this by reviewing as-built diagrams for the facility. In addition, there was a question concerning a field screen sample was collected from disturbed slough, or an area of loose soil located below the floor drain piping. The term slough was not used to reference a drainage area or waterway at the site. Thus, contamination was not detected outside of the tank excavation.3. The Department requested an explanation why confirmation soil samples were not collected from the untreated stockpile: Because the tank was unregulated, there was no requirement to collect samples at the site during tank closure. However, the Army's contractor did field screen the excavated soil and did collect confirmation soil samples from the bottom of the excavation. Field screen data did not indicate the presence of contamination in the soil (PID readings never exceeded 1 ppm) and confirmation samples indicated that contaminant levels did not exceed applicable Category C cleanup levels. In addition, the pit was immediately backfilled because the excavation was endangering the adjacent building foundation.4. The Department requested that the Army provide an explanation why samples were not collected and analyzed to determine the presence of metals, solvents, or PCBs as required by the Procedures Manual: Please review the response listed under item three regarding sampling requirements for unregulated tanks. The Army's contractor did collect a product sample from the OWS that was analyzed for the presence of metals, solvents, and PCBs. Only metals were detected in the sample, but at levels not likely to cause soil contamination that would exceed applicable cleanup standards.The Army does not feel that corrective action is warranted at this site and requests closure with no further action. Please let me know if you need further information on this OWS closure.Mark Prieksat DPW-FRA

Action Date: 6/24/2014
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date: 6/13/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Cleanup complete determination issued. Site Description and BackgroundSite SO030 consists of four former underground storage tanks (USTs) at Building 974, the Special Purpose Equipment Repair Shop: USTs 35, 36, and 37, and a 2,000-gallon UST associated with a

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former oil-water separator (OWS).Contaminants of ConcernDiesel Range Organics (DRO)Cleanup LevelsThe cleanup level for soils at SO030 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs).In 2013 groundwater was not encountered during the investigation, and no groundwater monitoring wells have been constructed at SO030. Based on information from nearby sites TU058 and DA085, located approximately 4,000 feet southwest and 1,600 feet south of SO030, respectively, the depth to groundwater is estimated at 100 feet bgs. Regional groundwater flow direction is toward the northwest.In 2013, soil samples were collected and analyzed for GRO, DRO, RRO, VOCs, metals, PAHs and pesticides. DRO was the only contaminant detected above SO030???s project screening level (250 mg/kg) in the following soil samples:Subsurface soil??? 606 mg/kg of DRO ??? lateral extent soil boring SO030-SB03, 5 to 10 feet bgs??? 313 mg/kg of DRO ??? lateral extent soil boring SO030-SB03, 10 to 15 feet bgs??? 452 mg/kg of DRO ??? step out soil boring SO030-SB08, 10 to 15 feet bgsSurface soil??? 286 mg/kg of DRO ??? lateral extent soil boring SO030-SB04, 0 to 5 feetThe estimated rounded cumulative cancer risk at SO030 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (5 x 10-7 and 1 x 10-6 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at SO030 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (0.003 and 0.009 respectively) is below the regulatory risk standard of 1. SO030 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO aromatic and aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for SO030 and no observed environmental impacts from soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The Ecoscoping Form indicates that a more in-depth risk evaluation is not needed and that the SO030 site conditions are protective of the environment.ADEC agrees that the TCE found in all of the samples taken outside the former excavation area of the OWS UST is not likely related to the former OWS UST. This area will need to be investigated as part of the investigative process outlined in the Fort Richardson Federal Facility Agreement as a new source area. Based on a review of the environmental records, ADEC has determined that SO030 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules for petroleum contamination related to SO030. ADEC is issuing this written determination that cleanup is complete at SO030, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for SO030 in the Contaminated Sites Database.

Action Date: 6/12/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: RCRA HW Mgt. Compliance Evaluation Inspection Report received. Although the inspection team did not get the opportunity to visit Building 974, the inspection team wanted to inquire into whether or not the 55-gallon drums under the sign Dirty Solvent out in the hazardous waste accumulation point at Building 974 were properly

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labeled as hazardous waste prior to being recycled. During the May 1990 inspection, this was seen as a potential violation of 40 CFR 261.6 and 18 AAC 62.020. Ms. Scott was not aware of this requirement for recyclable materials and she is theInstructor for personnel training per 40 CFR 265.16. Fort Richardson must ensure the relationship between 40 CFR 261.6 and 40 CFR 265 is included in personnel training conducted inaccordance with 40 CFR 265.16(a) (1).

Action Date: 6/11/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72211 name: auto-generated pm edit Ft. Rich Bldg. 974

Action Date: 5/8/1990
Action: Report or Workplan Review - Other
DEC Staff: Ron Klein
Action Description: ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection).
Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date: 5/22/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC Report received for review and comment.In 2013, DRO was not detected above the screening levels in samples within the former OWS UST excavation area and in lateral extent borings located to the northeast and southwest. This indicates the former OWS UST area is no

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longer a source of DRO contamination.??? In 2013, DRO was detected in soil at concentrations above project screening levels in samples from an area outside the former OWS UST excavation. The shallow DRO contamination in SO030-SB04, increasing with depth to the southwest at SO030-SB03 and SO030-SB08 is not consistent with a release from the former OWS UST.??? For the area to the west of the former OWS UST, the maximum vertical extent of DRO isapproximately 15 feet bgs, which is approximately 85 feet above the water table. The extentof DRO in soil outside of the former OWS UST excavation has not been laterally defined.DRO was detected above the project screening level of 250 mg/kg in the following soil samples:??? 606 mg/kg of DRO ??? lateral extent soil boring SO030-SB03, 5 to 10 feet bgs??? 313 mg/kg of DRO ??? lateral extent soil boring SO030-SB03, 10 to 15 feet bgs??? 452 mg/kg of DRO ??? step out soil boring SO030-SB08, 10 to 15 feet bgs??? 286 mg/kg of DRO ??? lateral extent soil boring SO030-SB04, 0 to 5 feet bgs??? Groundwater was not encountered during the investigation, and no groundwater monitoringwells have been constructed at SO030. Based on information from nearby sites TU058 andDA085, located approximately 4,000 feet southwest and 1,600 feet south of SO030, respectively,the depth to groundwater is estimated at 100 feet bgs. Regional groundwater flow direction istoward the northwest.??? The estimated rounded cumulative cancer risk for the current industrial and hypotheticalresidential exposure scenarios is below the regulatory risk standard of 1E-05.??? The estimated cumulative noncancer HI for the current industrial and hypothetical residentialexposure scenarios is below the regulatory risk standard of 1.??? The site meets the ADEC risk criteria for bulk hydrocarbons.??? TCE concentrations in soil were measured above the screening levels in all samples collected in 2013. The TCE is not likely related to the former OWS UST.??? No potential risks to the ecological receptors were observed, and potentially complete ecological exposure pathways are considered insignificant

Action Date: 5/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the UFP-QAPP SC Work Plan for SO030 Bldg. 974 (ADEC CS DB Hazard ID 1232) on JBER-Richardson on May 10, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

Action Date: 4/5/1991
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: RCRA Federal Facility Compliance Agreement signed. Inspection on June 19, 1985, June 13, 1986, and April 14, 1987 was conducted to determine compliance with RCRA. A Notice of Non-compliance (NON) dated July 28, 1987. Follow-up inspection conducted on April 19, 1988. On June 13, 1989 another Notice of Noncompliance was issued for violations observed during the April 19, 1988 inspection.The Army failed to mark containers of hazardous waste which has accumulated at Building 975 with an accumulation date, in violation of 40 CFR 262.34(a)(2). Fort Richardson also failed to mark containers of hazardous waste at 975 and 974 with the words hazardous waste (HW), in violation with 40 CFR 262.34(a)(3).On 6/8-9/89 inspection the Army failed to determine if its waste was a HW at 974.

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Action Date: 4/20/1998
Action: Update or Other Action
DEC Staff: Tim Stevens
Action Description: On April 20, 1998, the 2,000-gallon UST associated with an oil/water separator removed from the ground. Contaminated soil found in a confirmation soil sample collected from the bottom of the UST excavation (470 ppm DRO). Confirmation samples not tested for PCBs, chlorinated solvents or metals.

Action Date: 3/5/1999
Action: Report or Workplan Review - Other
DEC Staff: Tim Stevens
Action Description: RE: April 20, 1998 Closure of UST Alternate ID 974, located near the west side of Building 974 on Fort Richardson Alaska. Facility ID 0-000788, ADEC Tank 211 UST Database Event ID 2282. The Department of Environmental Conservation (Department) has reviewed the site assessment report received on August 7, 1998, documenting the closure of the above mentioned underground storage tank (UST). The report summarizes the information collected during closure of the 2000-gallon UST oil water separator located at Building 974. Based on the information presented in the site assessment document, the Department is requesting the following information be submitted:???Please provide the Department with an explanation as to why confirmation samples were not collected from the untreated stockpile. Information contained in the report indicates approximately 120 cy of soil was excavated from the UST excavation. The soil was temporarily stockpiled and field screened to help determine if hydrocarbon contamination was present. Figure 2, on page 5, lists the field screening results, ranging from 0.0 to 0.8 units. However, it appears no confirmation samples were collected from the stockpile before the soil was returned to the excavation. 18 AAC 78.320(c) [now 18 AAC 78.605(c)] requires a minimum of two grab samples be collected and analyzed for untreated stockpiles of 50 cy or less, and one additional sample for each additional 50 cy of soil. ???Please provide an explanation why neither the UST excavation soil nor the stockpiles soil was analyzed to determine the presence metals, chlorinated solvents, or PCBs as required by section 6.3 of Storage Tank Program Procedure Manual, dated September 22, 1995. ???Please reevaluate the ADEC Matrix Score Sheet submitted in the site assessment report, and either provide an explanation justifying the score submitted by the contractor, or submit a new matrix score sheet to reflect the issues discussed below. The Department believes a matrix score of 26 is inappropriate for this site. The Department believes an incorrect value of ???0??? was assigned to the ???Volume of Contaminated Soil??? category. Because the 120 cy stockpile had positive field screening results, and no confirmation samples were collected to verify the stockpile was not contaminated, the Department has to assume all 120 cy of excavated soil is contaminated. This volume of contaminated soil equates to a category score of eight, (8) and changes the over all matrix score to 32. A 32 score would make this site a level ???B??? site, instead of a level ???C??? as reported. ???The report contains a listing of field screening sample locations and results. The highest field screening result, 28.7 PID units, was from a sample collected from a nearby ???disturbed??? slough. I reviewed the site drawing and was not able to locate the slough. Since the slough had the highest field screening results, and the report did not mention where the oil water

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separator discharged to, the Department is requesting additional information about the disposal of the oil water separator effluent. Please provide the Department with information indicating whether the oil water separator discharged to an approved waste water treatment facility, or to the land. Upon review of the information requested, the Department may request additional sampling of the slough area. Upon receipt of the requested information the Department will review all the information submitted and make a determination whether correction action will be required at this site.

Action Date: 3/13/1992
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Waste oil contaminant. LUST reckey was 199821X011001 now covered by 199121X030403.

Action Date: 2/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft UFP-QAPP work plan.Please provide latitude & longitude coordinates for the site location in decimal degree format with a precision of six decimal places (dd.dddddd). Also include the following:1. Date of collection,2. Method of collection (i.e. GPS, hardcopy map, air photo),3. Scale of the map used to acquire coordinates (if applicable),4. Estimated accuracy & associated unit of measure,5.Reference point for which the coordinates were established (i.e. center of property, entrance gate),6.Horizontal datum (NAD 1983 is strongly preferred) &7. Comments for additional information regarding acquistion of coordinates (if necessary).Page ES-2Site-specific BackgroundBuilding 974 has several solid waste management units (RCRA) associated with it: 44, 45, 46, 47, 48, & 49. 44 Waste Accumulation Areas Near Bldg. 97445 Waste Solvent Accumulation Area Near Bldg. 97446 Fuel Blivet Cleanirig Area Near Bldg. 974 (required no further action under RCRA)47 Oil/Water Separator at Fuel Blivet Cleaning Area (required no further action under RCRA)48 Underground Waste Oil Tank Near Bldg. 97449 Oil/Water Separator near Bldg. 974ADEC???s review & comments do not relieve JBER???s responsibility to address the SWMUs under RCRA. EPA Region 10 the regulatory lead on this matter since ADEC no longer has a RCRA program. WS 10Page 141st ParagraphThe text states: ???In addition, the site must (1) meet the ???migration to GW??? criteria, which indicate that the dissolution (leaching) of chemicals from soil will not cause GW to exceed 18 Alaska Administrative Code (AAC) 75 Table C GW criteria for ingestion risk, & (2) concentrations in soil must not exceed the maximum allowable concentrations.??? ADEC also wishes to inform JBER that the vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs & ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of GW contamination above Table C cleanup levels. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC. 3rd ParagraphThe text states: ???There are no drinking water wells in the shallow GW at this time.??? ADEC requests JBER provide information (e.g. location & well construction) on the nearest (within &189; mile of SO030 site) drinking water [Base] well or standby drinking water

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well that may be used on a temporary, intermittent or permanent basis. This comment applies to all future UFP-QAPPs submitted by JBER for review by ADEC. WS 14 & 16Project Tasks/Project SchedulePost-Investigation ActivitiesReportingAll field records as listed on Basewide UFP-QAPP: WS 34 & reporting documents listed in the Basewide UFP-QAPP applicable SOPs (Appendix B) shall be included with the draft & final reports. These will meet or be comparable to the minimum reporting requirements listed in ADEC???s Site Characterization Work Plan & Reporting Guidance for Investigation of Contaminated Sites, September 23, 2009 (e.g. Table 2: Site Characterization Report Review & Approval Criteria). ADEC will require JBER to include the following deliverables with the draft & final reports (of all UFP-QAPP WPs that use HRC) as stated in ADEC???s ???Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator??? (February 25, 2011): 5.1 95 UCL vs. Maximum Concentration When using ProUCL with the HRC (similar to when using the ADEC online calculator or in a Method 4 risk assessment) both hard copies & electronic copies of the input & output data from ProUCL shall be submitted to ADEC as part of the written site characterization report. JBER must provide supporting documentation for the ProUCL input values. Sites with large source areas that exhibit significant variability in contaminant levels &/or heterogeneous soil properties across soil horizons may require additional data &/or separate evaluation.8 HRC SubmittalsAs part of the site characterization report, the responsible party shall submit both an electronic version & a hard copy of the Microsoft Excel calculator with all site-specific inputs & accompanying results. A table listing the site-specific inputs & how the values were derived (data collection method, model, literature source, etc.) shall also be provided as part of the site characterization report.Page 30SO030-SB01 & SO030-SB02 The text states: ???However, if visual observations indicate the presence of potential contamination at or near the water table, a monitoring well will be installed in the soil boring.??? Visual observations will not detect metals, PCBs, or pesticides contamination. The text should state that ???..if visual observations indicate the presence of potential petroleum contamination at or near the water table??????

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair Regional Administrator-Southcentral Office) and U.S. Army. The purpose of the agreement is to bring Fort Richardson into compliance with the Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding Alaska Department of Military and Veterans Affairs and Army National Guard USTs). All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.Site Assessment or Svstem Tightness Test29. The Army shall conduct a site assessment* or a system tightness test, as required by AS 46.03.380(b) and 18 AAC

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78.01S(i)(3), on all USTs located at Ft. Richardson, or permanently close the USTs in accordance with 40 CFR 280 and 18 AAC 78. If site assessments or system tests have been conducted, the Army shall submit proof of compliance by the deadlines set forth in the USTMP. Site Assessments or System Tightness Tests shall be conducted under the schedules in 18 AAC 78.015(i)(3) or, in order to come into compliance, as scheduled in the USTMP. All tightness testing work will be conducted by a certified UST worker as required by 18 AAC 78.400. Site Assessment work will be conducted pursuant to 18 AAC 78 and an ADEC-approved Quality Assurance Program Plan (QAPP). With respect to UST recordkeeping requirements, the Army shall compile all required records by the date set forth in the USTMP and shall thereafter maintain and update those records as required by 18 AAC 78 and 40 CFR 280.Release Investigation Reports31. The Army shall submit to ADEC a Release Investigation* report for each UST site having a documented release* of petroleum products or hazardous substances. These reports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b), 18 AAC 78.240(c) and the following: 1) a detailed written or, if applicable, visual description of all work performed and summary of all pertinent data prepared by the Army and its consultants, 2) monitoring well construction data and3) soil boring logs; 4) site maps detailing existing improvements and (if known) 5) the location of former fuel dispensing equipment, 6) water table elevation maps, 7) petroleum-product level and thickness (isoplot) maps, 8) organic-contaminant concentration maps, 9) aquifer interpretations, 10) other potential source areas within 1/4 mile, 11) data deliverables as outlined in 18 AAC 78, 12) interpretations of field observations and analytical data, 13) a completed Site Assessment/Release Investigation Summary Form, and 14) recommendations for any follow up work. 32. If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the ADEC concluded that additional assessment is required.111. Site shall mean a distinct area of contamination or potential contamination.112. Site assessment shall mean the investigation of suspected contamination resulting from an unpermitted release of oil or hazardous substance as further defined in 18 AAC 78.090 (Site characterization and assessment). 110. Release shall have the meaning in AS 46.03.826 [(9) release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance.]Listed in Attachment B as a site requiring a release investigation for UST 35. Listed on Attachment D as either requiring an upgrade or closure for USTs 36 and 37. Listed in Attachment I as requiring complete treatment of existing stockpile at the Landfill for SP 15.

Action Date:	1/31/2013
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft UFP-QAPP received. One boring (SO030-SB01) will be drilled to a depth up to 100??? bgs at the center of the former OWS UST location to investigate the area of residual contamination, define the nature of contamination & vertical extent, & collect source area data. Soil

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

samples will be collected every 5??? to 25??? bgs & every 10??? from 25??? bgs to 100??? bgs. If the boring is advanced to GW, HydroPunch GW samples will be collected at the water table to confirm contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, a monitoring well will be installed in the soil boring. One boring (SO030-SB02) will be drilled within the UST footprint & advanced to a depth up to 50??? bgs to collect additional source area data & further define the nature of contamination.Soil samples will be collected every 5??? to 50??? bgs. These proposed new borings are located where the vadose zone is interpreted to be contaminated. If, based on PID screening & visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, two samples will be collected beyond the last evidence of contamination, & the boring will be terminated. Both borings will be drilled to at least 25??? bgs.Based on field observations & the results of the PID, soil samples within each 5-foot interval throughout the boring will be selected for lab analyses. All soil samples (up to 22 primary samples) will be analyzed for GRO, DRO, RRO, VOCs, metals, PCBs, & pesticides. To facilitate HRC calculations, a subset of soil samples will be collected & analyzed as follows:??? Approximately 3 samples (excluding QC) from more heavily contaminated soils (as observed at the time of sampling based on the PID & visual/olfactory evidence of contamination) will be analyzed for PAHs, VPH, & EPH.??? Approximately 1 sample from uncontaminated soils that are representative of the source zone will be analyzed for foc.??? Approximately 1 sample representative of the site subsurface conditions will be analyzed for bulk density, grain size distribution, specific gravity, & moisture content. SO030-SB03, SO030-SB04, SO030-SB05, & SO030-SB06Four borings (SO030-SB03 through SO030-SB06) will be drilled to the NE, NW, SE, & SW of the former OWS UST location & advanced to depths up to 25 feet bgs to define the lateral extent of residual contamination. Soil samples will be collected every 5??? to 25??? bgs.Based on field observations & the results of the PID screening, soil samples within each 5-foot interval throughout the boring will be selected for lab analyses. All soil samples (up to 20 primary samples) will be analyzed for GRO, DRO, RRO, VOCs, metals, PCBs, & pesticides.If borings are advanced to GW (not anticipated), HydroPunch GW samples will be collected from a few feet below the water table from each boring to confirm that contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, monitoring wells may be installed in the soil borings. GW samples will be analyzed for GRO, DRO, RRO, VOCs, PAHs, PCBs, dissolved metals, pesticides, VPH, & EPH. Observations of odor, turbidity, & color will be recorded on the GW sample collection log.If, for POL, potential risk is indicated by the HRC or if vadose zone soils exceed MAC, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated. If excavation is the selected alternative, the contaminated soil will be excavated up to a depth of 25??? bgs, where possible, and thermally treated at Alaska Soil Recycling, Inc. (ASR). The following decision rules will be used to determine whether excavation is necessary:??? Soil contamination in the upper 15’ bgs with levels > approximately 10,250 mg/kg DRO will be the target of excavation.??? Soil contamination creating

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

unacceptable VI or MGW risk up to 25??? bgs will be excavated if soil contamination below 25??? bgs does not create unacceptable risk.If excavation is selected as the remedial approach, field screening and soil sampling will be performed in accordance with ADEC Field Sampling Guidance (ADEC, 2010). During excavation, the PID screen soil using a level of 20 ppm to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yds of soil. SOP-05 (Appendix B) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles and submitted for lab analysis of GRO, DRO, RRO, VOCs, PAHs, PCBs, metals, and pesticides at a rate of 2 for the first 50 cy of stockpiled soil with an additional sample for each additional 50 cy.

Action Date: 1/31/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received.One boring (SO030-SB01) will be drilled to a depth up to 100 feet bgs at the center of the approximate former OWS UST location to investigate the area of residual contamination, define the nature of contamination & vertical extent, & collect source area data. Soil samples will be collected every 5 feet from ground surface to 25 feet bgs & every 10 feet from 25 feet bgs to 100 feet bgs. If the boring is advanced to GW, HydroPunch GW samples will be collected at the water table to confirm contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, a monitoring well will be installed in the soil boring.One boring (SO030-SB02) will be drilled within the UST footprint & advanced to a depth up to 50 feet bgs to collect additional source area data & further define the nature of contamination.Soil samples will be collected every 5 feet from ground surface to 50 feet bgs. These proposed new borings are located where the vadose zone is interpreted to be contaminated. If, based on PID field screening & visual/olfactory evidence, the boring reaches the maximum vertical extent of the soil contamination, two samples will be collected beyond the last evidence of contamination, & the boring will be terminated. Both borings will be drilled to at least 25 feet bgs.Based on field observations & the results of the PID screening, soil samples within each 5-foot interval throughout the boring will be selected for laboratory analyses. All soil samples (up to 22 primary samples) will be analyzed for GRO, DRO, RRO, VOCs, metals, PCBs, & pesticides. To facilitate HRC calculations, a subset of soil samples will be collected & analyzed as follows:??? Approximately three samples (excluding QC) from more heavily contaminated soils (as observed at the time of sampling based on PID readings & visual/olfactory evidence of contamination) will be analyzed for PAHs, VPH, & EPH.??? Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for foc.??? Approximately one sample representative of the site subsurface conditions will be analyzed for bulk density, grain size distribution, specific gravity, & moisture content.SO030-SB03, SO030-SB04, SO030-SB05, & SO030-SB06Four borings will be drilled to the NE, NW, SE & SW of the former OWS UST location & advanced to depths up to 25 feet bgs to define the lateral extent of residual contamination. Soil samples will be collected every 5 feet from

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

ground surface to 25 feet bgs.Based on field observations & the results of the PID screening, soil samples within each 5-foot interval throughout the boring will be selected for lab analyses. All soil samples (up to 20 primary samples) will be analyzed for GRO, DRO, RRO, VOCs, metals, PCBs, & pesticides.GWIf borings are advanced to GW (not anticipated), HydroPunch GW samples will be collected from a few feet below the water table from each boring to confirm that contamination has not migrated to GW. However, if visual observations indicate the presence of potential contamination at or near the water table, monitoring wells may be installed in the soil borings. GW samples will be analyzed for GRO, DRO, RRO, VOCs, PAHs, PCBs, dissolved metals, pesticides, VPH, & EPH. Observations of odor, turbidity, & color will be recorded on the GW sample collection log.If, for petroleum hydrocarbons, potential risk is indicated by the HRC or if vadose zone soils exceed MACs, then remedial options that address the COC & associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated. If excavation is the selected alternative, the contaminated soil will be excavated up to a depth of 25 feet bgs, where possible, & thermally treated at Alaska Soil Recycling, Inc. (ASR). The following decision rules will be used to determine whether excavation is necessary:??? Soil contamination in the upper 15 feet bgs with levels > approximately 10,250 mg/kg DRO will be the target of excavation.??? Soil contamination creating unacceptable VI or MGW risk up to 25 feet bgs will be excavated if soil contamination below 25 feet bgs does not create unacceptable risk.If excavation is selected as the remedial approach, field screening & soil sampling will beperformed in accordance with ADEC Field Sampling Guidance (ADEC, 2010). Duringexcavation, the PID will be used to screen soil using a level of 20 ppm to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-05 (Appendix B) provides the methodologies to be followed for field screening.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich SO030 Bldg 974 Special Equip Repair
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

Inst Control:

Hazard ID:	1232
Facility Status:	Cleanup Complete
Action:	Institutional Control Record Established
Action Date:	6/28/2004
File Number:	2102.26.021

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR SHOP USTA (Continued) **S110144163**

Hazard ID: 1232
Facility Status: Cleanup Complete
Action: Institutional Control Record Removed
Action Date: 6/24/2014
File Number: 2102.26.021

U91 **JBER-FT. RICH BLDG 755 UST 17 USTA 2 PARTY** **SHWS S109256238**
WSW **2ND ST. BETWEEN D ST. & DAVIS HWY. EAST SIDE** **LUST N/A**
1/2-1 **FORT RICHARDSON (JBER), AK 99505**
0.693 mi.
3657 ft. **Site 2 of 3 in cluster U**

Relative:
Lower

Actual:
302 ft.

SHWS:
File Number: 2102.26.005
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259856
Longitude: -149.699187
Hazard ID: 24131
Problem: Mark Prieksat POC for the Army 384-3042. Last staff assigned was Howard. See CS DB 199121X130401 Fort Rich Bldg. 755 UST (DUPLICATE SITE in LUST DB-DELETE LUST reckey when CS/LUST DB merge) 17 SFRERA (non-ust) as this is a DUPLICATE SITE entry in the LUST DB subject to deletion at a future date. Also known as Site C. RCRA SWMU 26 UST Waste oil tank near bldg 755 and SWMU 27 Paint Spray Booth in bldg. 755. USTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:
Action Date: 2/5/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met:Tank17 A-This is a used oil UST with an ILS-350 interstitial monitor/overfillalarm system. The tank's spill control system consists of a catchement basin/floordrain system attached to an oil water separator. The tank is filled throughmanually pouring oil into either one of the floor drains or into an oil sink. Thesystem is non-pressurized, and gravity fed.

Action Date: 11/11/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: Conditionally closed DUPLICATE DELETE SITE from LUST when CS/LUST DB merge. Site C Building SEE CS DB reckey 199121X130401 for addtl. Information.

Action Date: 11/1/1991
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: LCAU; :LCAU Date changed DB conversion

Action Date: 10/31/1991

JBER-FT. RICH BLDG 755 UST 17 USTA 2 PARTY (Continued) **S109256238**

Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

LUST:
Facility Name: JBER-FT. RICH BLDG 755 UST 17 USTA 2 PARTY
Facility Status: Cleanup Complete
Record Key: 199121X030401
File ID: 2102.26.005
Oname: U.S. Air Force
Lat/Lon: 61.25985 -149.6991
Lust Event ID: 274
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: WGS84

U92 **JBER-FT. RICH BLDG 756 UST 179 USTA 2 PARTY** **SHWS S110144155**
WSW **BUILDING 756 ALT ID 109A NEAR SECOND & D STREET** **LUST N/A**
1/2-1 **FORT RICHARDSON (JBER), AK 99505**
0.719 mi.
3795 ft. **Site 3 of 3 in cluster U**

Relative:
Lower

Actual:
301 ft.

SHWS:
File Number: 2102.26.006
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259938
Longitude: -149.699917
Hazard ID: 25061
Problem: 1,000-gallon used oil UST closed on May 14, 1998. Low concentrations of DR0 & RR0 were found in confirmation samples. US ARMY sent a NFA letter on March 9, 1999. SA review done using 11/3/95 UST regs Army POC Cristal Fosbrook 384-2713. FTRS-03RCRA SWMU 28 Oil/Water Separator near bldg. 756, UST waste oil tank near bldg. 756.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or ClosureUSTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:
Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

JBER-FT. RICH BLDG 756 UST 179 USTA 2 PARTY (Continued) **S110144155**

Action Date:	8/13/1998
Action:	Underground Storage Tank Site Characterization or Assessment
DEC Staff:	* Not Assigned
Action Description:	8/13/98 ADEC received a copy of the site assessment document.
Action Date:	5/14/1998
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported
Action Date:	5/14/1998
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Source removal. UST removed from the ground on May 14, 1998.
Action Date:	3/9/1999
Action:	Site Closure Approved
DEC Staff:	* Not Assigned
Action Description:	ADEC progect manager sent the US Army and NFA letter, stating no cleanup needed at this site at this time.

LUST:

Facility Name:	JBER-FT. RICH BLDG 756 UST 179 USTA 2 PARTY
Facility Status:	Cleanup Complete
Record Key:	199821XO13401
File ID:	2102.26.006
Oname:	U.S. Air Force
Lat/Lon:	61.25993 -149.6999
Lust Event ID:	2273
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD83

93
WSW
1/2-1
0.727 mi.
3837 ft.

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY **SHWS** **S109568353**
2ND STREET BETWEEN D ST. & E. DAVIS HWY. FTRS-19, FORMERLY F **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
299 ft.

SHWS:

File Number:	2102.26.006
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.259167
Longitude:	-149.700000
Hazard ID:	1229
Problem:	Release of used oil discovered 8/28/91 from 1,000 gallon used oil underground storage tank. Also known as Site D, Building 756, Motor Pool. Cleanup levels found not to be exceeded site closed out. ER,A Eligible Response Complete FTRS-03 Bldg 756 UST 18. Site W018 1990 RFA SWMU 28, 29, 73. Point of contact is Cristal Fosbrook 384-2173, Environmental Resources Branch. Last staff assigned was Howard. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or ClosureUSTA 2 Party Attach I

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:

Action Date:	9/24/1991
Action:	Site Number Identifier Changed
DEC Staff:	John Halverson
Action Description:	Old Reckey 1991210024201, new Reckey 1991210025302 per J. Halverson.

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/2/1993
Action:	Update or Other Action
DEC Staff:	John Halverson
Action Description:	Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date:	9/13/1991
Action:	Notice of Violation
DEC Staff:	John Halverson
Action Description:	Notice of release letter sent to Directorate of Engineer in response to report of petroleum release on 8/29/91 at Building 756. Reports on the site assessment and release investigation to be sent within 30 days after confirmation of release. Corrective actions to be documented in an interim corrective action report sent within 60 days after the confirmation of a release.

Action Date:	8/29/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2592 N latitude -149.7002 W longitude

Action Date:	8/29/1991
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	petroleum contaminant.

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

Action Date:	6/16/1995
Action:	Site Ranked Using the AHRM
DEC Staff:	Louis Howard
Action Description:	Initial ranking. Action code added because it wasn't when the site was originally ranked.

Action Date:	3/9/1999
Action:	Site Closure Approved
DEC Staff:	Tim Stevens
Action Description:	Letter sent concurring with no further remedial action planned proposal by the Army re: The May 14, 1998, closure of UST, Alternate ID 109A, located on the west side of building 756, Fort Richardson, Alaska. Facility ID 0-000788, ADEC tank 179. Based on the HLA release investigation data there is only 1,990 mg/kg DRO present, so site will be matrix closed since it is below Level D criteria for DRO (2,000 mg/kg).The Department of Environmental Conservation (Department) has reviewed the site assessment report it received on August 13, 1998, documenting the closure of the above mentioned underground storage tank (UST). The report summarizes the information collected during closure of the 1000-gallon UST that was used to store used oil at Building 756. Since, both the UST closure and the site assessment report were completed prior to the adoption of the January 22, 1999 regulations, the Department conducted its review of the site assessment report using the November 3, 1995 regulations, in effect at the time of the closure. Based on the information and laboratory data presented in the site assessment document, no further action is required by the Department. In the future, should contaminated soil or groundwater be discovered on site that exceeds state cleanup standards, appropriate site assessment and cleanup would be required in accordance with applicable State regulations.

Action Date:	2/5/1995
Action:	Update or Other Action
DEC Staff:	Tim Stevens
Action Description:	Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met:Tank109A- This isa used oil UST for a vehicle wash rack, with an ILS-350 interstitial monitor/overfill alarm system. The tank's spill control is a catchement basin/floor drain system attached to an oil water separator. The tank is filled through manually pouring oil into either one of the floor drains or into an oil sink. The system is non-pressurized, and gravity fed.Tank18A-This is a used oil UST with an ILS-350 interstitial monitor/overfill alarm system. The tank's spill control system consists of a catchement basin/floor drain system attached to an oil water separator. The tank is filled through manually pouring oil into either one of the floor drains or into a oil sink. The system is non-pressurized, and gravity fed.

Action Date:	11/14/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the HLA Release Investigation Report

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

bldg. 756 Site DThe Alaska Department of Environmental Conservation, Defense Facilities Oversight Group(ADEC) received a copy of the above referenced report on April 26, 1994. Based on the datapresented in the report level c cleanup criteria has not been exceeded for the former used oilunderground storage tank at bldg. 756 and no further investigative action is warranted.However, closing out of this site does not limit nor preclude ADEC from requesting futureremediation or site investigation at a later date. If new information indicates that there ispreviously undiscovered contamination or exposures that may cause risk to human health or theenvironment, then future investigation and/or remedial actions may be required by ADEC.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 756 USTs 18 109 USTA 2 Party
Contaminate Level Description1:	Not reported
Contaminate Media1:	Not reported
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	For more information about this site, contact DEC at (907) 465-5390.

File Number:	2102.38.004.04
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.259454
Longitude:	-149.699009
Hazard ID:	1240
Problem:	10/31/91 Jane Smith from Fort Richardson reported a petroleum release from a 1,000 gallon used oil UST. Also known as site C (Auto and Crafts Center). Total extent of release not known. FTRS-19 Arts & Crafts Shop (Bldg 755). Site R057, 1990 RFA SWMU 27, 72 (Auto & Craft Shop). Also known as Building 755 the Directorate of Community Affairs Automotive and Craft Shop. UST Facility ID 788.EPA ID: AK6214522157USTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:

Action Date:	9/4/1992
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Petroleum contaminant.
Action Date:	9/28/2001
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff commented on ICs report for Two Party Sites which includes Building 755 UST 17 FTRS-19. ADEC does not concur that the Army does not need to conduct a five-year review for this site. Hazardous substances remain above levels that would allow for unlimited use and unrestricted exposure. Please refer to Draft Leachability Assessment and Risk Assessment April 1998 where the Army requested an alternative cleanup level for residual range organics at 3,900 mg/kg.

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

ADEC concurred with the proposed cleanup level on June 2, 1998. As an alternative cleanup level, ADEC expects the Army to impose institutional controls upon the contaminated soils at the site to reduce exposure of workers to contamination at the site.Also, ADEC expects any excavated soils, which are contaminated to be treated and disposed of in accordance with 18 AAC 78 Underground Storage Tank regulations. Hazardous substances remain at the site above levels, which would allow for unlimited use and unrestricted exposure. A [periodic] review will need to be conducted within five years (e.g. 2006, 2011, 2016) after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/2/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Preliminary Release Investigation Report Underground Storage Tank Sites Fort Richardson, Alaska, dated July 6, 1993 received by ADEC for review and comment. The report covers the following sites: Plate 3 Site A, Building 45590, Old Auto Hobby ShopPlate 4 Site B, Building 750, Motor PoolPlate 5 Site C, Building 755, Auto and Crafts CenterPlate 6 Site D, Building 756, Motor PoolPlate 7 Site E, Building 974, Special Purpose Equipment Repair ShopPlate 8 Site F, Building 796, Vehicle and Weapons Repair ShopPlate 9 Site G, Building 47811, Veterinary ClinicPlate 10 Site H, Building 47438, Bryant Anny Airfield Fuel FacilityPlate 11 Site I, Building 47641, Former Aero ClubPlate 12 Site J, Buildi ng 28004, Chlorination FacilityPlate 13 Site K, Building 955, Used POL Holding Facility

Action Date: 9/16/2016
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Supplemental work plan received for review to address the groundwater sampling, institutional controls (IC) inspection, and landfill cap inspection activities associated with the 2016 Long Term Monitoring (LTM) at the Joint Base Elmendorf-Richardson (JBER), Sites PL081, CG551, ST408, CG530, SO510, SS522, SO507, SS418, TS003, CG543, CG529, TU107, ST048, CG509, SO508, SO549, AT035, AT029, SS019, and DP009. As a requirement of the 2016 Environmental Long Term Monitoring contract, the following work shall be performed at JBER Site SS019:? Perform IC inspection

Action Date: 9/14/2001

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	ICs report for site was received by ADEC. Area where former tank was removed has been asphalted over, eliminating the potential inhalation, ingestion or dermal contact as potential exposure pathways for the RRO contamination at 3,900 mg/kg. April 30, 1998 a Draft Leachability Assessment and risk assessment was received. After review of the information provided, ADEC (Lynn Kent Program Manager) has approved the closure under the Draft 18 AAC 75 Contaminated Sites Regulations as an alternative cleanup level. The approval is for the residual range organics (RRO) present at 3,900 mg/kg in the wooded area near Building 755. This closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination from the former source areas or other exposures which cause or exceed an unacceptable risk to human health or the environment.ADEC reserves all its rights under Title 46 of Alaska Statutes and 18 AAC 75 to request additional activities in the future if necessary to address these risks. Future investigation or remedial actions may be required if the Army for any reason excavates the contaminated soils at Building 755 in the future. This site and others that were closed out at levels above those found in the Alaska Soil Cleanup Matrix (A, B, C, or D) will need to be referenced in the final Record of Decision (ROD) for the Post (Currently at 9/26/01 it is Operable Unit E).ADEC requests monitoring well AP-3167 be included with the area-wide monitoring well network for groundwater sampling and NOT be decommissioned as proposed.
Action Date:	8/29/2007
Action:	GIS Position Updated
DEC Staff:	Louis Howard
Action Description:	61.2599 N latitude -149.6993 W longitude
Action Date:	8/24/2017
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff commented on the Draft Supplemental Work Plan for JBER-E and JBER-R sites [PL081 N. Jet Pipeline, CG551 Bldg. 4314, ST408 Bldg. 9569, CG530 ST526, SO510 Bldg. 9480, SS522 Hardstand 39, SO507, Bldg. 9669, SS418, ST532, TS003 Skeet Range, CG543 Bldg. 18877, CG529 ST529, ST048 Bldg. 11-490, CG509 Bldg. 4347, SO508 ST508, SO549 Bldg. 4913, AT035 MEB Complex, AT029 Ruff Road FTA, SS019 Bldg. 755, DP009 Bldg. 986 POL Lab, LF002, LF002 OU6 Disposal Site, CG536 ST510, CG539 Bldg. 15380, CG702 Bldg. 31562, SO544 Bldg. 10334, SO547 Bldg. 4913, CG704 Southern Plume, CG527 ST538, SO501 ST427, TU064 Bldg. 740, SS013 MP Barracks, SS014, SS041 Roosevelt Road Transmitter Site, TU107, ST048] which include this one. ADEC concurs with the scope of work for the current work outlined in this section. Note: there is a RI/FS planned for this site Define nature and extent of contamination in soil and groundwater associated with the former UST and its associated piping.
Action Date:	6/6/2012
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan received. Performance objective: Site closurePerformance Indicators: &183; Complete an approved

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Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by July 2013&183; Complete an approved Characterization/Cleanup Report by January 2014&183; Achieve SC in 2014Potential Risk: The nature and extent of soil contamination in the upper 25 feet is greater than anticipated. Groundwater impacts are discovered.Risk Mitigation:Excavate soil as needed (estimate 300 yd3) to achieve SC. Monitoring wells will be installed,and groundwater contamination will be addressed with a technology that is appropriate to thenature and extent of the plume to achieve SC within the Period of Performance. Date of acheiving performance objective: 1st Quarter 2013.Planned ApproachPrepare an approved Characterization Workplan and coordinate, mobilize and execute Characterization by installing and sampling two soil borings and collect one hydropunch groundwater sample. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare and submit a request for Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/22/2012
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the draft Project Management Plan.Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). 7.1.2For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers and contracting staff:???Coordinate schedules with ADEC in advance and throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad and other Technical Project Planning team meetings, etc.). ???Plan and maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version and a final review and approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review and Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both

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interim and final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment and Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state and federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date: 6/2/1998
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: Based on contamination at site remaining above levels which would allow unlimited access and use (residential) the site has institutional controls placed on it in the Post-Wide general land planning records and maps.

Action Date: 6/2/1998
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed the Release Investigation Report Bldg. 755 Former UST 17 Project 21844. Site C Building 755 Auto and Crafts Center-The text recommends closure of UST 17 based on alterntive cleanup levels using SESOIL a draft leachability and risk assessment for soil contamination in vicinity of building 755. After briefing section manager and Program manager, received concurrence from program manager on ACL of 3,900 RRO.This determination does NOT preclude further remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures that may cause risk to human health, welfare, safety or the environment. ADEC reserves all of its rights under Title 46 of Alaska Statutes to request additional activities in the future if necessary. The Army is still obligated to comply with all relevant State and Federal regulations to report investigate and cleanup any/all past, present and future releasses relating to Army activities. ADEC requests monitoring well AP-3167 be included with the areawide monitoring well network for groundwater sampling and not be decommissioned as proposed in the document.In the future, should contaminated soil or groundwater be discovered on site that exceeds state cleanup standards, appropriate site assessment and cleanup would be required in accordance with applicable State regulations.

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

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Action Date: 6/10/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72219 name: auto-generated pm edit Ft. Rich Bldg. 755 UST 17 SFRERA

Action Date: 5/8/1990
Action: Report or Workplan Review - Other
DEC Staff: Ron Klein
Action Description: ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection).
Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date: 5/7/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC finds the responses to ADEC’s comments acceptable. Please finalize the document for SS019 Bldg. 755.

Action Date: 5/3/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has received the final version of the UFP-QAPP SC Work Plan for Building 755 ADEC CS DB Hazard ID 1240 (aka Auto and Crafts Center, Site R057, 1990 RCRA Facility Assessment SWMU 27 and 72) on JBER-Richardson on April 18, 2013. ADEC has reviewed the document and has no further comments on it. The document is approved.

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Action Date: 5/22/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: JBER Text: ???Quality control (QC) samples will include field duplicates (FDs), matrix spike / matrix spike duplicates (MS/MSDs), and equipment blanks (EBs) collected as OUTLINED IN Worksheet 20 of the Site Characterization Work Plan (10 percent for FDs, and 5 percent for MS/MSDs). Five primary samples, one FD, one MS/MSD, and one EB will be collected at the site. Table 1 presents a summary of samples and analyses, and rationale for collection.??? JBER Work Plan WS20 Field QC Summary: ???Field QC summary follows the JBER Basewide UFP-QAPP (USAF, 2013) and includes collecting duplicates and MS/MSDs at rates of 10 and 5 percent, respectively. The anticipated number of duplicates and MS/MSD samples are presented in Table 20-1 of this Work Plan (a lower number of duplicates and MS/MSD samples may be collected if the SS019 samples are collected as part of a program and submitted for laboratory analysis with samples from other sites).???ADEC: Comment1) ADEC will REQUIRE that all QC samples (e.g. duplicates, MS/MSD, etc) will be collected as required by the UST Procedure Manual Table 4 on a SITE-SPECIFIC basis (no pooling of QC samples as part of a ???program??? or larger ???JBER Project???).Table 4 shows the minimum level of sample QC scrutiny that must be applied to field sampling. A description of each type of field QC sample appears in Sections 9.1.2. - 9.1.5 of this chapter. Reference to sets of samples in this and subsequent subsections refers to samples taken from the same site (or, for multiple sampling points within a single project, from the same area within a site that has uniform characteristics such as grain size and organic content) during the same sampling event during a discrete time period. It does NOT apply to sampling points from DIFFERENT sites, samples taken at significant time differences from each other, nor multiple samples from the same site, but with non-uniform site characteristics. Allowable Tolerance shall be equivalent to UST Procedure Manual Table 1 for soil (Part A) and groundwater samples (Part B) as specified by the method listed. JBER Response:1. As described in the text (???Five primary samples, one FD, one MS/MSD, and one EB will be collected at the site.???) and shown in Table 1, QC samples will be collected from SS019 to meet the requirements of 10 percent for FDs and 5 percent for MS/MSDs, in accordance with the WS20 of the Site Characterization Work Plan, the JBER Basewide UFP-QAPP, and the UST Procedure manual Table 4. QC samples will be collected on a site-specific basis rather than on a program wide basis. JBER Comment: ???A soil gas screening evaluation will be performed in the area between Building 755 and Second Street, and the access road north of the building to the southern end of the building, to further characterize PCE in soil. Ten temporary soil gas probes will be installed in a grid-type pattern to approximately 8 feet bgs (Figure 1 and Table 1) using the methods outlined in SOP-5a. Soil gas samples will be screened with a portable gas chromatograph (GC) with a photoionization detector (PID) (FROG-4000 by Defiant Technologies, Inc.) using the methods outlined in SOP-5f.ADEC Comment2) Request JBER discuss the process of collecting soil gas samples to be analyzed by an approved laboratory and not just rely on an evaluation of the screening data for VI risk determination. JBER Response:1. 2. Collection and laboratory analysis of soil gas samples is not proposed at this time. As noted at the Soil Vapor Sampling Approach Meeting on April 14, 2014, the objective of this investigation is similar in approach to a Gore-Sorber Survey

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and will be used to help determine whether the PCE detected in soil is indicative of a separate source area, requiring further action under CERCLA. Further actions necessary to define the nature and extent of PCE under CERCLA will be conducted separately. After completion of the screening, Triad style decision making will be used to determine whether further action is necessary for petroleum-related VOCs under the Two-Party Agreement.

Action Date: 5/22/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Responses to ADEC???s comments for SS019 additional site characterization work plan addendum are acceptable. Please finalize the document

Action Date: 4/26/1994
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Release investigation report FTR Project 21844 received from Army on UST 17 that proposed closure for soil contamination at site. Based on groundwater leachability modeling it appears to be a candidate for closure.

Action Date: 3/4/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft SC report.Summary of 2013 Site Characterization ActivitiesThe text states: ???All samples were submitted to Applied Sciences Laboratory for analysis of gasoline-range organics (GRO), DRO, residual-range organics (RRO), and volatile organic compounds (VOCs).??? Please state here and elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.Nature and ExtentThe text states: ???Five VOCs were also detected above the project screening levels: 1,2,4-trimethylbenzene, benzene, m- and p-xylene, tetrachloroethene (PCE), and total xylenes.???PCE was not identified previously linked to this site. This document states that there is potentially a separate [new] source of PCE adjacent to Building 755. In accordance with the requirements of the Fort Richardson Federal Facility Agreement, Part Paragraph 24.3 and 24.4:???24.3 The Army shall provide notification to U.S. EPA and ADEC within thirty (30) days of identifying a new potential source area. Unless the Parties agree on another disposition, new source areas will be addressed under the last scheduled OU as described in Attachment I.24.4 The final deadlines established pursuant to this Part shall be published by U.S. EPA, in conjunction with ADEC.??? Nature and ExtentThe text states: ???The lateral extent of PCE in the soil in this area needs to be further delineated.???The text shall state: ???In accordance with 18 AAC 75.335 , the lateral extent of PCE in the soil in this area needs to be further delineated.???Human Health Risk EvaluationAdd sentence to discussion on risks outside of the OWS/UST source area (here and on Page 5-2): ???Because no groundwater samples have been collected at SS019, the EPCs for groundwater are the concentrations predicted by the ???migration to groundwater??? calculations (Table C-1.6, page 7).???RecommendationsThe text states: ???Recommendations for further investigation or action would be decided after receipt of result of the screening evaluation.??? The

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text shall state: ???Recommendations for further investigation or action under CERCLA as a new source area under the Federal Facility Agreement instead of the State Fort Richardson Environmental Agreement (SFRERA) would be decided after receipt of result of the screening evaluation.???Regulatory FrameworkThe text states: ???The HRC (version 1.1), a peer reviewed Microsoft Excel spreadsheet model, approved by ADEC as a Method Three and Four tool, is available at http://www.dec.alaska.gov/spar/csp/guidance/hrc/Hydrocarbon20Risk20Calculator.xls.???ADEC has not approved the use of the HRC for use as a Method Four tool by itself. The HRC can only be used for Method Four if it is part of the risk assessment performed under ADEC???s Risk Assessment Procedures Manual. Otherwise the HRC is merely a risk evaluation allowed for by ADEC under Method Three. The revised text shall state: ???The HRC (Version 1.1), a peer-reviewed Microsoft Excel??? (Excel???) spreadsheet model approved by the ADEC as a Method Three tool, is available at: Hydrocarbon Risk Calculator (Ver. 1.1) - Excel 1.9MB. When the HRC is used under Method Four, to support alternative groundwater cleanup levels derived as part of a risk assessment, responsible parties must follow the ADEC???s Risk Assessment Procedures Manual.???

Action Date: 3/4/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed & commented on the draft UFP-QAPP.WS 14 & 16Post-Investigation ActivitiesADEC will require JBER to include the following with the draft report as stated in ADEC???s ???Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator??? (February 25, 2011). 5.1 95 UCL vs. Maximum Concentration When using ProUCL with the HRC (similar to when using the ADEC online calculator or in a Method 4 risk assessment) both hard copies & electronic copies of the input & output data from ProUCL shall be submitted to ADEC as part of the written report. JBER must provide supporting documentation for the ProUCL input values. Sites with large source areas that exhibit significant variability in contaminant levels &/or heterogeneous soil properties across soil horizons may require additional data &/or separate evaluation.8 HRC SubmittalsAs part of the report, the RP shall submit both an electronic version & a hard copy of the MS Excel calculator with all site-specific inputs & accompanying results. A table listing the site-specific inputs & how the values were derived (data collection method, model, literature source, etc.) shall also be provided as part of the site characterization report.WS 17Sampling Design & Rationale2nd BulletThe text states: ???Calculation of representative 95 UCLs will commonly require 10 or more sample results from within the contaminated soil source area.??? Section 5.1 Page 4 of ADEC's Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator February 25, 2011 states: ???ADEC recommends a minimum of 10 data points be used to calculate the 95 UCL. However, RPs should bear in mind that even 10 data points may not yield a stable UCL if there is higher than normal heterogeneity in contaminant levels.Page 28Site-Specific Sampling PlanThe text states: ???In the event underground utilities or structures cannot be definitively identified, an air knife & vacuum truck may be used to clear the upper 6 ft of the proposed drilling location prior to drilling or conducting other invasive activities.???This 6 ft. interval shall not be excluded from field screening & sampling requirements due to it being previously removed

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& replaced during utility investigation activities. ADEC expects in most cases, that JBER staff can definitively identify the underground utilities at most of the PBR sites for the contractor & the use of the air knife & vacuum truck will be used very infrequently. Page 293rd BulletThe text states that to facilitate HRC calculations, a subset of [primary] soil samples will be collected & analyzed as follows: ???Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for foc.???Please be aware that the HRC User Manual (January 2011) states: Section 1 INTRODUCTION Page 1???Users of the hydrocarbon risk calculator must follow applicable ADEC regulations & guidance documents including, but not limited to, the following: Title 18, Chapter 75, of the Alaska Administrative Code (18 AAC 75); 18 AAC 78; Cleanup Levels Guidance (ADEC, 2008); Cumulative Risk Guidance (ADEC, 2008); Risk Assessment Procedures Manual (ADEC, 2010); Guidance For Data Reporting, Data Reduction, & Treatment of Non-Detect Values (ADEC, 2008); Draft VI Guidance for Contaminated Sites (ADEC, 2009 NOTE: this guidance has been superseded by October 2012 VI guidance); Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four (ADEC, 2008); & Draft Field Sampling Guidance (ADEC, 2010).???Page A-14 of HRC User Manual ???The default ADEC foc may be used in calculations OR the soil foc values may be measured in (FOUR OR MORE) soil samples collected from the impacted soil strata & near or below the water table depth, outside the NAPL-contaminated soil source area ??????Where the HRC User Manual & the 08-002 Technical Memo differ, the 08-002 Technical Memo shall be followed. The 2008 Tech Memo 08-002 Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four states:???TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.??? 1 sample collected for foc will not suffice. A minimum of 4 or more soil samples must be collected from the uncontaminated soils that are representative of the source zone.

Action Date: 3/22/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 2016 Draft Report for Remedial Action Operation and Land Use/Institutional Control at JBER received for review and comment. The USAF SS019 Site Characterization Report (2014c) states the lateral extent of PCE in soilnear Building 755 needs to be further delineated, in accordance with 18 AAC 75.335. This sitehas been added to the JBER-R FFA for further delineation of PCE.The USAF SS019 Site Characterization Report (2014c) indicates that the lateral and verticalextent of contamination in the wooded debris disposal area located east of Building 755 hasbeen delineated, and all detected concentrations in 2013 are below screening levels. SampleSS019-SB05 was collected from the vicinity of historical borings AP-3034 and AC-02, which hadhistorical exceedances of DRO. SS019-SB05 results for DRO are well below screening levels,and the historical DRO

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contamination from 1991 and 1995 appears to be no longer present.The inspection of Site SS019 revealed no revegetation occurring at the site as it is used as aparking/loading zone and soil stockpile staging area. The monitoring wells located at the sitewere observed to be in good condition. Two soil stockpiles were observed on site and bothstockpiles were covered with a liner. No evidence of ground disturbance was observed at thepreviously excavated area of the site. No warning signs relevant to the area of concern wereobserved and no erosion was observed along the parking/loading zone. Photographs 1 through4 in Photograph Log A15 present the general condition of Site SS019.See site file for additional information.

Action Date: 3/12/1993
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: ADEC letter to Army re: Draft Release Investigation Plan/QAPjP UST Sites Ft. Richardson, HLA Project No. 21844, dated January 29, 1993 which was received on February 17, 1993. Introduction: Text states that if contamination is present above ADEC recommended cleanup levels, a risk- and leachability-based analysis of alternative cleanup levels will be developed, and a CAP will be prepared as appropriate. Clarification requested on whether the Army proposes ACLs on all sites where contamination is present. It is not clear what amount of detail will be included in the analysis to be done under this work plan. Project Description: Two former USTs identified: a gasoline tank and a diesel fuel tank at site F. A 1,500 gallon used oil tank (Tank 27) was also reportedly removed from the site and residual petroleum contamination was reported at the limits of the excavation. The release investigation should include investigating the area around Tank 27. UST 43 at Building 955, the used POL Holding Facility, is listed as a site to be investigated. On November 3, 1992, the Department sent the Directorate of Public Works (DPW), Ms. Jane Smith, a letter noting that tank 43 was reportedly to have stored waste from the Sludge Pit Tank, which appears to be a hazardous waste tank. Therefore, Tank 43 and any associated contamination may have to be closed out as a RCRA hazardous waste tank and spill rather than the UST regulations. Our files do not indicate a response to the letter. This issue needs to be addressed prior to conducting field work. Soil Borings: The first paragraph states if groundwater is encountered at a depth of greater than 20 feet, but less than 50 feet, two soil borings will be terminated at approximately 20 feet and the third will be converted to a monitoring well. This type of determination should be based on information obtained during field investigations. Terminating borings at 20 feet is not desirable if contamination extends to greater depths. If groundwater is, or may be, impacted, one monitoring well most likely will not provide sufficient information to determine the presence or extent of contamination and evaluation options for corrective action. If there is not enough flexibility to make such a decision in the field, it may result in another phase of release investigation prior to developing a corrective action plan and would ultimately cost more money. Plate 5 for Site C, Building 755, identifies a pipeline valve near the former excavation. Please clarify what the pipeline is constructed of and what type of fluid it holds. Plate 10 for Site H, Building 47-438, shows proposed locations for four soil borings. If possible, a couple of borings should be located inside the former excavations as close as possible to the actual points of release.

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Action Date: 2/9/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff reviewed response to ADEC comments and approved responses for finalization into the final document for SS019 Bldg. 755 SC Addendum.

Action Date: 2/4/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Site Characterization report received for review & comment. The limit of detection (LOD) for 10 VOCs in soil (2-hexanone, 1,2,3-trichloropropane,1,2,3-trichlorobenzene, 1,2-dibromo-3-chloropropane, 1,2-dichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, methylene chloride, ethylene dibromide [EDB], and vinyl chloride) exceeded their respective screening levels, as shown in Table 4-3. These non-detect exceedances were either analytes listed in the Basewide UFP-QAPP (USAF, 2013a) wheremeeting a lower LOD was not achievable, or the analyte was called out in the Basewide UFPQAPPas not achievable by the methanol VOC method, and a sample using the low-level method (i.e. low level 8260 with a water carrier) was NOT collected. None of the 10 VOCs were detected in soil at SS019 above the screening levels, and the VOCs are not considered to be COPCs.PCE was also detected in soil within the vicinity of SS019-SB03-ST, located adjacent to Building 755 (Auto & Crafts Center), at concentrations up to 0.0487 mg/kg (5 to 10 feet bgs). Data indicate that PCE in soil near Building 755 is likely a release separate from the former OWS/UST source area. The lateral extent of PCE in soil in this area needs to be furtherdelineated.The lateral & vertical extent of contamination in the wooded debris disposal area located east of Building 755 has been delineated, & all detected concentrations in 2013 are below screening levels. Sample SS019-SB05 was collected from the vicinity of historical borings AP-3034 & AC-02, which had historical exceedances of DRO. SS019-SB05 results for DRO are well below screening levels, & the historical DRO contamination from 1991 & 1995 appears to be no longer present.Wooded AreaNo potential risks to the environment/ecological receptors were observed, & petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).Former OWS & UST AreaIn 2013, DRO, RRO, 1,2,4-trimethylbenzene, benzene, m- & p-xylene, PCE, & total xylenes were detected in soil near the former OWS & UST at concentrations above project screening levels. This covers an area approximately 20 by 25 feet & extends vertically from approximately 5 to 30 feet bgs. The total volume of contaminated soils in this area is approximately 12,500 cubic feet.PCE was also detected in soil at step-out boring SS019-SB03-ST, located adjacent toBuilding 755 (Auto & Crafts Center) at concentrations above project screening levels, & suggests a source other than the former OWS/UST. No other COPCs were detected in this area at concentrations above screening levels. PCE in soil at concentrations above the screening level in this area extends from 5 to 20 feet bgs. The lateral extent of the PCE in this area needs to be further delineated.GW was not encountered during the investigation. The maximum vertical extent of contamination is approximately 40 feet above the unconfined aquifer at 70 to 90 feet bgs.Cumulative carcinogenic risk & noncarcinogenic HI estimates are above the regulatory risk standards for both the commercial/industrial & future residential use scenarios. Primary

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risk drivers for carcinogenic risk include benzene, ethylbenzene, & PCE for the indoor air inhalation pathway. The primary risk drivers for noncarcinogenic risk include benzene, xylenes, & 1,2,4-trimethlybenzene for the indoor air inhalation pathway.The site meets the ADEC risk criteria for bulk hydrocarbons.No potential risks to the environment/ecological receptors were observed, & petroleum hydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).RecommendationNo further action is recommended for the wooded debris disposal area to the east of Building 755.Recommend conducting additional investigation of the former OWS/UST area, as follows:Perform a soil gas screening evaluation in the area between Building 755 & Second St (& the access road south to the southern extent of the building) to delineate the extent of VOC COPCs (benzene, xylenes, & PCE) in shallow soil gas in relation to the former OWS/UST. Screening would be conducted in a grid-type pattern via temporary vapor probes installed approximately 5 feet bgs. Soil gas samples would be screened with a portable gas chromatograph (GC) with a photoionization detector (PID) (FROG-4000??? by Defiant Technologies, Inc).Install one soil boring between SS019-SB03ST & SS019-SB01 to collect samples to 25 feet bgs. Analyses would include COPCs (BTEX, PAHs, & PCE) to determine whether contamination near Building 755 is related to former UST 17.Work would be conducted under a work plan to be submitted under separate cover. Recommendations for further investigation or action would be decided after receipt of result of the screening evaluation.

Action Date: 2/22/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: EPA sent letter regarding RCRA closure under the 1991 Fort Richardson FFCA. December 1992 closure plan appears to contradict the ROD in that the plan refers to soil sampling taken in July 1991 in an area east of 755 that was used to dispose of floor dirt sweepings from Building 755. According to the plan, the results show that the area was contaminated with metals and petroleum hydrocarbons and should be considered hazardous. However, the undated RCRA closure status report for 755 appears to contradict the status report states the July 1991 samples indicated that the soil did not appear to be a hazardous waste although it did require remediation. Therefore, EPA requested USARAK provide the 1991 and 1994 sampling analyses and conclusively demonstrate that these wastes were not hazardous before EPA would agree with USARAK that this unit does not have to be closed under RCRA and FFCA.In summary, CERCLA actions conducted to date appear to be consistent with RCRA requirements. However, for five of the units, USARAK must supply additional documentation and/or conduct additional cleanup actions before these units can be considered closed in accordance with requirements of RCRA and the FFCA. In addition, USARAK must be responsive to EPA's previous comments and submit a revised interim closure plan for the OB/OD Pad at Eagle River Flats.

Action Date: 2/14/2018
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff reviewed and commended on the draft UFP-QAPP LFI and had the following comments: Soil and groundwater samples will be analyzed for the following analytes: PAHs by SW8270C-SIM. ADEC requests the analysis and reporting of the following per 8270C-SIM (in addition to

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PAHs):3,3-dicholorbenzidine, 4-chloroaniline, bis(2-chloroethyl)ether, hexachlorobeznene, hexachlorobutadiene, hexachloroethane, nitrobenzene, N-Nitrosodimethylamine, N-Nitrosodi-n-propylamine, N-Nitrosodiphenylamine, and pentachlorophenol. Staff requested three (3) soil samples per boring to achieve the desired number of observations for ProUCL (e.g. 15 to 20 observations). See site file for additional information.

Action Date: 2/12/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for SS019 Building 755.Three borings will be drilled near former location AP-3166 to investigate the area of residualcontamination at the former UST/OWS. One boring, SS019-SB01, is located where the vadose zone is interpreted to be contaminated. Two borings, SS019-SB02 and SS019-SB03, are located outside the contaminated zone to assess the lateral extent of soil contamination. Soil borings will be advanced using a direct-push technology drill rig to depths up to 25 feet bgs.Soil samples will be collected at 5-ft intervals between 5 and 25 feet bgs. If contamination isobserved in the bottom of the boring, the boring will be continued until the last evidence of contamination; two soil samples will be collected beyond that depth; and the boring will beterminated. Soil cores will be examined for evidence of hydrocarbons (e.g., staining or odor) and will be screened for organic vapors using a PID. Lithologic descriptions, observations of staining or odor, and the results of field screening with the PID will be recorded on borehole log forms. If borings are advanced to groundwater (which is not anticipated), a HydroPunch groundwater sample will be collected at the water table from each boring. However, if visual observations indicate the presence of potential contamination at or near the water table, then monitoring wells may be installed in the soil borings.Based on field observations and the results of the PID screening, soil samples within each planned sampling interval throughout the boring will be selected for laboratory analyses. Allsoil samples (up to 15 primary samples) will be analyzed for GRO, DRO, RRO, and petroleum-related VOCs. To facilitate HRC calculations, a subset of soil samples will be collected and analyzed as follows:? Approximately one primary sample from more heavily contaminated soils (as observed at the time of sampling based on PID readings and visual/olfactory evidence of contamination) will be analyzed for PAHs, VPH, and EPH.? Approximately one sample representative of the site subsurface conditions will be analyzed for bulk density, grain size distribution, specific gravity, and moisture content.? Approximately one sample from uncontaminated soils that are representative of the source zone will be analyzed for foc.If the borings are drilled to groundwater (which is not anticipated), one groundwater sample will be analyzed for petroleum-related VOCs, GRO, DRO, RRO, PAHs, VPH, and EPH.Observations of odor, turbidity, and color will be recorded on the groundwater sample collectionlog.Four borings will be drilled to investigate the area of residual contamination in the wooded area. One deep boring, SS019-SB04, is located at previous sample location AC-02. Three shallowborings are planned: one near previous location AP-3034 (SS019-SB05) and two shallow borings(SS019-SB06 and SS019-SB07) to assess the lateral extent of soil contamination. Soil borings will be advanced using a direct-push technology drill rig to depths up to 5 feet bgs.Soil samples will be collected from 0 to 2

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and 3 to 5 feet bgs. If contamination is observed at5 feet bgs, the boring will be continued to reach the bottom of contamination, two soil sampleswill be collected beyond that depth, and the boring will be terminated. Soil cores will beexamined for evidence of hydrocarbons (e.g., staining or odor) and will be screened for organicvapors using a PID. Lithologic descriptions, observations of staining or odor, and the results of field screening with the PID will be recorded on borehole log forms.

Action Date: 12/31/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: RCRA Closure Status Building 755History/Summary of Closure-Building 755 is the Auto Hobby and Crafts Center for Fort Richardson. Wastes associated with car maintenance activities were found to be dumped in the woods to the northeast of this building. Upon discovering this condition, the EPA issued a Notice of Noncompliance (Docket No. 1090-05-29-6(01). As a result. the site must undergo a RCRA closure/post closure procedure.In July, 1991 the Corps of Engineers (COE) performed a site characterization of the wooded area near Building 755. As part of the investigation. ten shallow (2 ') borings were acquired as was one deep (11') sample. Analysis of these samples indicated that the soil did not appear to be a hazardous waste although it does require remediation.ENSR was contracted to perform the closure plan for this site. Their initial closure draft was submitted to the EPA in Dec. 1992 and we are currently awaiting the EPA's reply. Costs Associated With This ClosureSAMPLING-ENSR suggests that four samples be acquired in undisturbed areas to determine background concentrations, with each of the samples being tested for the entire list of metal and volatile organic COCs. In addition, they recommend removing non-native soil and two feet of native soil. If staining is observed, another two feet of soil will need to be removed. During excavation the soil will be sampled for TCLP analysis at the rate of one sample for every 25 cubic yards of soil removed. Confirmation samples (a total of 22) of the underlying soil will becollected from the excavated area and analyised. Sample collection and handling will be in accordance with EPA Guideline SW-846, Volume II, Chapter 9.Soil removal estimates are: 1,300 cu. yds. assuming a disposal area of 120 x 50 feet and a pile height of 6 feet. Note: After this, if the soil under the excavated soil is still contaminated, an additional 1.100 cu. yds. will need to be removed.POTENTIAL COSTS-If the area is found to be contaminated deeper than expected. additional soil will need to be removed and soil sampling procedures will need performed. Gound water testing and monitoring may also have to done. Also. if hazardous substances are discovered, the soil may have to be disposed of as a hazardous waste.

Action Date: 12/30/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Soil gas report addendum received for review and comment.PCE, TCE, and cis-1,2-dichloroethene (cis-1,2-DCE) were detected in samples from SS019-SB09 atconcentrations above their respective project screening levels (ADEC Table B1 Method Two ???Migration to Groundwater cleanup levels). PCE was detected at concentrations above screeninglevels in all five samples collected to a depth of 22.5 feet bgs. The highest detected concentration of PCE was 0.119 mg/kg in the

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sample collected from 7.5 to 12.5 feet bgs. TCE and cis-1,2-DCE were detected at concentrations greater than the screening levels (0.0927 mg/kg and 0.265 mg/kg, respectively) in the sample collected from 12.5 to 17.5 feet bgs. Results of the 2014 soil sampling are consistent with 2013 soil sampling results and confirm that VOCs are present in soil in the vicinity of the piping connecting UST 17A to Building 755. The data quality evaluation report for the soil samples, presented in Appendix B-1, indicates thatQC requirements have been met and that overall precision and accuracy of the data are sufficientfor project objectives.PCE was detected in soil gas at concentrations above the calibrated detection limit (172 micrograms per cubic meter [&181;g/m3]) at two locations: SS019-SV03 (3,080 &181;g/m3) and SS019-SV07 (1,428 &181;g/m3). Location SS019-SV03 is located adjacent to the UST piping, and location SS019-SV07 is located just outside the excavation limits of UST 17 (Figure 2). PCE was observed at concentrations below the calibrated detection limits at three other locations: SS019-SV01, SS019-SV04, and SS019-SV06. At all 10 soil gas screening locations, concentrations of TCE were below the calibrated detection limit of 137 &181;g/m3Results of the soil gas screening are consistent with soil sampling results and indicate that thehighest concentrations of VOCs (particularly PCE) in soil and soil gas are located near UST 17Aand its piping.ConclusionsThe results of the 2013/2014 soil sampling and soil gas screening indicate that PCE contaminationis limited in extent to the footprint of the UST and to the piping connecting the UST toBuilding 755. Comparison of co-located sample locations AP-3166 (1993) and SS019-SB01(2013) indicates that concentrations of PCE, 1,2,4-trimethylbenzene, and xylenes were at least anorder of magnitude greater (PCE was four orders of magnitude greater) in 2013 than in 1993.Detection limits for the 1993 PCE data were well below the current project screening level. In the20 years since the 1993 soil samples were collected, even when taking into account any uncertaintyassociated with soil sampling, concentrations of VOCs should have decreased. In addition,contamination detected in soil in 2013 is shallower, at 5 to 10 feet bgs, compared with 15 feet bgs in 1993.Based on the nature and extent of contamination, presence at a shallower depth in 2013 than in1993, and orders of magnitude higher concentrations in 2013 than in 1993, contamination in soilis not considered to be associated with the historic release from former UST 17, but rather is from a more recent release likely associated with the current UST 17A and its piping. The more recent release prevents completion of an HRC risk evaluation for just the historic contaminationassociated with former UST 17 (Site SS019) because data required to run an HRC evaluation (extractable petroleum hydrocarbons/volatile petroleum hydrocarbons [EPH/VPH] and residual rangeorganics [RRO]) were not collected in 1993. Based on current concentrations of contaminants in soil, it is anticipated that ADEC will require further action for soil, such as additional delineation or remediation of the contaminants associated with UST 17A and its piping,to achieve site closure.

Action Date: 12/29/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Uniform Federal Policy???Quality Assurance Project Plan (UFP-QAPP) presents the proposedobjectives, methods, and procedures for limited field investigations of Sites AT029, DP009, SS019, and

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SS120 received for review and comment.The remedial investigation needs to achieve the following objectives:??? Characterize the nature of soil contamination. This will include drilling soil borings to collect two samples from each boring to fill any data gaps identified during review of historical site data. One sample from shallow soils will be collected in the first 15 feet of the boring and the second sample will be collected at the bottom of the boring. In the case of the deep borings, samples will be collected from the deepest unsaturated interval.??? Define the lateral and vertical extent of contamination in soil. This will include drilling and sampling soil both inside and outside the source area.??? Determine if groundwater has been impacted. This will include drilling, installing, and sampling monitoring wells upgradient and downgradient of the source area. Depth-to-groundwatermeasurements will help refine the CSM.??? Collect a sufficient number of samples to support risk assessment. Exposure point concentrationsfor soil and groundwater will be either the 95 percent upper confidence limit or the maximumconcentration, depending on the available data and exposure scenario being evaluatedSee site file for additional information.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include

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procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/3/1994
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: Janice Adair, Regional Administrator Southcentral Regional Office (ADEC) signs the Fort Richardson-State Environmental Restoration Agreement. The Parties enter this Agreement to perform necessary assessment, remediation, & closure of source areas identified in Attachment A of this Agreement. These activities will follow the schedules listed in Attachment B. A companion Federal Facility Agreement (FFA) for Ft. Richardson has been entered into between the U.S. Environmental Protection Agency, the United States Army, & the ADEC pursuant to section 120 of the Comprehensive Environmental Response, Compensation & Liability Act (CERCLA), 42 U.S.C. 3 9601 et. seq., to address the Army???s obligations under CERCLA. This agreement does not include source areas which are addressed in the Ft. Richardson FFA. After completion of all required actions, the source area(s) addressed in this Agreement will be included in a Record of Decision in the companion FFA.ADEC finds that releases of petroleum products & oil within the meaning of AS 46.03.826, AS 46.03.740 & 19 AAC 75.990(35) have occurred at the source areas identified in Attachment A, & have contaminated the land & waters of the State of Alaska.The petroleum contamination source areas will be remediated pursuant to the levels set forth in 18 &K 75 (non-UST petroleum); the interim soil guidance for non-UST soil cleanup levels, dated July 17, 1991; the guidance for storage, remediation & disposal of non-UST petroleum contaminated soils, dated July 29, 1991; & for water, the applicable water standards set out in 18 AAC 70; & the applicable federal regulatory requirements for Maximum

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Contaminant Levels for drinking water; & interim guidance for surface & groundwater cleanups, dated September 26, 1990.If the Army wishes to reduce water contamination concentrations to levels which exceed levels specified above, the Army may prepare a risk assessment which sets forth the justification for the proposed elevated clean-up levels. The risk assessment shall include an exposure assessment. toxicity assessment & risk characterization.Free product recovery & soil remediation plans shall contain the following information: a schedule for implementation, support for choice of remedial technology, engineered system plans (where applicable), available equipment & skilled personnel, efficiency, reliability (life & difficulty of maintenance, costs & other associated impacts), compatibility of proposed actions with other reasonably foreseeable requirements, need for an on-site pilot scale study, third-party field supervision of remedial actions, procedures for equipment monitoring during remediation, contaminant media analysis to ensure remediation is progressing, & provisions for work documentation. Each plan shall reference the QAPP that will be followed & shall address any source area specific modifications necessary to conduct field work.Remedial Action Plans for each source area with groundwater contamination shall contain the following information: a schedule for implementation, support for choice of remedial technology, engineered system plans [where applicable, available equipment & skilled personnel, efficiency, reliability (life & difficulty of maintenance), costs & other associated impacts], compatibility of proposed actions with other reasonably foreseeable requirements, need for an on-site pilot scale study, qualified 3rd-party field supervision of remedial actions in accordance with 18 AAC 75.995(70), procedures for equipment monitoring during remediation, contaminant media analysis to ensure remediation is progressing, & provisions for work documentation. Each plan shall reference a QA/QC plan addressing all reasonably foreseeable planned activities & shall address any source area specific modifications necessary to conduct field work. Modifications, extensions, &/or actions taken pursuant to paragraphs 8(Schedule of Actions); 9-16 (Review & Comment on Documents); 17 (Subsequent modification); 37 (Progress Reports); 54-57 (Sampling & Data Document Availability); 63-65 (Extensions/Force Majeure) & Attachment B may be effected by the agreement of the Project Managers. Any modification approved orally under this paragraph must be reduced to writing within 10 days.Sites covered by Attachment A at time of signing: Bldg. 755 Auto & Craft Shop: waste paints, grease mineral spirits, & oil, Status: RCRA Closure 1990 RFA SWMU: 27 & 72. Bldg. 794 Cannibalization Yard, Bldg. 45590 Motor Pool: waste oil, lubricants, antifreeze, acid, & solvents. Status: RCRA Closure 1990 RFA SWMU 83. Bldg. 47431 Aircraft Maintenance Facility: drycleaning solvents, grease, hydraulic fluid, methyl ethyl ketone, naptha & waste fuels/oil. 1990 RFA SWMU 87. Bldg. 39800 (Upper Site Summit) & Lower Site Summit Former Nike Missile Site: water with residual solvents, fuels, radioactive material, asbestos.

Action Date:	11/14/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff reviewed and commented on the Release Investigation Report, Bldg 755, Former UST 17, Fort Richardson Project 21844The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on April 26, 1994 a copy of the above

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referenced report. Below are ADEC'scomments.6.5.1 Site C Building 755, Auto and Crafts Center page 6-18The text recommends closure for UST 17 based on ACLs calculated using SESOIL contaminantloading model. Based upon a review of the information submitted, no further assessment orremediation of the site is requested at this time. This does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures that may cause risk to human health or the environment. The department reserves all of its rights under Title 46 of Alaska Statutes to request additional activities in the future if necessary. The Army is still obligated to comply with all relevant State and Federal regulations to report, investigate and cleanup any/all past, present, and future releases relating to Army activities. ADEC requests MW AP-3167 be included with the areawide monitoring well network for groundwater sampling and not be decommissioned as proposed.

Action Date: 1/24/2003
Action: Site Number Identifier Changed
DEC Staff: Louis Howard
Action Description: Changed Workplan from X0 to X1.

Action Date: 1/16/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the SC Soil gas sampling addendum. 2.0Site Location and DescriptionADEC requests the Air Force discuss the characteristics of the on-site building (i.e. Building 755 Auto and Crafts Center). Building characteristics reduce or dilute vapor intrusion (e.g., vapor barriers and ventilation systems). ADEC requests the Air Force elaborate in the text of the document on whether it is occupied and for how many hours per day and how many days per week. ADEC requests the Air Force to elaborate on what the building used for currently. Finally, ADEC requests a building survey be conducted if it has not been conducted during the site characterization addendum work or prior during the work plan development stage as recommended by ADEC VI Guidance for Contaminated Sites (October 2012). The questionnaire will help the investigator identify building characteristics (residential, industrial, commercial/Multi-use-what type, floors, insulated, air tight, air flow, etc..) and possible vapor-entry points that will influence the vapor intrusion pathway. This comment is applicable to all contractors that conduct soil gas sampling for JBER-E and JBER-R. 4.2Soil Gas ScreeningADEC requests the Air Force to please describe the grade of helium utilized for the leak check procedure. Please clarify if the helium verified to be 99.99 pure.5.22014 Soil Gas Screening ResultsThe text states: ???At all 10 soil gas screening locations, concentrations of TCE were below the calibrated detection limit of 137 &181;g/m3.??? The FROG-4000 (a portable GC with a PID) field screening results were used to determine presence or absence and a rough order of magnitude to assess the distribution of PCE and TCE in the subsurface.Please be aware that there may or may not be a concern for TCE in the soil with a maximum detection of 0.0927 mg/kg. However, this concentration of TCE is still above Table B1 Method Two Migration to Groundwater cleanup level for TCE (0.020 mg/kg). Also, EPA???s screening criteria at Commercial/Industrial buildings for indoor air is much lower than the screening level used by JBER: 8.4

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&181;g/m3 for Short-term noncancer, 0.88 &181;g/m3 for Chronic noncancer (HQ of 0.1) and 3.0 &181;g/m3 for Cancer risk of 1x10-6 (Table 1. EPA Region 10 Recommended Media Concentrations of TCE in Standard Environmental Media for Use at Superfund and RCRA Waste Sites). Soil gas samples taken from outside surrounding a building may be quite different (most of the time lower) than indoor air samples taken inside due to a number of factors. ADEC requests the Air Force to provide a discussion of the duplicate soil gas sample results in this section or reference Appendix B-1. App. A-1Field NotesField notes are not complete. There are no page numbers, a list of people/team members located on-site is not given. Field measurements and calibration documentation are not provided. Barometric pressure, and temperature readings would be useful information to provide in field notes for future reference (Applicable to all contractors on JBER-E and JBER-R who conduct soil gas sampling for vapor intrusion pathway). App B-1Data Quality Evaluation ReportADEC requests the Air Force to provide a list of samples that are qualified due to QC failures. Just stating ???associated sample results??? is not helpful for a reviewer. Additionally, please document in this report the QC measurements that did not meet criteria. A generic statement stating a QC parameter did not meet acceptance criteria is not sufficient. Please provide in this report the actual QC parameter measurement and the associated acceptance criteria.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich SS019 Bldg 755 UST 17 FRSERA 2 Party
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	When Contaminated Soil is Accessible, Remediation Should Occur
Contaminant CTD:	Institutional controls are in place for the contaminated soils at the site to reduce exposure of workers to contamination at the site. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports.
Contaminant CDR:	For any excavated soils, which are contaminated, shall be treated and disposed of in accordance with state cleanup regulations. Five year review at 2008
Comments:	Not reported
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich SS019 Bldg 755 UST 17 FRSERA 2 Party
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	Excavation / Soil Movement Restrictions
Contaminant CTD:	Institutional controls are in place for the contaminated soils at the

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY USTA 2 PA (Continued) **S109568353**

site to reduce exposure of workers to contamination at the site. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports.

Contaminant CDR: For soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required: 1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1; 2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 Five year review in 2008.

Comments: Not reported

Inst Control:
- Hazard ID: 1240
- Facility Status: Cleanup Complete - Institutional Controls
- Action: Institutional Control Record Established
- Action Date: 6/2/1998
- File Number: 2102.38.004.04

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94 WNW 1/2-1 0.728 mi. 3843 ft. **JBER-FT. RICH OUD OLD LANDFILL** **SHWS S110144078**
CIRCLE ROAD N. OF MAIN CANTONMENT AREA SW OF FTA, FORMERLY F **INST CONTROL N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower
Actual: 322 ft.

SHWS:
- File Number: 2102.38.014
- Staff: Louis Howard, 9072697552 louis.howard@alaska.gov
- Facility Status: Active
- Latitude: 61.274970
- Longitude: -149.701280
- Hazard ID: 941
- Problem: Landfill operations may have included oil, solvents, fuels and solid waste disposal. Exact type, amount and extent of contamination unknown. Grease Pits as well as all former disposal areas at the Fort Richardson landfill to be closed out under RCRA subtitle D Solid Waste regulations. All petroleum contamination has been dealt with to the maximum extent practicable, no further action required or planned.S1/2 N1/2 Section 30 EPA ID: AK6214522157. Site W032, Landfill1 east sector of FRA LF 400 acres. 1990 RFA SWMU 94, 95. Landfill2 north-central sector of FRA IF 338 acres Site W033, Landfill3 southcentral sector of FRA LF 60 acres Site W034, Landfill4 southwest sector of FRA LF 3 acres SiteW035, Landfill5 northwest sector FRA LF 3 acres Site W036, Landfill6 west edge of FRO LF Site W037, Landfill7 adjacent to Old Davis Highway (vic. of Anchorge LF) SIte W038, Landfill8 adj. to Davis/Glenn Highways, approx. 3 km. south of Eagle River 3 acres Site W039. The landfill reportedly consists of six separate disposal areas in the S1/2 of the N1/2 of Section 30. The landfill has accepted construction debris, cooking grease, sewage, household solid wastes and waste from maintenance shops. Disposal areas 1,2,& 3 on the east side are referred to as the old landfill. Disposal area 5 had an area for asbestos disposal and

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

areas 1 and 2 had fire training pits (a.k.a. FTP-1). Most of FTP-1 has been covered by soil and is 40-50' in diameter. Approximately 1500-2000 gallons of used petroleum products were burned here annually. Adjacent to FTP-1 was a drum storage area for unlabeled waste drums and waste fuel.

Actions:

Action Date: 9/26/1990
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: INTERIM GUIDANCE FOR SURFACE AND GROUNDWATER CLEANUP LEVELS SEPTEMBER 26, 1990Interim cleanup guidance for contaminated surface and groundwater remediation is necessary to ensure that consistent cleanup levels are being applied by district and regional program staff. The following guidelines should be implemented under 18 AAC 75.140 which specifies that a discharge must be cleaned up to the satisfaction of the Regional Supervisor or his designee. Final cleanup levels shall be determined by the Regional Supervisor or his designee based on site-specific conditions. Staff should be aware that if a facility is regulated under RCRA, that RCRA corrective action and cleanup standards should enter into development of final site cleanup levels.Groundwater should be cleaned up to levels not exceeding the more stringent of the final State or Federal Maximum Contaminant levels (MCLs) for Organic and Inorganic Chemicals. If final MCLs have not been adopted for a contaminant, then groundwater should be cleaned up to levels not exceeding proposed Federal MCLs. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned, up to non-detectable levels as measured by EPA Method 418.1.Final State MCLs are specified in 18 AAC 80.050 and final Federal MCLs are specified in 40 CFR 141 and 142. Proposed Federal MCLs are specified in the May 22, 1989, Federal Register Vol. 54, No. 97, pages 22155 - 22157 and the July 25, 1990, Federal Register Vol. 55, No. 143, pages 30408 - 30448. Appendix I provides a summary listing of State and Federal Final and Proposed MCLs for selected organic and inorganic contaminants.For organic and in organic contaminants that have not been assigned a final or proposed MCL, cleanup levels should be based on criteria cited in EPA's Water Quality Criteria. 1986 using a health risk factor of 10-6. EPA's water quality criteria identify concentrations of elements and compounds which have toxic effects on aquatic organisms or toxic and carcinogenic effects on humans. If groundwater is being used as a drinking water source and alternative water supplies or point of use water treatment cannot be provided, then final or proposed secondary maximum contaminant levels (SMCLs) may be used as cleanup target levels. SMCLs are based on aesthetic properties such as taste and odor, whereas MCLs are based on human health risks. For compounds such as xylenes, the SMCL maybe several hundred times lower than the MCL.Surface waters used for drinking water should also be cleaned up to levels not exceeding the final or proposed MCLs for organic and inorganic chemicals, as specified above. Under the authority of 18 AAC 70.020, surface waters important to the growth and propagation of aquatic life should be cleaned up to the listed criteria which includes EPA's Water Quality Criteria. 1986. These criteria identify concentrations of specific elements or compounds which have toxic effects on aquatic organisms. The group of compounds collectively identified as total petroleum hydrocarbons (TPH) should be cleaned up to non-detectable levels as measured by EPA Method 418.1.Alternative Cleanup Levels (ACLs) may be adopted for a site if

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

a risk assessment approved by the department is performed and cleanup to levels identified above is technically infeasible. Risk assessments will not by themselves establish ACLs. Determination of cleanup levels is a risk management decision that the department must make based on results of a quantitative risk assessment and other pertinent information.The responsible party (RP) may prepare at its own expense a risk assessment which shall include an assessment of both human health and environmental risks. Specific components of the risk assessment should include an exposure assessment, toxicity assessment, risk characterization, and justification of ACLs. A general description of these risk assessment components is provided in Appendix II.General technical requirements for risk assessments should be based on EPA risk assessment guidance for superfund sites. A site specific risk assessment procedure must be prepared by the RP and submitted to the department for review and approval prior to conducting a risk assessment. The RP, at the department's discretion, must agree to reimburse the department for expenses incurred by the department if it chooses to contract for a risk assessment review.

Action Date: 9/26/1986
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Phase I Hazardous waste study Number 37-26-0725-87 conducted at the Fire Training pits located at the old landfill. Surface contamination was detected at 54 mg/kg 2-methylnaphthalene in pit P18301, 270 mg/kg in P1S2 and sample P1S3 at 47 mg/kg. This particular contaminant was not detected in 1 of the 3 subsurface samples taken from five feet. 207 mg/kg of toluene and 107 mg/kg of ethylbenzene was detected in sample P1S2 which exceeded holding times for volatile organics (this means that the contaminant levels are underestimated). FTP2 in operation prior to 1985. No contaminants detected in any samples from surface to 20 feet below ground surface. However, the holding times for volatile organic samples was exceeded.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 8/1/2000
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: April 2000 Landfill Closure study final chemical report received for Fall 1999 work. MCL or cleanup levels exceeded as follows: AP-3010 Lead 23.9 ug/L (MCL 15 ug/L), cadmium and chromium 2200 ug/L, 31 ug/L respectively for FR-3.Previous sampling for chromium has detected it above the MCL of 100 ug/L in Well FR-3: May 1997 575 ug/l, December 1997 increased to 670 ug/L, June 1998 decreased to 160 ug/L and in

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

December 1999 increased to 2,200 ug/L. Lead in FR-3 also has seen levels above the MCL of 15 ug/L: May 1997 17 ug/L, December 1997 increased to 65 ug/L, December 1999 decreased to 31 ug/L.

Action Date: 7/8/1993
Action: Update or Other Action
DEC Staff: Kevin Kleweno
Action Description: Letter for June 17, 1993 inspection sent to US Army Col. Robert Wrentmore by Keven Kleweno as part of the Environmental Protection Agency (EPA) Multi-media inspection. There are several active sites in the landfill. In Area B we located asphalt and concrete that was being stockpiled for later recyling. However, the asphalt and concrete are being contaminated with sections of metal and plastic pipe and fine grained material which is unusable for resuse. However, any material that can not be used will need to be disposed as covered in the closure plan that is currently being discussed. In Area C, we located a pond of water where waterfowl had evidently been using. Waste material was protruding from the cover material around the pond. With staff of both parties working on a closure plan for the landfill which will cover runoff control, the lack of runoff control that the pond represents will be resolved in the closure plan when it is approved.Throughout the inspection, waste was found protruding from the existing cover material. I believe that the way to resolve this concern is in the closure plan. The storage of contaminated soils in lined cells on a landfill that was not properly closed increases the possibility that the leachate from the landfill will be contaminated. Instead of requesting that all contaminated soils be removed or have engineering plans of each cell be submitted to this office for review and approval, this issue will be covered in the closure plan.

Action Date: 7/6/1993
Action: Report or Workplan Review - Other
DEC Staff: Kevin Kleweno
Action Description: Keven Kleweno sent Col. Robert Wrentmore letter RE: Fort Richardson Landfill Closure Plan ADEC Project 9321-SWM-004. This is in response to your submittal received in this office on April 6, and June 2, 1993. I have reviewed the submitted information, notes taken during the March 5, 1993 meeting with your staff, this office's files on the existing landfill and other pertinent data. In regards to your April 6, 1993 submittal: Review of this office's file reveals a history of non-action by the Army to the Department's concerns when dealing with the landfill. There has been no response to the Department's June 2, 1989 letter that notified your office that the existing permit was to expire on August 31, 1989. IN addition there has not been a written response by the Army to my February 4, 1992 letter covering the last inspection of the landfill. Failure to follow monioring as required by the permit (permit number 8421-BA005). Failure to follow site closure requirements in the permit (permit no. 8421-BA005) and as required by 18 AAC 60.410, Solid Waste Mangement regulations. The landfill closure plan submittal (Ecology and Environmental February 1992 report) received by the regional office in 1992 and the additional information was submitted to this office does not constitute a complete closure plan. During the March meeting, we agreed that the Ecology & Environment report was a starting point on the landfill closure plan. I agreed that the Army had the option to use remediated POL soils, but it appears that your staff failed to

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

inform you that they had to be completely clean prior to use. At this time no information has been submitted to me so that I can determine which areas of the landfill needs new or additional cover. Again, the Army has violated the expired permit regarding the monitoring requirements. The E&E reports do cover the existing monitoring programs with great detail which does assist in the review. However, the first report I reviewed stated that only 3 monitoring wells would be needed to address the Department's solid waste management regarding monitoring for closure. While in a different section of the report, it stated that the groundwater hydrology was very complex and that due to the size of the landfill, groundwater gradient could change from one section to another. This is not sufficient information to be accepted as the long term monitoring portion of a closure plan. Two different capping methods were listed. Thus, to work up a closure plan for the landfill in sections, the items that will need to be addressed first are: 1) an accurate top map of the landfill as it now exists; 2) provide inventory of existing vegetation to include detailed mapping of herbaceous ground cover/wood-stemmed under story and over story (trees) vegetation information will need speciees specific; 3) information on the depth of the existing cover through out the landfill (recommend that this information be collected using geophysical methods); 4) specifications on the final cover to be used through out the closure of the landfill, and; 5) storm water pollution prevention plan that will be used during closure and after closure. Groundwater monitoring for either closure plan will treat the landfill as one unit unless the information E&E February 1992 report is correct in regards to the groundwater gradient through out the landfill. If there are several changes in the groundwater gradient we could look at designing long term monitoring programs around the hydro-geological data instead of the surface closure plan.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Updated USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 7/19/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Chemical data report for GW monitoring received. Reusable bailers were used to collect volatile organic compounds, gasoline range organics samples. The results for these contaminants should be biased low due to sampling method and loss of volatiles with bailers. April 1994FR-1 DRO 8.06 mg/LFR-2 DRO 3.14 mg/LFR-3 DRO 4.02 mg/LSamples

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

were collected with tygon tubing. Sample tubing should be selected carefully, as some flexible sample tubing (e.g., silicone and tygon) may leach plasticizers or adsorb or desorb organic compounds. Teflon or Teflon-lined polyethylene tubing to collect samples fororganic analysis.

Action Date: 6/16/1999
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: April 9, 1999 Landfill Closure Study Fall 1998 by U.S. Army Corps of Engineers. Gasoline range organics detected below 1.3 mg/L at 0.46 mg/L in AP 3010 and benzene below the 5 ug/L MCL at 0.31 ug/L in AP 3220.

Action Date: 6/15/1992
Action: Update or Other Action
DEC Staff: Kevin Kleweno
Action Description: Letter from the US Army Col. Robert J. Wrentmore RE: Letter of February 4, 1992 Solid Waste Disposal Site on Fort Richardson. Enclosed is a copy of the report the maintenance shop provided concerning the materials placed in the landfill since February. Also enclosed are the landfill monitoring well reports from 27 May 1992. Point of Contact is Karen Klocke ERD.

Action Date: 6/15/1989
Action: Long Term Monitoring Established
DEC Staff: Louis Howard
Action Description: Groundwater sampling has been conducted in wells located around the perimeter of the landfill since 1989. Annual report on groundwater monitoring is provided to ADEC by the Army. Monitoring program is expected to continue for at least thirty years.Previous investigations have revealed three aquifers at the old landfill. A perched unconfined aquifer was encountered at 35 feet below ground surface (bgs), a second aquifer was encountered at 170 and 178 feet at mean sea level (AMSL) in glacial till. Finally, a third aquifer was found to the south of the landfill at a depth of 204 feet AMSL.

Action Date: 5/31/1995
Action: Site Number Identifier Changed
DEC Staff: Louis Howard
Action Description: Changed workplan to X9 from X5 to maintain existence on database.

Action Date: 5/3/1990
Action: Site Visit
DEC Staff: John Halverson
Action Description: Henry Friedman filled out a solid waste disposal site inspection report dated May 3, 1990. Permit No. 8421-BA005 (expired). The only active disposal cell was the human waste pit. A large pile of oily soil, covered with visqueen was located near the main entrance. Oil soaked sorbent pads and stained soil was located at the edge of the pile. All other old disposal areas were inactive and covered.

Action Date: 5/23/1990
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Oil & Hazardous Substances Material Incident Report Form dated 5/23/1990 spill 90-2-1-5-143-4. Contaminated soil from spill sites is

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

improperly stored in landfill area - visible contamination around storage area Fort Richardson Landfill. Petroleum products and unknown product types. Soild Waste Disposal Site Inspection Report Permit No. 8421-B4005 (expired). Contaminated soils from remedial action at spill sites is improperly stored and appears to be contributing to soil contamination in the landfill area. Free petroleum product on ground in front of stockpiled contaminated soils appears to have been dumped illegally. Access to the landfill area is not restricted.

Action Date: 5/13/2011
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the draft work plan for corrective action at heating oil tanks for several sites. This Work Plan, in conjunction with the addenda presented herein, will guide corrective actions to be performed at the Army Reserve Center (ARC) Tank E1, ARC Tank E2, ARC Tank E5, ARC Tank E7, Building 57-428 Tank, Building 987, Biathlon Range, & Fort Richardson Landfill sites in accordance with the requirements of the U.S. Environmental Protection Agency & Alaska Department of Environmental Conservation (ADEC) guidance documents.The Fort Richardson Landfill is closed and the Army is conducting post-closure monitoring,which includes an investigation of methane generation. One of the dedicated methane monitoring points was damaged in 2009 and requires replacement.One gas monitoring probe at the Landfill site is damaged and will be replaced. USACE andBristol personnel will determine the location for probe replacement in the field. The methanemonitoring point will be 1-inch inside diameter, Schedule 80 iron pipe, equipped with a 12- to18-inch screened section and drive point. The probe will be driven to a depth of 5.5 feet bgsand pulled back 6 inches to create an air space (final depth will be 5 feet bgs) beneath thedrive point. The end of the pipe will be terminated at a height to be determined, and groundsmoothed to accept the installation of a cap. Prior to completing the site activities, the sample point will be tested to determine that soil gas can be adequately extracted.The horizontal location of all borings/ groundwater monitoring wells will be established towithin one foot. The datum, coordinate system, and units will be: NAD83 Alaska State Plane, Zone 4, in feet. The elevation of the measuring point of all monitoring wells will besurveyed to an accuracy of 0.01 foot.Where there is not an established control at a site, a control by GPS static secessions of notless than two hours per secession will be established. The data will be post-processed usingNational Geodetic Survey Online Positioning User Service. The elevation of all soil analytical samples will be recorded to a vertical accuracy of one foot. All monitoring wells will be supplied with a four-number combination lock. The combination locks will be set to 0-9-1-1.

Action Date: 4/7/2008
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Fall 2007 Landfill Monitoring Report received. Visual Monitoring Results-No signs of damage to the facility, evidence of escape of waste or leachate, unauthorized waste disposal, or evidence of death or stress to wildlife or vegetation were identified during this monitoring event. Ongoing use of a portion of the closed landfill as an asphalt reclamation area was noted during the visual inspection. Groundwater Analytical Results-To determine if there are significant

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

concerns with groundwater from the landfill, analytical results were compared to those MCLs established in 40 CFR 141. No analytes exceeded MCLs during the fall 2007 monitoring event. During the fall 2007 landfill monitoring event, groundwater was sampled for both dissolved and total metals, as discussed in the Monitoring Plan. As agreed, filtered samples can be collected and analyzed but will not be used to compare water quality to standards. Filtered (dissolved) results are used as a tool to help evaluate water quality at the landfill and Fort Richardson.Methane Monitoring Results-The fall monitoring event occurred on November 20, 2007. Methane was monitored at 10 locations using the QRAE Four Gas Monitor. The LEL (100 percent LEL) was measured at three locations: MP-02, MP-04, and MP-05. Elevated methane concentrations also have been recorded at these monitoring points during the previous two monitoring events. The remaining methane results for the November event were all zero.In response to the levels exceeding LEL, methane monitoring was measured utilizing a more accurate meter, the GEM2000 Landfill Gas Monitor in December. In December, all methane monitoring results were at or less than 1 percent of the LEL.Methane monitoring results indicate that some methane gas production is occurring at the landfill. Methane production at landfills, depending on age and content, is a normal part of the waste breakdown process. To prevent landfill gas from threatening human health and the environment, the ADEC regulates the percentage of the lower explosive limit (LEL) at the ???facility property boundary??? and in ???facility structures.??? For the Fort Richardson Landfill, 18 AAC 60.350 states that the LEL cannot be exceeded at the landfill boundary (which would be an LEL reading of 100 percent) and cannot exceed 25 percent in ???facility structures.??? No structures exist within 500 feet of the landfill boundary at this time; the nearest permanent structure is approximately a third of a mile away from the nearest landfill boundary. In accordance with 18 AAC 60.350, the USARAK is required to submit a plan within 60 days of detecting methane above the LEL. This plan will outline potential monitoring techniques, sampling frequency, and if necessary a long term remediation plan for methane gas migration. This plan will demonstrate that current levels do not pose an unacceptable threat to public health, safety, and welfare.

Action Date: 4/3/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Fort Richardson Landfill Work Plan contract DACA85-88-D-0014 Delivery Order 18 by E&E inc. The workplan addresses the field investigation phase. Sampling/Analysis QC/QAP presents the objectives for the field investigation and describes the methods by which these will be accomplished. The subsurface exploration plan addresses the detailed aspects of the monitoring well installation. The main objective of this workplan is to obtain information necessary to develop the project report; and to determine if and what kind of remedial measures are necessary.Disposal areas 1, 2, and 3 are known as the old landfill. The dates of operation are unknown. Disposal area 2 was opened with the closure of disposal area 1. It accepted over 400,000 cubic meters of sanitary waste into trenches and was closed in 1973. Disposal area 3 was opened in 1973 and closed in 1977. Disposal area 4 was opened in 1976. The amount of refuse disposed and the date of closure are unknown. Disposal area 5, which opened in 1982, was the first of the disposal areas to actually be permitted by the State of

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

Alaska. This disposal area includes an open pit for disposal of construction and demolition debris, disposal piles for metal and wood, and an area for asbestos material. Small amounts of

Action Date: 3/1/2000
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Hart Crowser Research Results of Chemical Materiel at PACAF Bases Installations in Alaska (Contract No. DACA85-95-D-0010 Deliv. Order No. 30 A-8534: Although no disposal records have been found showing that these agents or kits were intentionally landfilled, the CAIS kits may be found in pre-1970 landfills. One should be prepared for the possible occurrence of CAIS discovery when 3 excavating landfill of that era. The personnel performing the excavation should be familiarized with the kits, their hazards, and appropriate protection against them. Empty cylinders or containers formerly containing H also may be found in pre-1970 military landfills.

Action Date: 2/7/2011
Action: Exposure Tracking Model Ranking
DEC Staff: Bianca Reece
Action Description: Initial ranking with ETM completed for source area id: 71920 name: dump

Action Date: 2/5/1990
Action: Report or Workplan Review - Other
DEC Staff: Jennifer Roberts
Action Description: J. Roberts sent Colonel Edwin Ruff a letter regarding Fort Richardson Landfill Work Plan December 1989. Section 2 of the report states there are currently three monitoring wells (FR-1, FR-2 & FR-3) on site. These wells were installed in 1984 and there is little construction information on them. On Page 2-5 the following information is given: The depth of the monitoring wells and the depth to groundwater in each well have not been determined. A drilling log was located for only one of the monitoring wells (FR-1). It is my concern that the information gained from these wells is not accurate or representative. To obtain accurate information from monitoring wells it is vital that the construction (including the screen type and screened interval) and development data be known. Since this information is not known, I request that new monitoring wells be install in place of the three wells under strict QA/QC installation guidelines. Until these wells have accurate construction or development histories the sampling data collected from them will remain suspect and questionable. The department requests that an expanded seasonal sampling schedule be established for selected monitoring wells. I am concerned that accurate data can not be collected based on a once a year sampling schedule. Seasonal water fluctuations can easily dilute or mask the contamination level of a contaminant. Determinations on site status and remedial actions will be based on incomplete information. In Section 5 Table 5-1 shows the sample analytical methods. I am assuming that these are the methods proposed to run on samples from the base drinking water wells and public wells. Since these wells are used for drinking water, the department requests analysis for base drinking wells and public wells to be done by EPA drinking water method 502.2 or 524.2. Table 5-1 also shows that Volatile Organic Compounds in water are to be analyzed by EPA 8240. EPA 8240. EPA 8240 is developed for solid

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

waste, the corresponding method for VOCs in water is EPA 624. In general, the department requests that all water samples be sampled using analytical methods developed specifically for water. Please alter your analysis program or explain your choice in using method 8240. The workplan makes no mention of sampling for Total Petroleum Hydrocarbons (TPH). There were numerous references (i.e. waste fuel spills in the landfill, and the drum storage area where unlabeld waste drums were stored) to potential sources for TPH in the workplan. The department requests that the workplan be revised to include TPH using EPA method 418.1 for analysis.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/1/1990
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Human wastes, cooking grease, other oils from field training exercises, ethylene glycol and petroleum contaminants suspected to be in soils.

Action Date: 12/7/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Benzene detected in Well number AP-3220 at 7.7 ug/L for the first time above the MCL of 5 ug/L. Previous samples in 10/95, 6/96, 11/96, 5/97 were non-detectable or well below the cleanup level of 5 ug/L.

Action Date: 12/4/1991
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: The only organic contamination detected in the groundwater samples was oil in total petroleum hydrocarbon (TPH) analysis FR-1 5,600 ug/L and FR-3 5,600 ug/L. No other sampling for inorganic parameters since TPH was only performed on samples that were a part of the basewide groundwater sampling program. Recommendations are to install 2 downgradient and 1 upgradient monitoring wells with annual and quarterly elevation surveys of all wells at landfill, incorporate all monitoring wells at the landfill into the basewide groundwater monitoring program.

Action Date: 12/2/1997
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Site reranked based on new information. Appears groundwater is not impacted above MCLs and soils minimally impacted by DRO.

Action Date: 12/15/2003
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received for review the landfill closure monitoring report and deferred all future correspondence coordination to the solid waste management program staff (Jennifer Donnel).

Action Date: 12/15/1989

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Ecology and Environment prepared a work plan for addressing prior landfill practices, soil types, groundwater (GW) regime, characterizing contamination and its horizontal and vertical extent. This information will be used to develop activities necessary to remediate and close the facility. ADEC returned comments on 2/5/90. Requested (3) new monitoring wells, because existing wells would provide questionable data. Expanded seasonal sampling. Soil samples to accurately identify metals, total petroleum hydrocarbons (TPH) and other parameters that photo-ionization detector (PID) will not-detect. A total of (12) comments were directed towards the Work Plan. A QA/QC plan was received on 1/4/90.

Action Date: 12/12/2001
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: 1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/7/2003
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the groundwater monitoring report. Staff concurs with the recommendations with this section and requests the Army consider establishing a post-wide monitoring program to include this operable unit when such a program is developed for all two-party agreement sites, CERCLA source areas, compliance agreement sites and any other site where groundwater monitoring is conducted.

Action Date: 10/15/1997
Action: Cleanup Plan Approved
DEC Staff: Louis Howard
Action Description: (Old R:Base Action Code = RAPA - Remedial Action Plan Approval).

Action Date: 1/29/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Colonel Edwin Ruff letter response to Notice of Violation (NOV) 89-21-05-208-01 for Fort Richardson landfill received by Jennifer Roberts. The exposed friable asbestos was removed and properly disposed of on the date of Henry Friedman's (DEC staff solid waste program) September 14, 1989. The human waste pit had been properly closed by the time of the third inspection as mentioned in the NOV letter. The sludge pit has been identified on the site plan, but has since been closed to all further use. The junk vehicles and debris in the fire training area has been buried. The three access points have been secured as well as possible, but routine inspections of the landfill will be added to the operations and maintenance (O and M) plan to discourage further illegal dumping, and to remedy violations in a more timely manner. The Army requested that this (9/25/89) NOV be considered resolved.

Action Date: 1/27/1993

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Memorandum ENSR GW results for FRA & Greely MW Network Sampling to Jane Smith 6th ID DPW APVR-DE-PSE.FR-3 November 1992 Gasoline range organics (GRO) detected at 11 mg/L. AP-2983 October 1992

Action Date: 1/14/1998
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: Presumptive remedy of capping as a part of the RCRA subtitle D landfill closure was conducted during the summer of 1997. Monitoring wells in place around landfill for thirty years of monitoring. Integrity of cap to be maintained and inspected regularly by the Army. Not reported

Contaminants:
Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich OUD Old Landfill
Contaminate Level Description1: > Table C
Contaminate Media1: Groundwater

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Groundwater Use Restrictions
Contaminant CTD: The Army has Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports for each OU. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: IC policies include the following: No unauthorized intrusive actions take place at source areas, No potable water wells are installed on source areas. USARAK DPW maintains the GIS database with information on all of the contaminated source areas on Post. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and groundwater in effect at the Post.
Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich OUD Old Landfill
Contaminate Level Description1: > Table C
Contaminate Media1: Groundwater

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Groundwater Monitoring
Contaminant CTD: The Army has Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports for each OU. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: Currently site is required to have groundwater monitoring conducted as

JBER-FT. RICH OUD OLD LANDFILL (Continued) **S110144078**

a former landfill. Annual reports due every spring.

Comments: Not reported

Staff: Louis Howard, 9072697552 louis.howard@alaska.gov

Contaminate Name1: JBER-Ft. Rich OUD Old Landfill
Contaminate Level Description1: > Table C
Contaminate Media1: Groundwater

Control Type: Land Use Plan / Maps / Base Master Plan
Control Details Description1: Excavation / Soil Movement Restrictions
Contaminant CTD: The Army has Standard Operating Procedures (SOP) and a Geographic Information System (GIS) based tracking system to ensure that the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan, and compliance with ICs is reported in the Annual Monitoring Reports for each OU. The IC policy applies to all USARAK units and activities, Military and Civilian Support Activities, Tenants Organizations and Agencies and Government and Civilian Contractors.
Contaminant CDR: Currently, all contracts that include intrusive activities require a Work Authorization Permit. The Permit was recently updated to clearly alert the user on procedures to follow when potential contamination is encountered. The Standard Operating Procedure (SOP) for ICs will include a more detailed section on the procedures and responsibilities for incidents where potential contamination is found. To ensure the effectiveness of ICs, all units and tenants are informed annually of ICs on contaminated soils and groundwater in effect at the Post.
Comments: Not reported

Inst Control:
Hazard ID: 941
Facility Status: Active
Action: Institutional Control Record Established
Action Date: 1/14/1998
File Number: 2102.38.014

95
WSW
1/2-1
0.736 mi.
3885 ft.

FORT RICHARDSON (USARMY)

ANCHORAGE, AK 99505

NPL 1000483246
SEMS AK6214522157
US ENG CONTROLS
US INST CONTROL
ROD

Relative: Lower

Actual: 296 ft.

NPL:
EPA ID: AK6214522157
Cerclis ID: 1001455
EPA Region: 10
Federal: Y
Final Date: 1994-05-31 00:00:00
Site Score: 50
Latitude: 61.258333
Longitude: -149.7

Category Details:
NPL Status: Currently on the Final NPL
Category Description: Surface Water Adjacent To Site-Other-Unknown
Category Value: WETLAND

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Site Details:

Site Name:	FORT RICHARDSON (USARMY)
Site Status:	Final
Site Zip:	99505
Site City:	ANCHORAGE
Site State:	AK
Federal Site:	Yes
Site County:	ANCHORAGE BOROUGH
EPA Region:	10
Date Proposed:	06/23/93
Date Deleted:	Not reported
Date Finalized:	05/31/94

Substance Details:

NPL Status:	Currently on the Final NPL
Substance ID:	C247
Substance:	ZINC AND COMPOUNDS
CAS #:	Not reported
Pathway:	SURFACE WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	Not reported
Substance:	Not reported
CAS #:	Not reported
Pathway:	Not reported
Scoring:	Not reported

NPL Status:	Currently on the Final NPL
Substance ID:	A003
Substance:	ANTIMONY AND COMPOUNDS
CAS #:	Not reported
Pathway:	SURFACE WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	A009
Substance:	BENZO(K)FLUORANTHENE
CAS #:	207-08-9
Pathway:	NO PATHWAY INDICATED
Scoring:	1

NPL Status:	Currently on the Final NPL
Substance ID:	A011
Substance:	BERYLLIUM AND COMPOUNDS
CAS #:	Not reported
Pathway:	SURFACE WATER PATHWAY
Scoring:	2

NPL Status:	Currently on the Final NPL
Substance ID:	A038
Substance:	NICKEL AND COMPOUNDS
CAS #:	Not reported
Pathway:	SURFACE WATER PATHWAY
Scoring:	2

FORT RICHARDSON (USARMY) (Continued) **1000483246**

NPL Status: Currently on the Final NPL
Substance ID: A046
Substance: POLYCHLORINATED BIPHENYLS
CAS #: 1336-36-3
Pathway: SURFACE WATER PATHWAY
Scoring: 3

NPL Status: Currently on the Final NPL
Substance ID: A054
Substance: TRICHLOROBENZENE, 1,2,4-
CAS #: 120-82-1
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: A074
Substance: DINITROBENZENE, 1,3-
CAS #: 99-65-0
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C143
Substance: SULFUR OXIDES
CAS #: Not reported
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: C177
Substance: COBALT AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C178
Substance: COPPER AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C201
Substance: MANGANESE AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C213
Substance: PHOSPHORUS AND COMPOUNDS
CAS #: Not reported
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Substance ID: C213
Substance: PHOSPHORUS AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C230
Substance: SULFURIC ACID
CAS #: 7664-93-9
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: C246
Substance: VANADIUM AND COMPOUNDS
CAS #: Not reported
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C365
Substance: TRINITROTOLUENE (TNT)
CAS #: 118-96-7
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: C385
Substance: PYRENE
CAS #: 129-00-0
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: C399
Substance: RDX (CYCLOTRIMETHYLENETRINITRAMINE)
CAS #: 121-82-4
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: C460
Substance: MERCURY
CAS #: 7439-97-6
Pathway: SURFACE WATER PATHWAY
Scoring: 4

NPL Status: Currently on the Final NPL
Substance ID: C546
Substance: DINITROTOLUENE
CAS #: 25321-14-6
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C548

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Substance: PENTAERYTHRITOL TETRANITRATE
CAS #: 78-11-5
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: C596
Substance: DICHLOROETHENE, 1,2-
CAS #: 540-59-0
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: D004
Substance: ARSENIC
CAS #: 7440-38-2
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: D006
Substance: CADMIUM (CD)
CAS #: 7440-43-9
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: D007
Substance: CHROMIUM
CAS #: 7440-47-3
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: D008
Substance: LEAD (PB)
CAS #: 7439-92-1
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: D010
Substance: SELENIUM
CAS #: 7782-49-2
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: D011
Substance: SILVER
CAS #: 7440-22-4
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: U019
Substance: BENZENE

FORT RICHARDSON (USARMY) (Continued) **1000483246**

CAS #: 71-43-2
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U044
Substance: CHLOROFORM
CAS #: 67-66-3
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U050
Substance: CHRYSENE
CAS #: 218-01-9
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U070
Substance: DICHLOROBENZENE, 1,2-
CAS #: 95-50-1
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U077
Substance: DICHLOROETHANE, 1,2-
CAS #: 107-06-2
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U078
Substance: DICHLOROETHENE, 1,1-
CAS #: 75-35-4
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U120
Substance: BENZO(J,K)FLUORENE
CAS #: 206-44-0
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U127
Substance: HEXACHLOROBENZENE
CAS #: 118-74-1
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U131
Substance: HEXACHLOROETHANE
CAS #: 67-72-1

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U169
Substance: NITROBENZENE
CAS #: 98-95-3
Pathway: SURFACE WATER PATHWAY
Scoring: 2

NPL Status: Currently on the Final NPL
Substance ID: U209
Substance: TETRACHLOROETHANE, 1,1,2,2-
CAS #: 79-34-5
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U211
Substance: CARBON TETRACHLORIDE
CAS #: 56-23-5
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U227
Substance: TRICHLOROETHANE, 1,1,2-
CAS #: 79-00-5
Pathway: NO PATHWAY INDICATED
Scoring: 1

NPL Status: Currently on the Final NPL
Substance ID: U228
Substance: TRICHLOROETHYLENE (TCE)
CAS #: 79-01-6
Pathway: NO PATHWAY INDICATED
Scoring: 1

Summary Details:

Fort Richardson occupies a 25,000 acre area located within the municipality of Anchorage in south-central Alaska. The installation is bounded by the city of Anchorage and Elmendorf Air Force Base to the west and by Eagle Bay and the Knik Armof Cook Inlet to the north. Fort Richardson s southern and eastern boundaries consist of undeveloped lands and Chugach State Park. Three sources of contamination were identified by the Army but do not represent all known or suspected sources of contamination at the Fort Richardson installation. These sources are the Eagle River Flats ERF) ordnance impact area, the Poleline Road Disposal Area PRDA), and the Roosevelt Road Transmitter Site RRTS). ERF is located in wetlands associated with the Eagle River delta in the northwestern corner of the

FORT RICHARDSON (USARMY) (Continued) **1000483246**

installation. ERF has served as the primary ordnance impact area for Fort Richardson since World War II. The ordnance testing area encompasses 2,500 acres of wetlands, which serves as an important habitat for waterfowl such as ducks, geese, and swans during spring and fall migrations. Sediment and surface water samples collected from ERF in August and October 1989 and in 1991 revealed elevated levels of heavy metals, explosive compounds, and white phosphorous. Copper, cadmium, nickel, inc, and mercury concentrations in surface water wetland samples exceeded the Ambient Water Quality Criteria. PRDA is located approximately 1.1 miles southwest of the Eagle River. PRDA was identified by a former soldier who stated that ha ardous substances were buried there in the 1950s; a 1954 Army Corps of Engineers map confirmed the existence of this disposal area. In 1990, an expanded site investigation conducted by the Army confirmed the presence of volatile organic compounds VOCs) in soil and shallow ground water at PRDA. RRTS consists of a bomb-proof underground bunker and the remnants of support facilities constructed in the 1940s. In May and June 1990, the Army conducted sampling operations as part of a site investigation follow-up. Analytical results from this investigation indicated contamination by PCBs, VOCs, semi-volatile organic compounds, dioxins, asbestos, and inorganic elements throughout RRTS. The Eagle River is used for recreational fishing and supports a wide variety of game fish including king, silver, red, pink, and chum salmon; dolly varden; arctic char; rainbow trout; grayling;and whitefish. The river maintains spawning runs of chinook, coho, and pink salmon. Stickleback inhabit salt marshes along the Knik Arm and are common within the shallow ponds and some impact craters within ERF. The American peregrine falcon, a federally-designated endangered species, and the federally-designated threatened arctic peregrine falcon, migrate through the area. EPA, the Army, and the Alaska Department of Conservation will negotiate an interagency agreement to address the clean-up of this site. The description of the site release) is based on information available at the time the site was scored. The description may change as additional information is gathered on the sources and extent of contamination. See 56 FR 5600, February 11, 1991, or subsequent FR notices.

Site Status Details:

NPL Status:	Final
Proposed Date:	06/23/1993
Final Date:	05/31/1994
Deleted Date:	Not reported

Narratives Details:

NPL Name:	FORT RICHARDSON (USARMY)
City:	ANCHORAGE
State:	AK

SEMS:

Site ID:	1001455
EPA ID:	AK6214522157
Cong District:	0
FIPS Code:	Not reported
Latitude:	61.258333
Longitude:	-149.69999999999999
FF:	Y
NPL:	Currently on the Final NPL
Non NPL Status:	Not reported

FORT RICHARDSON (USARMY) (Continued) **1000483246**

SEMS Detail:

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1991-03-12 00:00:00
Finish Date:	3/12/1991
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1993-06-23 00:00:00
Finish Date:	6/23/1993
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	CM
Action Name:	PCOR
SEQ:	2
Start Date:	2006-09-28 00:00:00
Finish Date:	9/28/2006
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	MA
Action Name:	ST COOP
SEQ:	1
Start Date:	1993-05-19 00:00:00

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Finish Date:	11/8/2013
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	NF
Action Name:	NPL FINL
SEQ:	1
Start Date:	1994-05-31 00:00:00
Finish Date:	5/31/1994
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	HR
Action Name:	HAZRANK
SEQ:	1
Start Date:	1993-05-06 00:00:00
Finish Date:	5/6/1993
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	2
Action Code:	LX
Action Name:	FF RD
SEQ:	3
Start Date:	1997-12-10 00:00:00
Finish Date:	5/7/1998
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	3
Action Code:	LW

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Action Name:	FF RI/FS
SEQ:	3
Start Date:	1996-03-06 00:00:00
Finish Date:	9/30/1998
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	2
Action Code:	LY
Action Name:	FF RA
SEQ:	2
Start Date:	1998-02-22 00:00:00
Finish Date:	5/29/2003
Qual:	IR
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	4
Action Code:	RO
Action Name:	ROD
SEQ:	4
Start Date:	2000-09-27 00:00:00
Finish Date:	9/27/2000
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	8
Action Code:	LV
Action Name:	FF RV
SEQ:	4
Start Date:	2010-03-30 00:00:00
Finish Date:	8/31/2013
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F

FORT RICHARDSON (USARMY) (Continued) **1000483246**

FF:	Y
OU:	7
Action Code:	LV
Action Name:	FF RV
SEQ:	5
Start Date:	2011-11-03 00:00:00
Finish Date:	8/28/2014
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	10
Action Code:	LV
Action Name:	FF RV
SEQ:	7
Start Date:	2010-06-01 00:00:00
Finish Date:	5/16/2013
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	11
Action Code:	RO
Action Name:	ROD
SEQ:	7
Start Date:	2017-09-12 00:00:00
Finish Date:	9/12/2017
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	7
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	7
Start Date:	2017-08-09 00:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455

FORT RICHARDSON (USARMY) (Continued) **1000483246**

EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	6
Action Code:	LX
Action Name:	FF RD
SEQ:	7
Start Date:	2018-04-23 00:00:00
Finish Date:	4/23/2018
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	4
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	4
Start Date:	1996-09-12 00:00:00
Finish Date:	9/27/2000
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	3
Action Code:	LX
Action Name:	FF RD
SEQ:	4
Start Date:	1998-11-02 00:00:00
Finish Date:	12/4/1998
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	9
Action Code:	LV
Action Name:	FF RV
SEQ:	3
Start Date:	2012-09-11 00:00:00
Finish Date:	10/25/2012
Qual:	S
Current Action Lead:	Fed Fac

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	10
Action Code:	LV
Action Name:	FF RV
SEQ:	2
Start Date:	2012-06-14 00:00:00
Finish Date:	8/22/2012
Qual:	S
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	13
Action Code:	NH
Action Name:	FF RI
SEQ:	6
Start Date:	2017-12-29 00:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	14
Action Code:	NH
Action Name:	FF RI
SEQ:	5
Start Date:	2017-12-29 00:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	12
Action Code:	NH
Action Name:	FF RI
SEQ:	4
Start Date:	2017-12-29 00:00:00
Finish Date:	Not reported

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	9
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	9
Start Date:	2015-10-02 00:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	6
Action Code:	RO
Action Name:	ROD
SEQ:	6
Start Date:	Not reported
Finish Date:	1/16/2018
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	6
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	6
Start Date:	2010-05-19 00:00:00
Finish Date:	1/16/2018
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	3
Action Code:	RO
Action Name:	ROD

FORT RICHARDSON (USARMY) (Continued) **1000483246**

SEQ:	3
Start Date:	1998-09-30 00:00:00
Finish Date:	9/30/1998
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	2
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	1997-09-15 00:00:00
Finish Date:	9/15/1997
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	3
Action Code:	LY
Action Name:	FF RA
SEQ:	3
Start Date:	1999-05-10 00:00:00
Finish Date:	5/19/2003
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	0
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1992-06-30 00:00:00
Finish Date:	6/30/1992
Qual:	H
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y

FORT RICHARDSON (USARMY) (Continued) **1000483246**

OU:	2
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	2
Start Date:	1995-08-03 00:00:00
Finish Date:	9/15/1997
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	5
Action Code:	LY
Action Name:	FF RA
SEQ:	5
Start Date:	2006-08-16 00:00:00
Finish Date:	9/21/2007
Qual:	IR
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	5
Action Code:	LX
Action Name:	FF RD
SEQ:	6
Start Date:	2005-09-30 00:00:00
Finish Date:	7/26/2006
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	5
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2005-09-30 00:00:00
Finish Date:	9/30/2005
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	10
Site ID:	1001455
EPA ID:	AK6214522157

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	5
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	5
Start Date:	2000-10-19 00:00:00
Finish Date:	9/30/2005
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	10
Site ID:	1001455
EPA ID:	AK6214522157
Site Name:	FORT RICHARDSON (USARMY)
NPL:	F
FF:	Y
OU:	2
Action Code:	LV
Action Name:	FF RV
SEQ:	1
Start Date:	1993-09-30 00:00:00
Finish Date:	10/28/1994
Qual:	S
Current Action Lead:	Fed Fac

US ENG CONTROLS:

EPA ID:	AK6214522157
Site ID:	1001455
Name:	FORT RICHARDSON (USARMY)
Address:	Not reported
	ANCHORAGE, AK 99505
EPA Region:	10
County:	ANCHORAGE BOROUGH
Event Code:	Not reported
Actual Date:	09/30/2005
Contact Name:	Not reported
Contact Phone and Ext:	Not reported
Event Code Description:	Not reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	09/15/1997
Operable Unit:	02
Contaminated Media :	Groundwater
Engineering Control:	Air Stripping
Contact Name:	Not reported
Contact Phone and Ext:	Not reported
Event Code Description:	Not reported

Action ID:	002
Action Name:	RECORD OF DECISION
Action Completion date:	09/15/1997
Operable Unit:	02
Contaminated Media :	Groundwater

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Engineering Control: Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 09/15/1997
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 09/15/1997
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Natural Attenuation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 09/15/1997
Operable Unit: 02
Contaminated Media : Groundwater
Engineering Control: Vapor Extraction
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 002
Action Name: RECORD OF DECISION
Action Completion date: 09/15/1997
Operable Unit: 02
Contaminated Media : Soil
Engineering Control: Soil Vapor Extraction (in-situ)
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Groundwater
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Sediment
Engineering Control: Cap
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Sediment
Engineering Control: Dewatering
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Sediment
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Sediment
Engineering Control: Oxidation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Soil
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 003
Action Name: RECORD OF DECISION
Action Completion date: 09/30/1998
Operable Unit: 03
Contaminated Media : Surface Water
Engineering Control: Pump And Treat
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Groundwater
Engineering Control: No Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Groundwater
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Other
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Other
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Sediment
Engineering Control: Monitoring
Contact Name: Not reported

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Sediment
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Soil
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 004
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2000
Operable Unit: 04
Contaminated Media : Soil
Engineering Control: No Further Action
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 005
Action Name: RECORD OF DECISION
Action Completion date: 09/30/2005
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Monitoring
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

Action ID: 005
Action Name: RECORD OF DECISION
Action Completion date: 09/30/2005
Operable Unit: 05
Contaminated Media : Groundwater
Engineering Control: Natural Attenuation
Contact Name: Not reported
Contact Phone and Ext: Not reported
Event Code Description: Not reported

US INST CONTROL:
EPA ID: AK6214522157
Site ID: 1001455

FORT RICHARDSON (USARMY) (Continued) **1000483246**

Name: FORT RICHARDSON (USARMY)
Action Name: RECORD OF DECISION
Address: Not reported
ANCHORAGE, AK 99505
EPA Region: 10
County: ANCHORAGE BOROUGH
Event Code: Not reported
Inst. Control: Institutional Controls, (N.O.S.)
Actual Date: 09/30/1997
Complet. Date: 09/15/1997
Operable Unit: 02
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: AK6214522157
Site ID: 1001455
Name: FORT RICHARDSON (USARMY)
Action Name: RECORD OF DECISION
Address: Not reported
ANCHORAGE, AK 99505
EPA Region: 10
County: ANCHORAGE BOROUGH
Event Code: Not reported
Inst. Control: Institutional Controls, (N.O.S.)
Actual Date: 09/30/1997
Complet. Date: 09/15/1997
Operable Unit: 02
Contaminated Media : Soil
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: AK6214522157
Site ID: 1001455
Name: FORT RICHARDSON (USARMY)
Action Name: RECORD OF DECISION
Address: Not reported
ANCHORAGE, AK 99505
EPA Region: 10
County: ANCHORAGE BOROUGH
Event Code: Not reported
Inst. Control: Institutional Controls, (N.O.S.)
Actual Date: 09/30/1998
Complet. Date: 09/30/1998
Operable Unit: 03
Contaminated Media : Sediment
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

EPA ID: AK6214522157
Site ID: 1001455
Name: FORT RICHARDSON (USARMY)
Action Name: RECORD OF DECISION
Address: Not reported

FORT RICHARDSON (USARMY) (Continued) **1000483246**

ANCHORAGE, AK 99505
EPA Region: 10
County: ANCHORAGE BOROUGH
Event Code: Not reported
Inst. Control: Covenant
Actual Date: 09/30/2005
Complet. Date: 09/30/2005
Operable Unit: 05
Contaminated Media : Groundwater
Contact Name : Not reported
Contact Phone and Ext : Not reported
Event Code Description: Not reported

ROD:
Full-text of USEPA Record of Decision(s) is available from EDR.

96
SW
1/2-1
0.750 mi.
3962 ft.

JBER-FT. RICH ADAL COMMISSARY **SHWS** **S104892992**
5TH STREET & CHILKOOT AVE, FORMERLY FORT RICHARDSON BEFORE 1 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
296 ft.

SHWS:
File Number: 2102.38.057
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.251409
Longitude: -149.693646
Hazard ID: 1236
Problem: Petroleum contamination found in soils during foundation investigation by the Corps of Engineers. No indication from historic maps that a fuel tank was ever located at site. Amount, total extent of contamination, and impact to human health unknown. UST Fac. ID 788Camp Anchorage (1919 - 1926), AnchorageEstablished to protect the railroad that was under construction at the time. Located one mile north of town.Fort Richardson was established nearby in 1940. Fort Richardson moved in 1950 to its present site, and the original site became Elmendorf AFB. This is the U.S. Army's headquarters post for the Alaska Military Command.EPA ID: AK6214522157

Actions:
Action Date: 9/18/2003
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and approved the community involvement plan as submitted.

Action Date: 7/2/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Information update.

Action Date: 6/16/1995
Action: Site Ranked Using the AHRM
DEC Staff: Louis Howard
Action Description: Initial ranking. Action code added because it wasn't when the site was originally ranked.

JBER-FT. RICH ADAL COMMISSARY (Continued) **S104892992**

Action Date:	5/9/1991
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Petroleum contaminant.

Action Date:	5/8/1990
Action:	Report or Workplan Review - Other
DEC Staff:	Ron Klein
Action Description:	ADEC sent Col. Edwin Ruff letter re: USTs at Fort Richardson. Staff reviewed the draft SOPs for Site Investigation of UST removals dated April 11, 1990. Screening Method: Soil samples collected when HNU [photoionization analyzer] readings are consistently less than 50 ppm. Recommend excavating until the readings with Hnu are non-detectable (or equal to the background readings) and then collecting soil samples for laboratory analysis. Sample location: The department has not been accepting composite sampling from within excavation as a means of determining adequacy of cleanup. Composite sampling has been approved as a method of characterizing spoils piles after excavation. Sample collection procedure: Sample collection jars should be obtained from the laboratory that will perform the analyses. Samples must be stored at 4 degrees celsius from the time of collection until analyzed (within 14 days of collection). Analysis: All soil samples should be analyzed for Total Petroleum Hydrocarbons (EPA Method 418.1) and BTEX (EPA Method 8020) unless a hydrocarbon identification test (EPA Method 8015) clearly shows that the contamination is ONLY diesel or another non-gasoline fraction hydrocarbon such as heating fuel. Under these conditions, samples need only be analyzed for TPH. If the tank was used for waste oil, soil samples should be analyzed for PCBs (EPA 8080), total arsenic, cadmium, chromium, and lead as proposed in your SOPs. If the total lead content is above allowable limit, additional sampling and analysis should be conducted following the toxic characteristic leaching procedure (TCLP). Rather than testing the soils for total organic halides by EPA Method 9020, the department is requesting analysis of total organic halides by EPA Method 8010. If a site cannot be cleaned up adequately through the tank removal and initial excavation efforts, a site assessment may be requested including individual work plans and QA/QC plans. For the initial tank removals this letter and your SOP for tank removals, dated April 11, 1990, will suffice as a generic work plan.

Action Date:	3/20/1991
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Army sent in their sampling report petroleum, oil, and lubricants (POL) investigation for site. 1,490 mg/kg (ppm) in soil sample AP-2 using modified method 8015 identifies it as weathered diesel fuel 2. Possible source of contamination is a skid mounted backup generator on west side of building. Soil inspector noticed a petroleum stain on floor plate of the generator.

Action Date:	2/23/2007
Action:	Exposure Tracking Model Ranking
DEC Staff:	Louis Howard
Action Description:	Not reported

Action Date:	11/17/2006

JBER-FT. RICH ADAL COMMISSARY (Continued) **S104892992**

Action: Update or Other Action
DEC Staff: Aggie Blandford
Action Description: File number issued 2102.38.057.

Action Date: 1/16/2008
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: Site closed. No contamination found above cleanup levels

Action Date: 1/16/2008
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72215 name: Surface release

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich ADAL Commissary
Contaminate Level Description1: Not reported
Contaminate Media1: Not reported

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: For more information about this site, contact DEC at (907) 465-5390.

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97 West 1/2-1 0.752 mi. 3973 ft.

JBER-FT. RICH TU082 BLDG 968 FTRS-82 **SHWS** **S113929820**
CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Actual: 305 ft.

SHWS:
File Number: 2102.38.038
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.264000
Longitude: -149.701166
Hazard ID: 26066
Problem: A site assessment was conducted during the removal of a 1,000-gallon underground storage tank (UST) at Building 968. Laboratory results show that the maximum detected level of diesel range organics (DRO) in the project soil was 4330 ppm. These results show that petroleum hydrocarbons have been released to the environment from Tank 34 at Building 968.

Actions:
Action Date: 9/19/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Site Assessment Report for Bldg. 968 received. Under Work Release R30262/541 issued by Brown & Root Service Corporation, Oil Spill Consultants collected samples and performed a site assessment during the removal of a 1,000-gallon underground storage tank (UST) at Building 968 at Ft. Richardson, Alaska. The UST (Tank 34) was removed

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

by Nessco Environmental on June 2, 1994. It was taken to a storage area behind Building 955 for cutting and cleaning. Following this, the tank was given to the Defense Reutilization and Marketing organization for disposal.Five (5) project samples and one (1) quality control sample were collected to determine if the soil over and around the UST was contaminated with petroleum hydrocarbons. Additionally, the tank contents were sampled to assess which contaminants would likely be in the soil if a releaseoccurred. Samples were taken to Analytical Technologies, Inc., in Anchorage, Alaska, for analysis. HNU 3 ppm lab result for DRO 3,200 mg/kg HNU 3 ppm Lab result for DRO 3,800 mg/kg, HNU 2 ppm lab result for DRO 2,900 mg/kg, HNU 15 ppm lab result 14,000 mg/kg, HNU 6 ppm lab result 8,000 mg/kg. NOTE TO FILE: DRO at 14,000 mg/kg was field screened at 15 ppm with HNU and therefore use of 20 ppm, 25 ppm, 30 ppm, 50 ppm would not have caught this if the threshold for clean vs. dirty was based solely on the HNU readings. Laboratory results show that the maximum detected level of diesel range organics (DRO) in theproject soil was 14,000 ppm. These results suggest that petroleum hydrocarbons may have beenreleased to the environment from Tank 34 at Building 968.Based on guidelines provided in 18 AAC 78.315 and environmental conditions at Ft. Richardson,Alaska, the soil at Building 968 qualifies for Level C cleanup which sets the maximum DROconcentration at 1,000 ppm. Since the detected levels for DRO at Building 968 exceeds this level, further action is required for site closure. As required by the State of Alaska, a remedial site investigation is required to quantify the area affected by the tank release. The report containing this investigation must includerecommendations for site cleanup. Soil excavated during tank removal cannot be used for backfill.

Action Date: 8/6/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP WP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon RiskCalculator (HRC) approach under Method Three will be used to assess whether site conditionsmeet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will berequested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.One boring will be drilled at former sample location 94-968-BC to resample the soil at thelocation and depth where previous sampling showed exceedances of the maximum allowablecriteria for DRO and to collect source area soil samples for polycyclic aromatic hydrocarbons(PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH)

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

analysis.Two borings will be drilled south and west of the former tank to assess the lateral extent ofcontamination. Samples will be analyzed for gasoline-range organics (GRO), DRO, residualrangeorganics (RRO), petroleum-related VOCs (benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]), and PAHs.Up to approximately 15 primary soil samples will be collected and analyzed for GRO, DRO, RRO, PAHs, and petroleum-related VOCs (BTEXN). Three of the soil samples will also be analyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).If any of the borings are drilled to groundwater, a groundwater sample will be collected andanalyzed for GRO, DRO, RRO, petroleum-related VOCs (BTEXN), PAHs, VPH, and EPH.

Action Date: 8/29/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER's responses to ADEC's comments on the Work Plan for TU082 Bldg. 968. ADEC finds the responses acceptable. The document may be finalized.

Action Date: 8/21/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the draft UFP-QAPP.Page 31TU082-SB01The text states: ???Approximately one sample from uncontaminated soils that is representative of the source zone will be analyzed for foc.???JBER may collect one foc soil sample for whatever purpose it desires, however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected and analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection and Data Reduction for Method Three and Method Four (ADEC, 2008). If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 ADEC Guidelines for TOC Sample Collection must be followed. For example: 4) TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.Please refer to the TOC sampling guidance for additional requirements. Soil Excavation (If Required)Page 32Soil Excavation (If Required)The text states: ???If potential risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated.???Not necessarily correct, remedial options that address the contaminants of concern which exceed maximum allowable concentrations will be also evaluated regardless of HRC risk

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

calculation results. See comment 1 regarding MAC. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. The text states: ???During excavation, the PID will be used to screen soil using a level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-16 (Appendix B of the Basewide UFP-QAPP) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles and submitted for laboratory analysis of GRO, DRO, RRO, petroleum-related VOCs (BTEXN), and PAHs at a rate of two for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards.???20 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold and does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both stockpiles (???clean??? < 20 ppm PID reading and ???dirty??? 20 ppm and higher PID reading) for definitive laboratory testing. At previous investigations at other DoD installations there have been instances where diesel range organics in soil have been well above 10,250 mg/kg and the arbitrary field screening level of 10 ppm on the PID was used at that time for ???clean??? vs. ???dirty??? soil: PID reading (DRO laboratory result)6 ppm (11,600 mg/kg), 10 ppm (35,800 mg/kg), 12 ppm (28,200 mg/kg), 17 ppm (67,200 mg/kg), and 19 ppm (17,300 mg/kg).

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79475 name: 1,000-Gal UST 34

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan receivedPerformance ObjectiveSite ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the Period of Performance.Date of achieving performance objective2nd Quarter 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways.
Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/12/2013

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 4/30/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete designation for TU082 (Bldg. 968).Contaminants of ConcernDuring the 2013 investigation at TU082, the maximum detected levels of diesel range organics (DRO) was 3,590 mg/kg. The maximum detected levels of 1-Methylnaphthalene was 7.3 mg/kg and 2-methylnaphthalene at 8.06 mg/kg at 15 to 20' bgs. The maximum level of Benzo(a)pyrene was 0.213 mg/kg at 0 to 5' bgs. Groundwater was not encountered and therefore not sampled as part of this investigation. Groundwater occurs at approximately 124 feet bgs. Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU082 is based on the ingestion pathway for the under 40??? Zone at 10,250 mg/kg. The cleanup level for 1-Methylnaphthalene and 2-Methylnaphthalene is based on the direct contact pathway at 280 mg/kg. The cleanup level for benzo(a)pyrene is 0.49 mg/kg based on the direct contact pathway. In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined TU082 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (TU082)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU082. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 4/25/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment.The former UST NAPL

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

source area is defined by DRO concentrations detected above screening levels. DRO within the soil source area ranged up to 14,000 mg/kg in the 1994 excavation confirmation samples; this concentration is above ADEC???s maximum allowable criteria of 12,500 mg/kg. However, attempts to re-sample this location have indicated concentrations within the former tank footprint are actually much lower (less than 4,500 mg/kg). As a result, these historical investigation samples are not considered representative of current conditions.Groundwater is at 124 feet bgs (approximately 100' deeper than the maximum depth of contamination. Maximum detected DRO was 3,590 mg/kg at 12 to 15' bgs. 1-Methylnaphthalene was 7.3 mg/kg and 2-methylnaphthalene was 8.06 mg/kg at 15 to 20' bgsBenzo(a)pyrene was 0.213 mg/kg at 0 to 5' bgs. ConclusionsThe following conclusions were made regarding TU082:Based on previous investigations and the 2013 site characterization field investigation, DRO, 1-MN, 2-MN, Naph, total xylenes, and B(a)P have been detected in soil at concentrations above project screening levels. Contamination is present in two separate soil source areas: (1) theformer UST source area and (2) the surface spill source area. Both areas are defined by DROand/or RRO at concentrations of 250 mg/kg or greater. 1-MN, 2-MN, Naph, and total xylenes were detected in the NAPL at the former UST source area, and B(a)P was detected in the surface spill source area NAPL.Former UST Source Area??? DRO in the former UST source area soil at concentrations above the screening level (250 mg/kg) covers an area approximately 80 feet long and 45 feet wide centered near boring TU082-SB01/AP-3592, starting at a depth of 10 feet bgs and reaching a total depth of approximately 25 feet bgs (approximately 2,000 cubic yards). Based on the results of the HRC, the cumulative carcinogenic risk and noncarcinogenic HI estimates (based on both industrial and hypothetical residential exposure scenarios) are below the regulatory risk standards for direct contact/ingestion, outdoor air inhalation, and groundwater ingestion pathways.??? The ADEC risk criteria for bulk hydrocarbons are met for direct contact/ingestion, outdoor air inhalation, migration to groundwater, and groundwater ingestion pathways.??? The potential future indoor air exposure pathway is considered incomplete because althoughconcentrations of volatile contaminants are above the most stringent 18 AAC 75.345 Table B1 cleanup levels, this contamination is below 15 feet bgs, meaning there is more than 7 feet of clean oxygenated soil between the contamination and a potential future 8-foot-deep basement at the site. In accordance with the ADEC Vapor Intrusion Guidance for Contaminated Sites (2012c), 7 feet of clean oxygenated soil between the source area and the building foundation is a sufficient barrier to eliminate the petroleum vapor intrusion risk.??? No potential risks to ecological receptors were observed, and potentially complete ecologicalexposure pathways are considered insignificant. See completed Ecoscoping form in Appendix D.
Not reported

Action Date: 3/22/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to ARMY from ADEC Release Investigation for bldgs: 914 UST 37, 920 UST 95,926 UST 96, 932 UST 97, 934 UST 98, 936 UST 99, 944 UST 100, 946 UST 101, 950 UST 102, 962 UST 105, 968 UST 34 at Fort Richardson, Alaska, February 21, 1996 Based upon a review of the information submitted no further assessment or remediation of the sites is requested at this time, These closures do not preclude

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated; DEC reserves all of its rights undetTitle 46 of Alaska Statutes and 18 AAe 78 to request additional activities inthe future if necessary to address these risks. DEC requests any monitoring wells installed as a part of these investigations be added to the Postwide monitoring network established under the CERCLA FFA.

Action Date: 2/21/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Release Investigation (RI) received by ADEC for review and comment. This document presents the findings of Shannon & Wilson's Release Investigation of a formerunderground storage tank (UST) site located along Circle Loop Road on the United StatesDepartment of the Army's Fort Richardson facility, Alaska. The former UST, designated Tank34, was a heating oil tank which supplied fuel to Building 968, located along Circle Loop Road.The release investigation of Building 968 was completed as part of a larger assessment addressing a total of eleven former UST sites along Circle Loop Road. Each of the eleven tank sites was associated with a warehouse structure, including Buildings 914, 920, 926, 932, 934, 936, 944, 946, 950, 962, and 968.The highest DRO concentration reported was 4,330 ppm. This DRO concentration is 45 to 70less than the 8,000 ppm to 14,000 ppm reported in the tank closure assessment report. Benzenewas not reported in the samples, and total aromatic volatile organics (BTEX) concentrations f did not exceed the 50 ppm applicable cleanup guideline. A total of 6 individual semi-volatile organic compounds (SVOCs) were detected in the soil samples. Eleven samples contained detectable levels of one or more SVOC constituents, including naphthalene, 2-methylnaphthalene, fluorene, anthracene, di-n-butyl phthalate, and benzoic acid.Based on the DRO concentrations detected in the soil boring samples, the contaminant plume at this site appears to extend directly beneath former Tank 34, with lateral migration to the east, west, and south. The estimated lateral extent of soil contamination exceeding the Level C cleanup guideline of 1,000 ppm DRO measures approximately 30 feet by 50 feet, or about 1,500 square feet. The highest DRO was measured in sample 002SL, collected from boring AP-3592 at a depth of 1O to 12 feet bgs (PID 210 ppm). From sample 004SL boring AP-3592 20-22' bgs: 7 ppm of 2-methylnaphthalene was detected in one sample (2012 MGW cleanup level is 6.1 mg/kg). PID reading was 70 ppm. From the estimated horizontal and vertical extent of soil contamination and the apparent plumeconfiguration, approximately 500 cubic yards of soil exceeding the applicable DRO cleanupguideline are present in the subsurface. The maximum predicted concentrations of these constituents in groundwater do not exceed therespective MCLs within the next 99 years. The simulated naphthalene plume did not reach thegroundwater table within the 99 year model. Based on these surrogate results, the slower migrating DRO hydrocarbons are likewise not anticipated to intercept the site's groundwater in the next 99 years. Therefore, it is our opinion that no further action is required at this site and we recommend that the Army Alaska District Corps of Engineers request closure for the Tank 34, Building 968 site.Site-specific xylene and toluene ACLs are also

JBER-FT. RICH TU082 BLDG 968 FTRS-82 (Continued) **S113929820**

proposed as tools to develop cleanup criteria forpotential future sitework. The ACLs reflect the maximum estimated contaminant concentrations inthe soil which will not result in groundwater concentrations above the corresponding MCLs.Although toluene was not detected at this site, a toluene ACL was developed since it is expected to migrate at a faster rate than xylene and is often associated with diesel fuel releases. Based on the SESOIL modelling results, ACLs of 11 ppm toluene and 80 ppm xylene are recommended for the Building 968, Tank 34 site. An ACL is not proposed for naphthalene since the simulated naphthalene plume does not reach groundwater within the modelled time period, irrespective of the source-area concentration. An ACL was also not calculated for ethylbenzene, despite model results demonstrating that the simulated plume contacts groundwater within the next 99 years. Because the simulated ethylbenzene plume infiltrates to groundwater in the final year of the modelled time frame, the single calculated groundwater concentration is anticipated to be up to one order of magnitude smaller than the maximum leached concentration. Similarly, an ACL is not proposed for DRO since this parameter was not directly modelled, and a correlation was not identified between the present DRO and surrogate concentrations in the soil.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich TU082 Bldg 968 FTRS-82
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

98
WSW
1/2-1
0.758 mi.
4004 ft.

JBER-FT. RICH BLDG 47799 UST 218 **SHWS S110144134**
BLDG 47-799 STOCKADE ON DAVIS HWY, FORMERLY FORT RICHARDSON **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
302 ft.

SHWS:

File Number:	2102.26.070
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.261181
Longitude:	-149.701226
Hazard ID:	23326
Problem:	Low levels of contamination were found during the closure of this 1,000-gallon diesel UST.

Actions:

Action Date:	9/23/1998
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	Not reported

JBER-FT. RICH BLDG 47799 UST 218 (Continued) **S110144134**

Action Date: 9/23/1998
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 7/29/2004
Action: Site Closure Approved
DEC Staff: Louis Howard
Action Description: Site met cleanup levels and no further action is required. The Department is basing its decision on the most current and complete data provided by the Army. The Department reserves its rights, under: 18 AAC 75 Oil and Other Hazardous Substances, Pollution Control regulations, 18 AAC 78 Underground Storage Tank Regulations, and Alaska Statute 46.03 to require additional investigation, cleanup, or containment if subsequent information indicates that: 1) additional contamination remains at the site which was previously undiscovered and presents an unacceptable risk to human health, safety, or welfare, or the environment.

Action Date: 10/7/1999
Action: Underground Storage Tank Site Characterization or Assessment
DEC Staff: * Not Assigned
Action Description: ADEC reviewed the SA report. Highest concentration of DRO found in the UST was 10.6 ppm. Level D cleanup criteria is applicable (GRO 1,000 mg/kg, DRO 2000 mg/kg, RRO 2000 mg/kg, BTEX 100 mg/kg) Site may be eligible for closure. ADEC has requested additional information about the piping closure ie, was all the piping removed, and was the entire piping run assessed for petroleum contamination.

99
WNW
1/2-1
0.773 mi.
4082 ft.

JBER-FT. RICH BLDG 926 FTRS-77 TU077 **SHWS** **S113929819**
CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
315 ft.

SHWS:
File Number: 2102.38.031
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.274032
Longitude: -149.703108
Hazard ID: 26065
Problem: A site assessment was conducted during the removal of a 1,000-gallon underground storage tank (UST) at Building 926. Laboratory results show that the maximum detected level of diesel range organics (DRO) in the project soil was 600 ppm. These results show that petroleum hydrocarbons have been released to the environment from Tank 96 at Building 926.

Actions:
Action Date: 9/28/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC letter to ARMY (S. Swearingen)RE: Site Assessment report Bldg. 926 Former UST 96 Fac. No. 0-00788 July 20, 1994. 5.2 Discussion page 11The level C criteria score is incorrect. Information from other consultants' reports at FortRichardson the annual precipitation has

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

been calculated to be approximately 13 to 20 inches per year (Univ. of AK, Anchorage, Environmental Atlas ... 1972). This correction would result in a reclassifying of the cleanup score to 20 or a level D cleanup.5.3 Conclusion and Recommendations page 11The text states levels above level D criteria were detected in the soil under tank 96 hasleaked. Further action is required by the Army to delineate the vertical and horizontal level and extent of petroleum hydrocarbon contamination in soil and groundwater at each site. ADEC looks forward to receiving the draft release investigation work plan with schedules of action for review and comment by January 1995 (Attachment C of the UST timeline for release investigation/corrective action UST MP).

Action Date: 8/5/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP WP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC, or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard.One boring will be drilled at former boring AP-3548 to resample the soil at the location anddepth where previous sampling showed exceedances of the migration to groundwater criteriafor DRO and to collect source area soil samples for polycyclic aromatic hydrocarbon (PAH),volatile petroleum hydrocarbon (VPH), and extractable petroleum hydrocarbon (EPH) analysis.One boring will be drilled west of the former tank to assess the lateral extent of contamination. Samples will be analyzed for gasoline-range organics (GRO), DRO, and petroleum-related volatile organic compounds (VOCs) (benzene, toluene, ethylbenzene, xylenes, and naphthalene [BTEXN]).Up to approximately 12 primary soil samples will be collected and analyzed for GRO, DRO, residual-range organics (RRO), and petroleum-related VOCs (BTEXN). Three of the soil samples will also be analyzed for PAHs, EPH, and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon (foc).If any of the borings are drilled to groundwater, a groundwater sample will be collected andanalyzed for GRO, DRO, RRO, petroleum-related VOCs (BTEXN), PAHs, VPH, and EPH.

Action Date: 8/26/2013

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC has reviewed JBER's responses to its comments on the UFP-QAPPs for TU077 and TU075. The responses to comments are acceptable. Please finalize the documents

Action Date: 8/20/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on the draft UFP-QAPP WP. WS 17Sampling Design & RationaleSite Specific Sampling PlanPage 30The text states: ???If underground utilities or structures cannot be definitively identified, then an air knife & vacuum truck may be used to clear the upper 6 feet of the proposed drilling location prior to drilling or conducting other invasive activities. Once clearance activities have been completed in the upper 6 feet of the soil column, soil removed during utility clearance will be placed back into the hole from which it was removed. Drilling or other invasive activities will be conducted after utility clearance has been completed & the soil has been replaced.???This 6 ft. interval shall not be excluded from field screening & sampling requirements due to it being previously removed & replaced during utility investigation activities. ADEC expects in most cases that the U.S. Air Force can definitively identify the utilities at most of the PBR sites for the contractor & the use of the air knife & vacuum truck will be used very infrequently. Page 31JBER may collect one foc soil sample for whatever purpose it desires; however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected & analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection & Data Reduction for Method Three & Method Four (ADEC, 2008). If JBER is proposing using the foc data for Method Three or Method Four, then the 2008 ADEC Guidelines for TOC Sample Collection must be followed. For example: 4) TOC samples must be collected from a minimum of four (4) borings or test pits adjacent to but outside of the zone of contamination. Soil type(s) analyzed for TOC must be representative of the impacted soil type(s). It is recommended that the sampling locations be selected at points surrounding (on each side of) the contaminated zone to ensure adequate characterization of the soil TOC variability. If the zone of contamination extends over a significant area, additional samples may need to be collected from the soil horizon below the impacted soils.5) If the depth to seasonal high GW is more than 5 feet below the deepest contaminated vadose soil statum, one sample must be collected from the deepest contaminated vadose soil stratum & a second sample collected from 5 feet below the contaminated soil stratum. This will result in a total of eight (8) TOC samples.If the contamination extends to within 5 feet, but not to the seasonal high GW level, one sample must be collected from the deepest contaminated soil stratum & one sample immediately adjacent to the GW interface. This will result in a total of eight (8) TOC samples.If the contamination extends to or below the seasonal high GW level, the TOC samples must be collected immediately adjacent to the GW interface. This will result in a total of four (4) TOC samples.Please refer to the TOC sampling guidance for additional requirements. Page 32Soil Excavation (If Required)Not necessarily correct, remedial options that address the contaminants of concern

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

which exceed maximum allowable concentrations (MAC) will be also evaluated regardless of HRC risk calculation results. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. Pages 32 & 3320 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold & does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both stockpiles (???clean??? < 20 ppm PID reading & ???dirty??? 20 ppm & higher PID reading) for definitive laboratory testing. At previous investigations at other DoD installations there have been instances where diesel range organics in soil have been well above 10,250 mg/kg & the arbitrary field screening level of 10 ppm on the PID was used at that time for ???clean??? vs. ???dirty??? soil: PID reading (DRO laboratory result)6 ppm (11,600 mg/kg), 10 ppm (35,800 mg/kg), 12 ppm (28,200 mg/kg), 17 ppm (67,200 mg/kg), & 19 ppm (17,300 mg/kg).

Action Date: 7/20/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Tank 96 was removed from the Building 926 site by Nessco Environmental on June 20, 1994. OilSpill Consultants performed the closure assessment monitoring and sampling under a work releaseissued by Brown & Root Service Corporation. The results of the closure assessment are presentedin Oil Spill Consultants' July 20, 1994 report titled Facility No. 0-00788, Building 926Underground Storage Tank Site Assessment Report, Fort Richardson, Alaska. Tank 96 was a1,000-gallon vessel reportedly measuring 9.1 feet in length and 4.1 feet in diameter. During the tank closure, approximately 18 cubic yards of soil were excavated resulting in an excavation measuring about 15 feet in length, 10 feet in width, and 10.5 feet in depth. The assessment report recommendations indicated that the excavated soils could not be used to backfill the tank excavation. The excavated soils exhibiting a response of greater than 25 parts per million (ppm) on a photoionization detector (PID) were removed from the project site. The excavation was backfilled with clean, imported material along with excavated soils that exhibited a response of equal to or less than 25 ppm on a PID. Soil samples collected from the bottom and sidewalls of the excavation contained DRO concentrations ranging from 1,500 ppm to 7,400 ppm. The report concluded that the levels of DRO exceeded applicable ADEC cleanup guidelines and that a remedial site investigation would be required to quantify the area impacted by the apparent tank release.

Action Date: 7/12/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 79474 name: 1,000-Gal UST 96

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received.Performance ObjectiveSite ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the Period of Performance.Performance ObjectiveSite ClosureDate of Achieving Performance Objective 2nd Quarter FY 2014Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/21/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Brown & Root Services Fax sent to Commander 6th ID (Light) Attn: Burdette Willimas from Herbert V. Dunham Area Engineer - FRA. Contract DACA85-91-D-0004 Project FR30213/550. Letter R490 File 595.4/230During the removal of Tank 96 at Building 926 and Tank 95 at Building 920 on June 20, 1994, field screening of the excavated soil with a P.I.D. (Photoionization Detector) indicated that the soil was contaminated. The soil was also discolored and had a slight hydrocarbon smell. Per 18 AAC 78 the A.D.E.C. should be notified.

Action Date: 6/21/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Sam Swearingen (ARMY) sent a oil & hazardous material incident report form to ADEC via fax. Building 926, heating oil tank. Unknown quantity spilled or recovered. Removal of the tank as the source of contamiantion.

Action Date: 6/12/2013
Action: Site Added to Database
DEC Staff: Mitzi Read
Action Description: A new site has been added to the database

Action Date: 4/29/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete designation for TU077.Cleanup LevelsIn accordance with 18 AAC 75.341(d), Table B2, the cleanup level for DRO at TU077 is based on the ingestion pathway for the under 40??? Zone at 10,250 mg/kg.. In accordance with 18 AAC 75.380(d)(1), after reviewing the final cleanup report submitted under this section, ADEC has determined TU082 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules for a ???cleanup complete??? designation. The designation shall be noted in the CS Database. This written determination does not preclude ADEC from requiring additional assessment, investigation, monitoring, and cleanup if future information, site conditions, or new data indicates that action is necessary to protect human health, welfare, safety, or

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

of the environment. In accordance with 18 AAC 75.325(i) and 18 AAC 75.370(b): A responsible person (the Air Force) shall obtain approval before disposing of soil from a site (TU077)(1)that is subject to the site cleanup rules; or(2)for which the responsible person has received a written determination from the department under 18 AAC 75.380(d)(1); Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Notations of these requirements shall be made on the Environmental Restoration map/Base General Plan which will show up during a dig permit review/work clearance request process for TU077. Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving ADEC???s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after ADEC issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

Action Date: 4/25/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review and comment.Maximum detected concentrationsDRO: 7010 mg/kg 25’ - 30’ bgs, No groundwater samples were collected because groundwater was not encountered during the2013 investigation. Groundwater was measured in May 1995 at approximately 140 feet bgs (greater than approximately 100 feet below the depth of contamination at TU077)ConclusionsBased on previous investigations and the 2013 site characterization field investigation, DRO wasthe only contaminant detected in soil at concentrations above a project screening level.??? DRO in soil at concentrations above the screening level (250 mg/kg) covers an areaapproximately 40 feet long (east-west) and 20 feet wide (north-south), including the formertank location and additional area to the west, and reaching a total depth of approximately45 feet bgs (1,300 cubic yards).??? Using the HRC for contaminated soil within the source area, the cumulative carcinogenic riskand noncarcinogenic HI estimates for TU077, based on both industrial and hypothetical residential exposure scenarios for the direct contact, outdoor inhalation, and groundwater ingestion pathways, are below the regulatory risk standards.??? Potential risks posed by the GRO and DRO aromatic and aliphatic fractions are below the regulatory risk standard of 1 for direct contact, outdoor inhalation, and groundwater ingestionpathways.??? Concentrations of all VOCs and PAHs were below their respective 18 AAC 75.345 Table B1 soil cleanup levels for TU077; therefore, the vapor intrusion pathway is considered incomplete.??? The migration to groundwater criteria are attained in surface and subsurface soils in accordance with 18 AAC 75.340, supporting a Cleanup Complete determination.??? No potential risks to the ecological receptors were observed at TU077, and petroleum hydrocarbon contamination in surface soil is considered insignificant (less than 0.5 acre).RecommendationsBased on the HRC calculations and compliance with environmental criteria, the following arerecommended for TU077:??? No further investigation or

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

cleanup of soil and groundwater.??? Agreement from ADEC to grant a ???Cleanup Complete??? designation.

Action Date: 3/6/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: This decision document describes the rationale for No Further Remedial Action Planned (NFRAP) at the Circle Loop Road Warehouses, Fort Richardson, Alaska. This action has been chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA) and Army Regulation 200-1, as applicable.The sites addressed by this document include Bldg 914 underground storage tank (UST) 137, Bldg 926 UST 96, Bldg 932UST 97, Bldg 934 UST 98, Bldg 936 UST 99, Bldg 944 UST 100, Bldg 946 UST 101, Bldg 950 UST 102, Bldg 962 UST 105, and Bldg 968 UST 34. These USTs were removed during the summer 1994 to meet the requirements of the Fort Richardson-State of Alaska, Department of Environmental Conservation (ADEC) UST Compliance Agreement. During removal, soil contamination was found at each site at levels exceeding the State of Alaska level clean-up standards, 2000 parts per million (ppm) Diesel Range Organics (ORO) and 2000 ppm residual range organics (RRO), specified in 18 Alaska Administrative Code (AAC) 78.A release investigation was conducted which averaged 4 soil borings per site. The borings were drilled to approximately 50 feet below ground surface (bgs), and found DRO concentrations ranging from 3,010 ppm to 16,000 ppmCircle Loop Road warehoused is an industrial complex. Due to limited acess it is not expected to pose a risk to the general public or other pathways. Contamination is not expected to impact groundwater, based up on a soil leaching potential assessment conducted during the release investigation. Therefore, contamination poses no risk to the potential drinking water supply in the area.An evaluation of remedial alternatives was not conducted for this site. Previous experience indicated that these sites could be closed through development of alternative clean-up levels(ACL) using a soil leaching potential assessment. This work was conducted concurrently with the release investigation.Because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years (2001, 2006, 2011, 2016, 2021) to ensure that there is adequate protection of human health and the environment. Not reported

Action Date: 3/5/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Sam Swearingen memorandum Since the additional groundwater sampling showed no B2EHP then ADEC supports NFA at these sites. Therefore ADEC considers the following sites closed:Bldg Tank914 37926 96932 97934 98936 99944 100946 101950 102962 105968 34920 95

Action Date: 3/22/1996
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to ARMY from ADECRelease Investigation for bldgs: 914 UST 37, 920 UST 95,926 UST 96, 932 UST 97, 934 UST 98, 936 UST 99, 944 UST

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

100, 946 UST 101, 950 UST 102, 962 UST 105, 968 UST 34 at Fort Richardson, Alaska, February 21, 1996Based upon a review of the information submitted no further assessment or remediation of the sites is requested at this time, These closures do not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated; DEC reserves all of its rights undetTitle 46 of Alaska Statutes and 18 AAe 78 to request additional activities inthe future if necessary to address these risks. DEC requests any monitoring wells installed as a part of these investigations be added to the Postwide monitoring network established under the CERCLA FFA.

Action Date: 2/28/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ARMY sent various support documents to ADEC: Enclosed for your information and file are copies of the following reports:a. Circle Loop Road, Release Investigation, Support Document, Fort Richardson, Alaska.b. Circle Loop Road, Release Investigation, Bldg 914, UST 37, Fort Richardson, Alaska.c. Circle Loop Road, Release Investigation, Bldg 920, USR 95, Fort Richardson, Alaska.d. Circle Loop Road, Release Investigation, Bldg 926, UST 96, Fort Richardson, Alaska.e. Circle Loop Road, Release Investigation, Bldg 932, UST 97, Fort Richardson, Alaska.f. Circle Loop Road, Release Investigation, Bldg 934, UST 98, Fort Richardson, Alaska.g. Circle Loop Road, Release Investigation, Bldg 936, UST 99, Fort Richardson, Alaska.h. Circle Loop Road, Release Investigation, Bldg 944, UST 100, Fort Richardson, Alaska.i. Circle Loop Road, Release Investigation, Bldg 946, UST 101, Fort Richardson, Alaska.j. Circle Loop Road, Release Investigation, Bldg 950, UST 102, Fort Richardson, Alaska.k. Circle Loop Road, Release Investigation, Bldg 962, UST 105, Fort Richardson, Alaska.L Circle Loop Road, Release Investigation, Bldg 968, UST 34, Fort Richardson, Alaska.

Action Date: 2/21/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Circle Loop Road Release Investigation received for review & comment Bldg 926 Tank 96. The former UST, designated Tank 96, was a heating oil tank which supplied fuel to Building 926, located along Circle Loop Road. The release investigation (RI) was completed as part of a larger assessment addressing 11 tank sites was associated with a warehouse structure, including Buildings 914, 920, 926, 932, 934,, 936, 944, 946, 950, 962, & 968. A total of 5 soil borings were drilled, positioned within & adjacent to the former Tank 96 excavation in order to evaluate the vertical & lateral extent of contamination.. The highest DRO was 6,000 ppm from sample 279SL 10-12’ bgs. Benzene was not reported in the samples analyzed, & BTEX did not exceed the applicable cleanup guideline of 50 ppm. NOTE to FILE: 2012 Benzene soil cleanup level MGW is 0.025 mg/kg-Detection limit was 0.05 mg/kg in 1996 for all soil samples analyzed via EPA 8020.DRO has a total lateral area of approximately 300 square feet & extends about 10 feet radially from the former UST excavation center. The soils extend vertically about 29 feet below the ground surface at

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

the point directly beneath the former Tank 96 excavation. These estimated contamination plume dimensions indicate that approximately 300 cubic yards of soil exceeding DRO cleanup guideline are present in the subsurface. SVOCs were not detected in the water samples. For modeling purposes, the present-day vertical contaminant profile at this site is assumed to be represented by those concentrations measured in boring AP-3548. This boring is located in the center of the former UST excavation and contains the highest single concentrations of DRO, total BTEX, and 2-methylnaphthalene. As detailed in Section 2.6, this assumption is necessitated by the model's limitation of accommodating only vertical contaminant movement, with no lateral diffusion or other lateral transport. The deepest soil sample collected from this boring which contained detectable DRO was recovered from 35-37 feet bgs. This sample contained about 12 ppm DRO with no detectable BTEX or SVOC constituents. The deepest occurrence of BTEX constituents were in the soil sample recovered from a depth of 20-22 feet bgs, whereas 2-methylnaphthalene was detected in the sample collected at a depth of 25-27 feet bgs.Migrating at the predicted rates, the xylene plume front is shown by the SESOIL model to intercept the site's GW table in 86 years. However, the maximum predicted concentration of xylene in GW does not exceed the respective MCL within the next 99 years. The simulated ethylbenzene & naphthalene plume fronts do not reach the GW table within the 99 year model simulat.ion. Based on these surrogate results, the slower-migrating DRO hydrocarbons are likewise not anticipated to intercept the site's GW in the next 99 years. Therefore, NFA is required at this site & recommend that the Army Alaska District Corps of Engineers request closure for the Tank 96, Building 926 site. Site-specific ACLs are also proposed as a tool to develop cleanup criteria for potential future site work. The ACLs reflect the maximum contaminant concentrations in the soil which will not result in GW concentrations above the corresponding MCLs. Although toluene was not detected at this site, a toluene ACL was developed since it is expected to migrate at a faster rate than xylene & is often associated with diesel fuel releases. ACLs of 1.8 ppm toluene & 18 ppm xylene are recommended based on the SESOIL modelling. ACLs were not proposed for ethylbenzene & naphthalene since modeling indicated that these contaminant plumes will not reach GW, irrespective of the initial load concentration. Similarly, an ACL is not proposed for DRO since a correlation was not identified between the present DRO & surrogate concentrations in the soil.

Action Date: 11/9/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the October 21, 1994 Site Work Plan, Sampling Analysis Plan, QC/QA Plan, and Health and Safety Plan, Circle Rd. Heating Oil Tanks Project DACA8594DOOO9Task 3 Implement Release Investigation Plan Soil Borings page 5 last para.The text states after receipt of lab data one soil boring will be completed as a monitoringwell in the area where the highest concentrations and deepest contaminant impact occurred. ADEC requests two monitoring wells be installed instead of one to characterize the potential impacts to groundwater at the 12 different project sites. One well will be placed at each of the two project sites that have the highest concentrations and deepest impacts to soil.Health and Safety PlanADEC does not review health and safety plans, but will keep a copy on fIle

JBER-FT. RICH BLDG 926 FTRS-77 TU077 (Continued) **S113929819**

in its records.

Contaminants:

Staff:	Not reported
Contaminate Name1:	JBER-Ft. Rich Bldg 926 FTRS-77 TU077
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	No ICs Required
Control Details Description1:	Advance approval required to transport soil or groundwater off-site.
Contaminant CTD:	Not reported
Contaminant CDR:	Not reported
Comments:	Not reported

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100 WNW 1/2-1 0.776 mi. 4098 ft.

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 **SHWS S110144079**
CIRCLE ROAD FTRS-40, FORMERLY FORT RICHARDSON BEFORE 10/01/2 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Actual: 312 ft.

SHWS:

File Number:	2102.38.014
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.272997
Longitude:	-149.703459
Hazard ID:	2752
Problem:	Soils are contaminated with various underground storage tank and surface spills. Site FTRS-40. UST Soil Piles. UST Facility ID 788. EPA ID: AK6214522157Soil stockpiles stored at the landfill were from the following twelve (12) sources: Vet Clinic Bldg. 47811: 775 gal heating oil tank Old Auto Craft Shop Bldg. 45590: 300 gallon used oil tank Motor Pool Bldg. 756: 1,000 gal used oil tank. Motor Pool Bldg. 750: 250 gal used oil tankBldg. 755 used oil tank. Special Purpose Equipment Repair Shop Bldg. 974 1,200 gal used oil tank. Vehicle and weapons repair shop, Bldg. 796 1,000 gal gasoline tankGas Station Bldg. 710 Four 10,000 gallon gas tanks and one 550 gallon used oil tank Jet Fuel spill Byrant Army Airfield and Diesel Fuel Spill Bulk Storage Tanks Flying Club Bldg. 47641 1,000 gallon used oil tankChlorination Bldg. 28004 250 gal leaded gasoline tankByrant Army Airfield Bldg. 47438 Three 25,000 gal JP4 tanks and one 550 gal water/JP4 tankPproperty under the jurisdiction of the U.S. Army transferred to the Joint Base Elmendorf-Richardson (JBER) effective October 1, 2010.

Actions:

Action Date:	9/3/1992
Action:	Report or Workplan Review - Other
DEC Staff:	Robert Weimer
Action Description:	ADEC letter to George Cline President Soil Processing Inc. RE: Soil Processing Inc Treatment Facility Operation Plan for its Mobile Thermal Remediation Unit. The department has completed its review of SPI's Treatment Facility Operation Plan for its Mobile Thermal Remedation Unit, dated August 26, 1992. Based on the information presented, the department is granting an approval of the operation

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

plan for your mobile thermal remediation unit. Future site specific corrective action plans should state that soils will be thermally treated in accordance with SPI's approved Thermal Facility Operations Plan dated August 26, 1992.

Action Date: 9/21/1993
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: A.G. letter (Breck Tostevin) to Tamela J. Tobia OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date: 9/2/2014
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 73728 name: Surface release

Action Date: 9/19/2001
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff commented on workplan for removal, treatment and placement of POL contaminated soils stockpiled outside the landfill. The text states the lowest action level for diesel range organics (DRO) for this site is 230 milligrams per kilogram (mg/kg). The actual level is Method One Category ???A???, which is set at 100 mg/kg for DRO, 50 mg/kg for GRO and 2000 for RRO. The action level set for PetroFlag will have to be lower due to the lower cleanup level for DRO. If the Army were to utilize Method Two migration to groundwater cleanup level of 250 mg/kg for DRO, it would have to include PAHs in the list of parameters being analyzed for at the site.

Action Date: 9/17/1992
Action: Enforcement Agreement or Order
DEC Staff: Ron Klein
Action Description: September 17, 1992 Letter for a Compliance advisory sent via facsimile to Colonel George Vakalis for failure to contain cleanup materials (petroleum contaminated soil) at Fort Richardson's landfill. This letter is to notify the Department of the Army of its continuing failure to properly store, treat, or dispose of contaminated cleanup materials generated during removal of underground storage tanks at Fort Richardson. The advisory identifies specific compliance problems and serves as a reques for the Army to take appropriate steps to bring its contaminated soil management activities in compliance with Alaska State Statutes and Regulations. The advisory provides a final opportunity to the Army to avoid a NOTICE OF VIOLATION. According to department records, we have not received a corrective action plan for the stockpiles of petroleum contaminated soil at the Ft. RIchardson landfill. The Department proposes that Fort Richardson incorporate the corrective actions into

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

the UST compliance agreement referenced in ADEC's September 2, 1992 letter. Failure to adequately address the issues raised in the letter will result in the issuance of a Notice of Violation (NOV) or other possible actions as provided for in state statutes and regulations. 6/8/90 ADEC NOV issued for failure to contain stockpiles of petroleum contaminated soil at the landfill. Army response to NOV on July 2, 1990 was to have remediation scheduled for Spring 1991 and a plan submitted before then to the Department. No plan has been received for corrective action. An inspection of the UST closure at the Post on September 14, 1992 by staff revealed that the Army failed to contain petroleum and PCB contaminated soils at the landfill. Soils were not on adequate liners, properly covered and standing water was observed in and around the stockpiles. DEC requested the following action items be undertaken by the Army:by no later than 10/2/1992, submit a plan for containing the stockpiles of contaminated soil stored at the landfill;by no later than 10/9/92, contain stockpiles of contaminated soil in accordance with a plan approved by the department;by no later than 11/15/92, submit a plan for treatment and/or disposal of contaminated soil stored at the landfill;by no later than 7/1/93, submit a plan for measuring the presence and extent of all secondary contamination that may have affected the soil or groundwater beneath the stockpile areas due to improper storage of cleanup material;by no later than 9/30/93, complete treatment or disposal of all contaminated soil currently stockpiled at the landfill in accordance with a plan approved by the department;by no later than 11/30/93, submit results of the assessment work for soil and groundwater investigation beneath the stockpile areas; and if secondary contamination resulting from improper storage is detected, by not later than January 1, 1994, submit a corrective action plan to cleanup the affected areas. ADEC requests a response to the NOV no later than 10/2/92 outlying actions that will be taken. ADEC proposes that the Post incorporate the corrective actions into the UST compliance agreement referenced in ADEC's 9/2/92 letter.

Action Date: 8/11/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Request to use UST Stockpile Soils from Contract DACA85-93-C-0063 as cover material at HilandRoad Landfill The Department of Environmental Conservation has received a fax copy of your request on August 10, 1995. The additional analyses the Municipality of Anchorage (MOA) is requesting will ensure the soil meets their requirements for cover at the Hiland Road Landfill. Composite soil sampling as mentioned in the MOA letter is not recommended for volatile chlorinated solvents (EPA 8010). The analyses for leachable metals and PCBs may be composited prior to analysis.The Department does not object to soil from the bioremediation project being mixed with clean soil and used as cover material at the landfill. Please provide copies of lab analytical sample results and sample locations from the stockpile prior to transporting the soil. The Department will grant approval once the modifications stated in this letter are accepted by the Army and the sampling results show the soils are acceptable for use as cover at the landfill. This approval is for this specific project only. Please provide copies of the tare reciepts after all soil has been delivered to the landfill in order to close out this site.

Action Date: 8/10/1995

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army letter to ADEC with a copy of a memorandum from the Municipality of Anchorage Solid Waste Services (SWS) which lists their requirements for acceptance of the soils in the Fertech bioremediation pile. Ft. Rich is interested in pursuing the disposal of the soil pile, and is currently establishing a contract through the CORPS that will meet the requirements listed in the attachement. The contractor in question will be responsible for coordinating disposal with the SWS. Ft. Rich would like to obtain ADEC's comments on the requirements listed by SWS prior to establishing this contract. Five, 5-part composite samples be taken from the soil stockpile to ensure the soil meets all SWS contaminated soils restrictions contained in the SWS June 1, 1992, Contaminated Soils and Spill Residue Disposal Policy. The samples will be analyzed for: Organic Halogens, EPA Test protocol 8010; Polychlorinated biphenols, EPA Test protocol 8080; and Toxicity Characteristic Leaching Procedure (TCLP) for the metals lead, arsenic and chromium. The sample results and a diagram of the stockpile indicating where and how the samples were taken will be submitted for SWS review and final approval. SWS approval must be granted before these soils will be accepted at the Anchorage Regional Landfill (ARL).

Action Date: 7/5/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Army sent letter to Roberts in response to NOV 90-2-1-1-143-4 dated June 8, 1990 for the landfill. All contaminated soil will be temporarily stored near the UST excavation zone until the excavation has stopped. Then the soil will be moved to the Fort Richardson landfill. Contaminated soil will be stored as follows:POL contaminated soil storage pits-prepare a separate POL contaminated soil storage for each existing UST site having POL contaminated soil. Prepare each pit at the landfill at a specific location designated by the government inspector. The government inspector will assign to each pit an identification number corresponding to an existing UST site. POL contaminated soils will be placed from each existing UST site into its corresponding POL contaminated soil storage pit. All soil from each UST site will be segregated in their dedicated pits. Each pit and berm will be covered with 6 mil visqueen following placement of the contaminated soil. Corps of Engineers is developing a sample plan for each storage cell of UST contaminated soil at the landfill by July 1990. Sampling of the piles is scheduled for September 1990. Sampling analysis QA/QC plan submitted for addressing any surface, subsurface or groundwater contamination from the soil piles. Work is scheduled to begin in July 1990. 4 soil piles from 1989 excavation will have a contract prepared to repair berms around them recover the piles with polyethylene, and remove surface contamination around the piles. Ammo Area A UST contaminated soil pile has been regraded and a new bermed and lined area for the soil is being constructed. After all soil samples at the landfill are sampled, the Corps will provide a work plan to include alternative remediation methods for ADEC review by December 1990. Remediation of the soil is scheduled for spring 1991.

Action Date: 7/2/1991
Action: Update or Other Action

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

DEC Staff: Jennifer Roberts
Action Description: US Army Environmental Hygiene Agency GW Quality Survey No. 38-26-K986-91 Evaluation of Solid Waste Management Units Fort Richardson AK 24 June to 2 July 1991. This survey was performed to evaluate and update the Solid Waste Management Unit (SWMU) information contained in Fort Richardson's RCRA Facility Assessment (RFA); to determine which SWMU's require further sampling, investigation, or corrective action; and to identify and evaluate any SWMU's not previously documented. SWMU's Not Previouslv Identified in the RFA. The following SWMU was not in existence or were not discovered during the RFA. This site should be formally added to the SWMU list, and supporting documentation regarding ongoing work or justification for no further action should be provided to the regulator prior to issuance of the permit. TABLE 2. SWMU'S NOT PREVIOUSLY IDENTIFIED IN THE RFA: SWMU 121 Contaminated Soil Piles. sources on the installation, including soil excavated during UST removal. The piles are maintained in accordance with ADEC current guidance;they are covered with impervious sheeting and weighted with tires pending proper disposal. Disposal of the soil will be accomplished after completion of sampling and analysis asrequired by ADEC. The Fort Richardson Quality Assurance Program Plan (QAPP) for Site Assessment of Underground Storage Tank Sites details the procedures of samplecollection, field screening, and transport of contaminated soil to the landfill area. Soil considered contaminated is that for which a photoionization detector indicates elevated levels of the suspected contaminants. A contractor to the U.S. Army Corps of Engineers, Alaska District, has developed a Workplan for the Remediation of Contaminated Soil Stockpiles, which addresses sites at Forts Wainwright and Greely as well. This SWMU should be cdnsidered as under investigation.

Action Date: 7/14/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff provided comments to Jane Smith regarding the Draft Technical Specifications for Fort Richardson Soil Stockpile Remediation dated June 1992. Staff requested submittal of the contractor chemical quality control plan, plan of equipment and material decon procedures, environmental protection plan, as built drawings, transportation plan, waste shipment records, thermal treatment operations plan, sampling and analysis plan, and quality assurance project plan. Staff requested that the untreated soil being transported to the staging area and the treated soil that has not been certified as remediated, be stored under the guidelines for long term storage greater than 180 days-2 years. Samples collected for certification of remediation shall be collected by a qualified person in accordance with an approved QAPP on file with the department.In addition to the CCQCP, the department is requiring that a quality assurance project plan (QAPP) be submitted for its review and comment since the Army's contract requirements may differ from the department's in regards to QAPPs

Action Date: 6/8/1990
Action: Enforcement Agreement or Order
DEC Staff: John Halverson
Action Description: NOV to Colonel Edwin Ruff Sub: Notice of Violation/Request for corrective action Contaminated Soil Storage and Disposal, Spill

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

90-2-1-1-143-4. On May 23, 1990 Officer (now referred to as environmental program specialists) John Halverson with the Alaska Department of Environmental Conservation, inspected the contaminated soil storage locations at Fort Richardson. The inspection revealed improper storage techniques and additional soil contamination. Contaminated soils that were stockpiled in 1989 as a result of remedial action following tank removals are no longer properly contained and appear to be contributing to soil contamination in the landfill area. The polyethylene cover is not covering the soils. It is apparent that some type of oil or petroleum product has been disposed of on the surface of the ground in front of the stockpiles. Further investigation revealed a large area of contaminated soils in the landfill area that are not contained at all. It appears as though soil removed during remedial action in the ammo area (spill 90-20-1-1-096-2) during April 1990, has been dumped in this area on a liner that was not properly laid out, furthermore, the soils are not covered. The Department views these as serious matters. Improper handling of contaminated materials is resulting in relocating a problem from one area to another. Soil storage in the landfill area was to be a temporary solution to dealing with contaminated soils until a treatment or disposal method was approved. The ADEC was informed that the Department of the Army was working with the Corps of Engineers to develop a soil remedation plan. The ADEC needs to know the status of the treatment or disposal plans.These pollution spills constitute violations of AS 46.03.710 (Pollution of the Air, Land, Subsurface Land or Water of the State Prohibiited), and AS 46.03.740 (Discharge of Petroleum or Petroluem Products without a Permit Prohibited) and associated regulations. According to AS 46.04.020 (a) (removal of Oil Discharges), a person causing or permitting the discharge of oil shall immediately contain and cleanup the discharge. According to AS 46.04.020 (b) the containment and cleanup activities must be carried out in a manner approved by the Department. All work plans must be approved by the Department prior to any further sampling, clean-up or disposal activities. All work plans must be accompanied by a Quality Assurance/Quality Control Plan. The Department requests submittal of the following: 1. A soil storage plan that will provide for complete containment of all contaminated materials that have been or will be accumulated during corrective actions at LUST and other petroleum contaminated sites. The plan must include the following:a. Storage of soil contaminated by anything other than unused clean petroleum products (i.e. waste oil, chlorinated solvents, PCBs) must be handled under a separate storage plan and must be contained separately from the remainder of the soils. b. Develop a tracking method to record the content of specific soil storage cells including the origin, level, and type of contamination and date of initial storage. Please submit a written report to this office, withing three (3) working days from your receipt of this notice, outlining how you intend to comply with the items above.The Department specifically reserves the right to require additional assessment or cleanup activities as information is developed during the course of the site evaluation and cleanup. The Department specifically reserves the right to take further action as provided for in Title 46 of the Alaska Statutes. Additionally, the Department reserves all its rights to pursue any and all other responsible parties involved in this incident.

Action Date: 6/6/2012

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Project Management Plan received which includes FTRS-40, UST SOil Piles (CRP). Performance Objective: Site Closure.Performance Indicators&183; Complete an approved Characterization/Cleanup Plan by May 2013&183; Coordinate, mobilize, and execute characterization/cleanup by August 2013&183; Complete an approved Characterization/Cleanup Report by January 2014&183; Achieve SC in 2014Potential Risk: Soil contamination extends beyond 5 feet bgs. Contaminant concentrations are greater than anticipated.Risk mitigation: Boring depths will be extended based on field screening results (estimate to 25 feet bgs). Excavate soil as needed (estimate 200 yd3) to achieve SC.Date of achieving performance objective: 1st quarter 2013.Planned approach: Prepare an approved Characterization Workplan and coordinate, mobilize and execute Characterization by installing and sampling ten soil borings. Use HRC to evaluate SC based on risk to future residential receptors for all pathways. Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare and submit a request for Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.
Action Date:	6/3/1994
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Letter from ADEC to Major Kevin Gardner Re: Bio-cell Construction and Operation Site Request for New location on Ft. Richardson UST soil stockpiles Contract No. DACA85-93-C-0063. The ADEC has received your letter outlining the change of location for the above project to Bldg. 932 and east of the rail loading dock. The ADEC approves the location as submitted and looks forward to reviewing the corrective action report due no later than December 30, 1994.
Action Date:	6/3/1990
Action:	Site Visit
DEC Staff:	John Halverson
Action Description:	Solid Waste Disposal Site Inspection Report by John Halverson 1:30 p.m. to 2:30 p.m. Permit 8421-BA0005-Exp. 1) Contaminated soils from remedial action at spill sites stored and appears to be contributing to soil contamination in the landfill area. 2) Free petroleum product on ground in front of stockpiled contaminated soils appears to have been dumped illegally. 3) Access to landfill area is not restricted. Received by Lori L. Lay. 6/3/1990 See NOV dated June 8, 1990.
Action Date:	6/22/2012
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC comments on the draft project management plan.Page 2-31The text states: ???The WPs will be submitted in the initial phases of the project for Air Force and regulatory review and concurrence according to the schedule outlined in the IMS. If regulatory agencies elect not to review/approve documents, approval will be sought through the Secretary of the Air Force/Installations and Environment (SAF/IE) to proceed with execution of the plan activities. The WESTON Team understands that a procedure has been established for this situation, and that the Air Force controls this process.???Failure to obtain work plan approval before implementing site work described above is

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

considered a violation of Alaska regulations and may result in field work not being approved or additional work being required and may subject responsible parties and/or contractors to a Notice of Violation (NOV). 7.1.2Document Preparation and Version ControlDraft and Draft Final Versions of documentsAgency review of draft/draft-final version of documents are subject to those review time frames for primary and secondary documents and conditions as specifically identified in the respective Federal Facility Agreements for JBER or a mutually agreed upon schedule agreed to in writing by the three agencies??? remedial project managers. For petroleum sites (aka Two Party sites) overseen by ADEC refer to the following:ADEC will strive to complete plan reviews and respond to JBER within thirty (30) days after receipt of plans, although this is not always possible nor is it a requirement. At times, JBER requested expedited plan reviews are feasible based on project manager work load, adequate up-front planning, and contractors providing complete, well written plans. However, if significant work plan revisions are required, additional review and comment resolution time will be needed. To facilitate successful project implementation, it is recommended that DoD project managers and contracting staff:???Coordinate schedules with ADEC in advance and throughout projects.???Include ADEC in project planning meetings (DQO meetings, UFP QAPP development meetings, Triad and other Technical Project Planning team meetings, etc.). ???Plan and maintain project schedules that include a minimum of forty-five (45) days for reviewing draft work plans, comment resolution, any necessary revisions to the draft-final version and a final review and approval.See also the Fort Richardson 1994 Environmental Restoration Agreement ???Review and Comment on Documents??? which states at Section 9. ???All draft final work plans for field work, site assessments or remedial actions (both interim and final) must be submitted to ADEC a minimum of 45 days prior to the start of field work or construction. Site Assessment and Remedial Action draft reports must be submitted to ADEC within 120 days after completion of field work.??????Review contractor planning documents prior to submission to ADEC to ensure compliance with state and federal regulations consistency with agreements made during project planning meetings.Independent QA Oversight on Performance Based ContractsThe site cleanup rules require that ???collection, interpretation, and reporting of data, and the required sampling and analysis is conducted or supervised by a qualified, impartial third party???. Depending upon the specific terms in a performance based contract, a contractor may no longer be considered an impartial third party with respect to collecting, interpreting and reporting data. This should be taken into consideration when preparing scopes of work. ADEC strongly recommends the Air Force provide an on-site Quality Assurance Representative or a third party QA oversight contractor to monitor fieldwork for consistency with approved plans and contract requirements.

Action Date:	6/18/1997
Action:	Offsite Soil or Groundwater Disposal Approved
DEC Staff:	Louis Howard
Action Description:	ADEC approval granted for Project 55016-004.00 Task 1H to transport and thermal treatment of 6,000 tons of petroleum contaminated soil currently stockpiled on Fort Richardson. Each stockpile will be transported (offsite) separately (using covered loads) to Anchorage Soil Recycling (ASR) and thermally treated. Each stockpile will be

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stored and treated separately. Confirmation soil samples will be collected from the treated soil in accordance with ASR's permit. When the cleanup requirements have been met, EMCON will request ADEC's approval to transport the soil back to Fort Richardson.

Action Date: 6/13/2014
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Cleanup complete determination decisionSite Name and LocationBER-Ft. Rich Landfill UST Soil Piles CF040northeastern quadrant of Circle Loop on JBER-R, south of the roadJBER, Alaska 99505Regulatory Authority for Determination: 18 AAC 75 Site Description and BackgroundThe site consists of the locations of three former stockpiles: A, B, and C. Stockpile A consisted of soil generated during demolition of Building 760. Stockpile B consisted of soil from remedial activities associated with petroleum-contaminated soil at Buildings 986 and 987, removal of a UST at Building 1175, a diesel spill at Building 732, and various small spills resulting from vehicle accidents. Stockpile C consisted of soil from an excavation of underground piping at Building 39-600 and parking lot cleanups. Currently, the location of Stockpile A is fenced (there is not currently a stockpile stored at the site).Contaminants of ConcernDiesel Range Organics (DRO)Cleanup LevelsThe cleanup level for soils at CF040 containing DRO contamination is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathway within the 0 to 15??? interval below ground surface (bgs). The estimated rounded cumulative cancer risk at CF040 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (3 x 10-6 and 1 x 10-5 respectively) is below the regulatory risk standard of 1 x 10-5 for petroleum hydrocarbons. The estimated cumulative noncancer HI at CF040 for the current industrial and hypothetical residential exposure scenarios, across all exposure pathways, (0.03 and 0.10 respectively) is below the regulatory risk standard of 1. CF040 meets the ADEC risk criteria [18 AAC 75.325(g)] for petroleum hydrocarbons. The risk posed by the DRO aromatic and aliphatic surrogate fractions meets the risk standard for each exposure pathway, assuming a residential land use scenario.An ecoscoping form was completed for CF040 and no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed and that the CF040 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that CF040 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for CF040 in the Contaminated Sites Database.

Action Date: 6/1/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army letter from Colonel Robert Wrentmore, Director of Public Works to ADEC. Due to local community concern over planned off-post contaminated soil pile remediation, Public Works agreed to allow the

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remediation to take place on-post. The remediation will occur on approximately 3 acres of land in the loop area of Fort Richardson in the vicinity of Building 932, to the east of the rail loading dock. Water and power hook-ups available to accomplish the biological remediation. The process will entail establishing a rectangular bermed, and lined bio-cell treatment plot approximately 150' by 300'. The soil will be treated over a period of approximately 3-4 months. The bio-cell itself will be fenced to provide additional security and safety.

Action Date: 5/23/1990
Action: Site Visit
DEC Staff: John Halverson
Action Description: Henry Friedman (ADEC) conducted an inspection on the landfill at the Post. Only active disposal cell was the human waste pit. A large pile of oily soil, covered with visqueen was located near the main entrance. Oil soaked sorbent pads and stained soil was located at the edge of the pile. All other old disposal areas were inactive and covered.

Action Date: 5/13/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Army letter to ADEC re: Ft. Rich stockpiles and Treatment Contract DACA85-93-C-00063 letter Dated March 13, 1994. In the General Comments section it states: ADEC denies approval of the request to relocate the soils from Ft. Richardson to an off-site location for purposes of bioremediation.. Terms of our contract with FERtech call for the contractor to remove the soils off-site location, treat them, and return to the original site. We did not anticipate being required to treat the soils on Ft. Richardson and we are not prepared to do so.Please direct my attention to the authorizing authority or statutory provision so that we may determine what we should do to meet your criteria for finding an acceptable off-site location for treating the soils. Signed Toni B. London Assistant Distric Counsel.

Action Date: 5/10/1994
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Jennifer Roberts sent letter to Dwaine Bankston (FERtech Enviro Systems, Inc.). RE: FERtech contract DACA85093-C-0063 Bioremediation of UST Soil Stockpiles. The proposed bioremediation is regulated by 18 AAC 78 for UST releases and 18 AAC 75 for non-UST releases. Both of these regulations require prior department approval for a remedial action to proceed. Due to the size of the proposed action at Lake Otis and 63rd Avenue, which includes round trip transport of an estimated 6,000 cubic yards of contaminated soil, the department requested that the project be presented to the local community for comments. The project was presented to the Abbot Loop Community Council on April 14, 1994 by Dan Graham. Since that time, the department has received numerous public comments and correspondence indicating widespread commuity disapproval for locating the biocell at Lake Otis and 63rd Avenue. One of the community's major points is that Ft. Richardson should provide the land on its facility and not transport the contaminated soil off Post to another location. Therefor, due to the strong public concern for the project, the department does not approve the work plan at this location. If the

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project location changes to another area, the department will request that the local community again be notified of the project. Also for any proposed location, the department's approval will take into account local community comments and concerns. We advise you to examine the feasibility of on-Post treatment options which should reduce transportation costs, be more cost effective for your client.

Action Date: 5/1/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft SC report.3.2Soil SamplingThe text states: ???Table 3-2 presents a summary of the soil samples collected during the 2013 investigation and submitted to Applied Science Laboratory (ASL), Inc...???Please state here and elsewhere as applicable that Applied Sciences Laboratory (ASL) is the CH2M Hill-Corvalis laboratory, UST-079.The text states: ???Four types of field quality control (QC) samples were collected to meet data quality standards. Two FDs, one matrix spike/matrix spike duplicate (MS/MSD), two equipment blanks (EBs), and one trip blank (TB) were submitted for analysis at CF040. While the field QC samples for CF040 alone do not meet the required frequency for FDs according to the DQE, the work at this site was performed as part of a larger program and overall.???ADEC disagrees. The site specific UFP-QAPP field quality controls as agreed to in the final work plan UFP-QAPP for each site shall be applicable. The fact that the work is being performed as part of a larger program has no bearing on complying with QC requirements for a specific site???s QA requirements. Restate text as follows: ???The field QC samples for CF040 alone do not meet the required frequency for FDs according to the DQE,...??? Delete discussion to satisfying the requirements established in the Basewide UFP-QAPP: While the field QC samples for CF040 alone do not meet the required frequency for FDs according to the DQE, the work at this site was performed as part of a larger program and overall. 4.4.3The text states: ???All potentially complete ecological exposure pathways are considered insignificant because of the small size of the site, the location within the Base, and the presence of more optimal habitat nearby.???See comment 4 regarding an ecological scoping evaluation (i.e. see Appendix C Ecoscoping Form from ADEC???s January 2012 Ecoscoping Guidance).6.1ConclusionsLast BulletThe text states: ???No potential risks to the environment/ecological receptors were observed, and potentially complete ecological exposure pathways are considered insignificant (less than 0.5 acre).???The text shall state: ???No potential risks to ecological receptors were observed, and potentially complete ecological exposure pathways are considered insignificant (less than 0.5 acre). See completed ecoscoping form on page X-X of Appendix X.???ADEC agrees with the recommendations for CF040 and a written ???cleanup complete??? determination will be made upon satisfactory finalization of this report in accordance with 18 AAC 75.380(d). This decision will be subject to a potential future ADEC determination that conditions at a site are no longer protective of human health, safety, or welfare, or of the environment per 18 AAC 75.380 (d)(2) which require additional actions to meet the requirements of the site cleanup rules. Table 5-5Modeled Contaminated Soil Impacts to GroundwaterThe table lists two modeled concentrations for ???pore-water??? and ???groundwater???. Be aware that 18 AAC 75 does not distinguish between pore water and groundwater cleanup levels. Groundwater cleanup levels must comply with Table C absent

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any determination by ADEC under 18 AAC 75.350 that groundwater is not a drinking water source or alternative cleanup level consideration by ADEC under Method Four. 18 AAC 75.990(46) states:???groundwater??? means(A) water in the saturated zone, for purposes of evaluating whether thegroundwater is a drinking water source under 18 AAC 75.350; or(B) water beneath the surface of the soil, for purposes of evaluating whether the water will act as a transport medium for hazardous substance migration18 AAC 78.990(71) states: groundwater has the meaning given in 18 AAC 75.990.

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 3/9/1994
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: Letter from Army sent on compliance advisory letter dated 2/9/1994. The Army notes the concern of failure to meet certain time deadlines specified in the UST compliance agreement could jeopardize our excellent working relationship which we both worked on to achieve. Due to limited staffing we are having difficulty meeting the agreed upon deadlines. We wish to set up a meeting with your Contaminated Sites Office to discuss future deadlines. Tank 26 at Building 786 Driver's Training, Tank 57 at Bldg. 39600, Site Summit arescheduled for removal on or before August 31, 1994. Please find attached the Corrective Action Report prepared by the CORPS for soil piles 3B, 4, 5, 9, 10, 11, 12, and 13 that were thermally treated by Little Susitna (Co.). The CAR for the soil piles treated by Oil Spill Consultants is also attached.

Action Date: 3/6/1990
Action: Update or Other Action
DEC Staff: Ron Klein
Action Description: Letter from Army to Ron Klein (ADEC) requesting approval for disposal of hazardous substances (18 AAC 75.130). 23,300 cubic yards of soil which is contaminated with gasoline, diesel, fuel oil and used oil. The contaminated soil is from the excavation of USTs and from previous spill sites. Fort Richardson is hiring a contracting firm to dispose of the contaminated soil by thermal remediation. Also, we will require the contractor to obtain all necessary permits to operate and treat this soil on site to under 100 parts per million total petroleum hydrocarbons.The treated soil will be stored at the Fort Richardson Landfill until it can be used. The treated soil will only be used as backfill in areas of previous contamination such as UST sites.

Action Date: 3/5/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC letter to Sam Swearingen re: sampling and analysis plan for the soil pile remediation dated November 1995. ADEC received a copy of the referenced workplan on Feb. 12, 1996. If the Army wishes to use the old methods of analyses, then ADEC requests the Army seek a waiver on use of the new methods listed in Table G of 18 AAC 78 from

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the Underground Storage Tank Program. Be aware that method 8021 is not an ADEC recognized method for analysis for total BTEX constituents derived from Leaking Underground Storage Tanks (LUSTs). Without a waiver from the UST program, ADEC will require the methods listed in Table G be used for this upcoming and any other future sampling event.

Action Date: 3/4/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: General Comments for JBER-E and JBER-R sitesADEC requests JBER provide the following location information for each site will be provided for in the Executive Summary text:Please provide latitude and longitude coordinates for the site location in decimal degree format with a precision of six decimal places (dd.dddddd). Also include the following:1. Date of collection,2. Method of collection (i.e. GPS, hardcopy map, air photo),3. Scale of the map used to acquire coordinates (if applicable),4. Estimated accuracy and associated unit of measure,5.Reference point for which the coordinates were established (i.e. center of property, entrance gate),6.Horizontal datum (NAD 1983 is strongly preferred) and7. Comments for additional information regarding acquistion of coordinates (if necessary).Executive Summary2nd ParagraphThe text states: ???If ADEC Method 2 criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method 3 will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated.??? It is ADEC???s position that ICs would be applied at JBER sites when:??? The groundwater under or downgradient of a site was contaminated with POL constituents at concentrations exceeding risk criteria or MCLs; or??? POL contaminants in the soil were above the maximum allowable concentrations [MAC] given in Table B2 of 18 AAC 75 or at concentrations exceeding risk criteria.??? ICs also needed if direct contact or inhalation risks exceed residential land use risk-based levels. Sites should be suitable for UU/UL for cleanup complete without ICs (June 14, 2012 meeting minutes ???Use of Hydrocarbon Risk Calculator??? with AFCEE, JBER, PBC and ADEC).If soil that was above the MAC were excavated, the excavation confirmation sample concentrations could be used to replace the higher concentration in the removed soil and the statistics for the site could be rerun. The ProUCL checks for outliers and the Q-Q plot should be submitted with the 95 UCL calculations.Vadose zone soils shall not exceed MAC for petroleum contamination for soil from 0 ??? 15??? bgs (i.e. direct contact for BTEX, PAHs and ingestion for DRO, GRO, RRO) regardless of HRC calculated risk levels. Treatment or excavations deeper than 15??? bgs may be warranted on a site-specific basis to prevent the soil from acting as a continuing source of groundwater contamination. In accordance with 18 AAC 75. 325(i) ADEC will require JBER to notify ADEC prior to moving any soil [or groundwater] from a site (even a closed site). JBER acknowledges this requirement but does not consider it to be an IC (June 14, 2012 HRC

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meeting minutes with JBER, AFCEE, ADEC, WESTON, CH2M Hill). Movement or use of contaminated soil in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. In addition, sites with existing groundwater contamination above Table C cleanup levels will require that migration to groundwater cleanup levels be used for soil and ICs will be required. Once groundwater is below Table C for a period of time (per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, and 6 September 2003)??? two rounds annual groundwater monitoring), the maximum allowable levels may become the cleanup levels as determined by ADEC on a case by case basis.Executive Summary Page ES-2Site-Specific Proposed Work3rd BulletADEC will require JBER to report all VOCs from method 8260C not just BTEX petroleum related analytes.

Action Date: 3/25/2010
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: Letter from Lt. General Dana T. Atkins, Commander, Eleventh Air Force to EPA Region 10 Deb Yamamoto Environmental Cleanup Office and ADEC, Jennifer Roberts Fed. Fac. Environmental Restoration Program. This letter serves as formal notice to the Environmental Protection Agency Region 10 and the State of Alaska that on 1 October 2010, the U.S. Air Force will assume the U.S. Army's obligations under the 1994 Federal Facility Agreement for Fort Richardson (Docket No. 1093-05-02-120) and any amendments thereto (hereinafter collectively referred to as the FFA).The Air Force assumes these authorities and obligations as the Army's successor at FortRichardson in accordance with subsection 2.1(i) of the FFA.This is a transfer of responsibility for carrying out the terms and responsibilities of the FFA;it is not a transfer of property covered by Section XXXII of the FFA or Section 120(h) of theComprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. &167;9620(h)). This transfer of responsibility is in accordance with the Base Realignment and Closure Act of 2005 and the Joint Base Elmendorf-Richardson Installation Support Memorandum of Agreement between the Army and the Air Force, dated 9 October 2009.On and after 1 October 2010, the Air Force and, to the extent necessary, the Department ofDefense will fund all activities required by and subject to the FFA.The following administrative changes shall be effective 1 October 2010:1. Para 8.11 - The Air Force representative on the Technical Review Committee (currentlyreferred to as Community Environmental Board) shall be the Joint Base Elmendorf-Richardson(JBER) Remedial Project Manager (RPM).2. Para. 8.13 - The chair of the Technical Review Committee (currently referred to as Community Environmental Board) shall be the Vice Commander, 673rd Air Base Wing. 3. Para 9.1 - The JBER RPM shall be Mr. Gary Fink, who is currently the Chief of the Restoration Section at Elmendorf Air Force Base. Mr. Fink's contact information is:3 CES/CEANR 6326 Arctic Warrior Drive Elmendorf AFB AK 99506 Phone number is (907) 552-28754. Para. 14.2 - The Air Force point of contact shall be Mr. Fink. Please see the precedingparagraph for his contact information.5. Para 21.5 - The Air Force's designated member on the Dispute Resolution Committee shall be the Director, Air Force Center for Engineering and the Environment.6. Para 21.7 - The Air Force's representative on the Senior Executive Committee shall be the Deputy Assistant Secretary of the Air Force (Energy, Environment, Safety, and Occupational Health).7. Para 27.3 - The source of funds

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for activities required by the FFA shall be funds authorized and appropriated annually by Congress under the Environmental Restoration, Air Force (ER,AF) appropriation in the Department of Defense Appropriations Act.8. Attachment 1, Para 3.8: Records of decision shall be signed by the following Air Force designee: Commander, 673rd Air Base Wing.If you have any questions about this matter, please contact Mr. Gary Fink at (907) 552-2875.Signed Dana T. Atkins Lieutenant General, USAF, Commander

Action Date: 3/23/1992
Action: Report or Workplan Review - Other
DEC Staff: Jennifer Roberts
Action Description: ADEC letter to Army RE: Contaminated Stockpiles report for Forts Richardson, Wainwright, and Greely Alaska. Soil in FR-SP 14 and the subsequent stockpile created by FR-SP 15 are improperly stored. The soil layer is neither on nor covered by a proper liner. Visqueen is an inadequate liner material for stockpiling soils and an appropriate liner needs to be used to prevent runoff and infiltration of the POL contaminants contained in the stockpiles (18 AAC 60). A pre-approved work plan, referenced in 18 AAC 75.130 is needed for stockpiles that have been generated more than 180 days ago. Soil stockpile 14 at Fort Richardson was not sampled (page 3-2). This stockpile was covered partially by SP 15 and by an unnumbered, unsampled stockpile which had no liner. Where is this unnumbered stockpile in reference to FR-SP 14 or FR-SP 157 It was not indicated on Figure 2-6 on page 2-20 of the report. SP 14 and the unnumbered stockpile must be characterized in order to determine acceptable treatment and/or disposal methods.Stockpiles 2 and 16 were not included in the remedial alternative analysis because they had elevated levels of PCBs were beyond the scope of work given to E & E (5.1.2 page 5-5). Workplans need to be submitted to the Department addressing these stockpiles on how the two stockpiles will be remediated or disposed of.Fort Richardson SP 1, SP 5, SP 12, SP 15 matrix scores need to be corrected to reflect a score of 28 which would change the cleanup level to Level B. The factor that changed is the Mean Annual Precipitation of 14.7 which should be changed to 15.9. Using the climatic data for Elmendorf AFB, Alaska, which is found in the February 1992 RI/FS Management Plan, the mean annual precipitation for the period of 1941 through 1984 is 15.9 The reference cited in themanagement plan is Alaska Climate Summaries Alaska Climate Center, Anchorage, Alaska. Leslie, L.D., 1986. SUMMARY1) Improperly stockpiled soils need to be adequately contained as soon as practical. DEC must be notified on when compliance of the stockpiled soils will be obtained. A DEC inspection will need to take place to ensure that proper waste management are done in accordance with the applicable statutes, regulations, and guidance.2) Stockpile 14 and the unnumbered stockpile needs to be sampled and, characterized. In addition the unnumbered stockpile needs to be quantified, its location mapped for future reference and a workplan for appropriate treatment and/or disposal.3) Matrix scores for stockpiles numbered 1, 5, 12, 15 need to be changed to 28 based on the mean annual precipitation obtained from the February 1992 EAFB RI/FS Management Plan.

Action Date: 3/2/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

Action Description: Letter to Dan Owens ARMY CORPS re: Work Plan and Equipment and Materials Decontamination Plan for UST stockpile remediation Contract No. DACA85-93-C-0063. The text states that POL contaminated soils will be bioremediated to the designated cleanup levels as stated in the bid document. Please elaborate as to which cleanup levels are to be used as a standard for successful bioremediation. The text states soil samples from the contaminated stockpiles will be constructed into a bench scale biocell mound to be operated for six weeks. Please ensure that the soils are indeed contaminated with high levels of petroleum to prove the success of bioremedation. Please provide ADEC a copy of the SAP for review. If wastewater discharge is being considered for the project, then a wastewater discharge permit application must be submitted to ADEC for review (Non-domestic Wastewater: 18 AAC 72.500 and 18 AAC 72.600). Please provide ADEC on the lab method/analysis used for each parameter being proposed for the project.

Action Date: 3/18/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Letter to Dan Owens ARMY CORPS re: Bio-cell construction and operation site request for Ft. Richardson UST Soil Stockpiles contract DACA85-93-C-0063. Staff received the document for review on March 11, 1994. Text states POL contaminated soils are to be bioremediated at a site located at East 63rd Street and Lake Otis Blvd. ADEC denies approval of the request to relocated the soils from Fort Richardson (landfill site) to an off-site location for purposes of bioremediation. Due to the nature of the material and the future listing of the Garrison on the National Priorities Listing (NPL), the required location of the stockpiled soils is on Post. Please provide a detailed description (site map at one inch to the mile scale, well surveys, and depth to groundwater as well as gradient) for the selected site on Post for the bio-cells. Text states six-inch layer of sand to be spread on liner for protection. ADEC requests twelve inches of sand above the liner for protecting the liner from heavy equipment damage, breaches occurring from loading and unloading activities or failure of the seams holding the liner together. Provide information on the procedures of testing the seams of the liner and if the liner will be heat seamed in the field or at the manufacturing facility.

Action Date: 3/17/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff received the draft SC report for review and comment. Petroleum hydrocarbon results were detected above the project screening levels for DRO in twosamples.Boring CF040-SB15 within Stockpile B, 0 to 5 feet bgs at 523 mg/kg and Boring CF040-SB09 within Stockpile A, 5 to 10 feet bgs at 1,320 J mg/kg.Although seven PAH compounds were detected (1-methylnaphthalene, 2-methylnaphthalene,benzo(a)pyrene, benzo(g,h,i)perylene, fluoranthene, phenanthrene, and pyrene), all were wellbelow project screening levelsNone of the detected VOCs were above project screening levels.The following conclusions were made regarding CF040:DRO and metals were detected in soil at concentrations above project screening levels. However, metals concentrations were below JBER background levels, with the exception of molybdenum at one location which was slightly above

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

background.Molybdenum was detected at a concentration of 16.2 mg/kg in one soil sample from Stockpile A, which is just above the background concentration range (up to 15 mg/kg). There is no historical evidence that soils or wastes containing molybdenum were disposed of at the site. Therefore, the concentration of molybdenum at CF040-SB08 represents background, and was not included in the human health risk assessment. At Stockpile A, the soil source area (defined as the three-dimensional soil volume with DROconcentrations greater than 250 mg/kg) covers an area approximately 20 by 20 feet, fromapproximately 5 to 10 feet bgs vertically. Total volume is approximately 2,000 cubic feet(74 cubic yards).At Stockpile B, the soil source area covers an area approximately 14 by 18 feet, fromapproximately 0 to 5 feet bgs vertically. Total volume is approximately 1,260 cubic feet(47 cubic yards).Groundwater was not encountered during the investigation because of the shallow extent ofcontamination. The vertical extent of soil contamination was confirmed by the collection andanalysis of two soil samples beneath the observed contamination. Based on information fromnearby monitoring well AP-3221 (approximately 1,000 feet from CF040), depth togroundwater is approximately 160 feet bgs.Cumulative carcinogenic risk and noncarcinogenic HI estimates for the residential scenariodo not exceed the regulatory risk standards.The site meets the ADEC risk criteria for bulk hydrocarbons.No potential risks to the environment/ecological receptors were observed, and petroleumhydrocarbon contamination in soil is considered insignificant (less than 0.5 acre).The following are recommended for CF040:No further investigation or remediation of soil or groundwater.???Cleanup Complete without ICs??? designation from ADEC because the site meets the criteria established for site closure (ADEC, 2012a).

Action Date: 3/14/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from D. Graham consultant to FERTECH regarding contaminants of concern and the source of the proposed materials for bioremediation submitted to ADEC. Estimated total stockpiled cubic yards from twenty-two sources is estimated to be 6, 754 cy. Although the stockpiles themselves have not been sampled, soil samples from the excavations were chemically analyzed. Vet Clinic Bldg. 47811: 775 gal heating oil tank DRO 8100M 262 mg/kg to 8,989.5 mg/kg.Old Auto Craft Shop Bldg. 45590: 300 gallon used oil tank TRPH 418.1, DRO 8100M, BTEX 8020, PCBs 8080, arsenic, cadmium, and chromium were also analyzed. DRO, BTEX, PCBs were not detected. TRPH levels ranged from 480 mg/kg to 4,600 mg/kg. Levels of metals were within typical ranges for Alaskan soil. Motor Pool Bldg. 756: 1,000 gal used oil tank. TRPH, GRO, DRO, BTEX, PCBs and metals were analyzed. DRO, GRO, PCBs were not detected. TRPH levels ranged from 3,320 mg/kg to 5,100 mg/kg. Benzene was present in all samples from 3.1 mg/kg to 11.7 mg/kg. Metals were within amounts found in Alaskan soil.Motor Pool Bldg. 750: 250 gal used oil tank, TRPH, DRO, GRO, BTEX, PCBs and metals were analyzed. DRO, GRO, BTEX and PCBs were not detected. TRPH ranged from 400 mg/kg to 29,000 mg/kg. Metals were within amounts found in Alaskan soil.Bldg. 755 used oil tank. TRPH, DRO, GRO, BTEX, PCBs and metals analyzed for. TRPH was the only contaminant ranging from 378 mg/kg to 1,925 mg/kg. Highest lead concentrations was 82.6 mg/kg. Special Purpose Equipment Repair Shop Bldg. 974 1,200 gal used

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oil tank. TRPH, GRO, DRO, BTEX, PCBs and metals analyzed for. DRO, GRO, PCBs were not detected. Benzene was not detected, however total BTEX levels up to nearly 60 mg/kg were detected. TRPH ranged from 752 mg/kg to 6,350 mg/kg. Metals were within amounts found in Alaskan soil.Vehicle and weapons repair shop, Bldg. 796 1,000 gal gasoline tank, 1,000 gal diesel tank removed. TRPH, DRO, GRO, BTEX, PCBs, metals were analyzed for. No PCBs were detected. Benzene was detected at levels from 0.6 mg/kg to 2.6 mg/kg. Total BTEX levels ranged from 4 mg/kg to 24.4 mg/kg. DRO was detected only in one sample at almost 2,100 mg/kg. GRO was reported in three samples from 101.5 mg/kg to 458.7 mg/kg and TRPH was found in every sample from 826 mg/kg to 5,811 mg/kg. Metals were within amounts found in Alaskan soil.Gas Station Bldg. 710 Four 10,000 gallon gas tanks and one 550 gallon used oil tank removed. GRO, BTEX were analyzed for. Up to 53 mg/kg benzene, 6,129 mg/kg BTEX, and 9,400 mg/kg GRO were detected from the gas tank excavations. TRPH and VOCs were analyzed at the used oil tank excavation. No TRPH was detected and Tetrachloroethene was found at 0.033 mg/kg. Jet Fuel spill Byrant Army Airfield and Diesel Fuel Spill Bulk Storage Tanks have unknown quantities and unknown levels of petroleum contamination. Flying Club Bldg. 47641 1,000 gallon used oil tank, TRPH, DRO, GRO, BTEX, and metals analyzed for. TRPH was the only contaminant detected from 298 mg/kg to 702 mg/kg. Metals were within amounts found in Alaskan soil. PCBs were detected in only one of the five samples up to 6.2 mg/kg. The two soil stockpiles were resampled in May 1993 and 18 samples showed PCBs to be below 0.02 mg/kg and halogenated volatile hydrocarbons to be below 3 ug/kg (8010). Chlorination Bldg. 28004 250 gal leaded gasoline tank. TRPH, GRO, DRO, BTEX, PCBs and metals analyzed for. TRPH was found from 169 mg/kg to 597 mg/kg. Metals were within amounts found in Alaskan soil. A trace of PCBs was detected in each sample. From the records it was not possible to determine what is meant by a trace amount. Soil stockpile was resampled in May 1993 and 13 samples were below 0.02 mg/kg for PCBs. Byrant Army Airfield Bldg. 47438 Three 25,000 gal JP-4 tanks and one 550 gal water/JP4 tank. DRO, GRO, Total organic halogens, BTEX, PCBs and metals were analyzed for. DRO ranged from non-detect to 10,900 mg/kg. GRO ranged from non-detect to 1,600 mg/kgt, maximum benzene levels detected were 56 mg/kg, total BTEX was 425 mg/kg. Total organic halogens ranged from 128 mg/kg to 270 mg/kg. Metals were within amounts found in Alaskan soil. The JP4/water tank excavation had TRPH levels just under 500 mg/kg. Two unknown origin stockpiles were sampled in May 1993 for TRPH, GRO, DRO, BTEX, PCBs, halogenated volatile organics and metals. Metals were within amounts found in Alaskan soil. Samples from stockple A found DRO up to 6,500 mg/kg, TRPH up to 9,100 mg/kg and GRO non-detect. Samples from stockpile B found DRO up to 170,000 mg/kg, TRPH up to 400 mg/kg and GRO up to 1,200 mg/kg.

Action Date: 3/10/1998
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC letter ARMY RE: Draft work plan for removal, treatment, and placement of POL soil Fort Richardson contract DACA85-94-D-0016 Delivery order 0009. ADEC reviewed the document and approves the work plan as submitted.

Action Date: 2/25/2010
Action: Enforcement Agreement or Order

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DEC Staff: Louis Howard
Action Description: Dept. of Army Installation Management Command, HQ U.S. Army Garrison Fort Richardson, Office of the Garrison Commander sent letter to ADEC. This letter serves as formal notice under Paragraph XXXII, Transfer of Property, of the Fort Richardson, Alaska (FRA) Federal Facility Agreement (FFA), that the property under the jurisdiction of the U.S. Army will be transferred to the Joint Base Elmendorf-Richardson (JBER) effective October 1, 2010.This letter also serves as formal notice that effective October 1, 2010, responsibility for the FRA FFA, dated December 15, 1994, will be transferred to the senior official of the JBER Supporting Component, United States Air Force (USAF). This transfer of responsibility is in accordance with the Memorandum of Agreement (MOA) between the USAF and United States Army (USA), and was signed by the Vice Chief of Staff for the USAF and the Vice Chief of Staff for the USA on October 9, 2009.Based on the MOA and previous discussions with US EPA (reference March 2009 FRA FFA meeting in Seattle with representatives of the EPA Region 10, Elmendorf AFB and Fort Richardson), it is our understanding your agency agrees the management and oversight of the FRA FFA may properly transfer to the JBER Restoration Project Manager (RPM), and such transfer does not constitute a significant change, such as to require formal renegotiation of the Agreement or the preparation of an amendment to the Record of Decision. If you have any questions or concerns about this matter, please contact Therese Deardorff, Chief, Environmental Division, U.S. Army Garrison Fort Richardson, Alaska 907.384.3074.

Action Date: 2/23/2007
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Not reported

Action Date: 2/17/1997
Action: Site Added to Database
DEC Staff: Louis Howard
Action Description: Soils are contaminated with toluene and xylenes.

Action Date: 2/12/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP work plan received. Up to 19 new soil borings will be drilled as follows:? CF040-SB01, CF040-SB02, CF040-SB03, CF040-SB04, CF040-SB05, CF040-SB06, CF040-SB07, CF040-SB08, CF040-SB09 and CF040-SB10. Ten soil borings will be drilled in the footprint of former Stockpile A to evaluate the presence or absence of contamination. Based on ADEC sampling guidance for the base of an excavation (two samples for the first 250 square feet and one for each additional 250 square feet), 10 samples are required for Stockpile A (2,100 square feet).Based on field observations and the results of the PID screening, soil samples within each planned sampling interval throughout the boring will be selected for laboratory analyses. All soil samples (up to 20 primary samples) will be analyzed for GRO, DRO, RRO, VOCs, metals, and pesticides.CF040-SB11, CF040-SB12, CF040-SB13, CF040-SB14, CF040-SB15, CF040-SB16, CF040-SB17, CF040-SB18, and CF040-SB19. Nine soil borings will be drilled in the footprint of former Stockpile B to assess the current DRO concentrations, collect additional source

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area data and evaluate the lateral and vertical extent of contamination. Based on ADEC sampling guidance for the base of an excavation (two samples for the first 250 square feet and one for each additional 250 square feet), nine samples are required for Stockpile B (2,000 square feet).If excavation is selected as the remedial approach, field screening and soil sampling will beperformed in accordance with ADEC Field Sampling Guidance (ADEC, 2010). During excavation, the PID will be used to screen soil using a level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-05 (Appendix B) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples willbe collected from stockpiles and submitted for laboratory analysis of GRO, DRO, RRO,petroleum-related VOCs, and PAHs at a rate of two for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards.After the excavation has been completed, soil from the sidewalls and bottom of the excavationwill be field screened prior to sample collection for laboratory analysis. Sidewall field screening samples will be collected at a rate of one per every 10 linear feet of excavation, and field screening of the excavation bases will be conducted at a rate of 10 for the first 250 square feet of excavation, plus an additional sample for each additional 100 square feet of excavation.Field-screening and laboratory samples will be collected from areas within the excavation wherethe soil is most likely to be contaminated. Each field-screening location will be marked with awooden lath that will have the field-screen identification written on it. The field-screeningidentification, date, time, and PID measurements will be recorded in the field notebook.

Action Date: 2/10/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC letter to Army RE: Soil Stockpile Remediation Report Bio-cell at Fort Richardson contract DACA85-95-D-0011 Dated January 1997. Based on a review of the data, it appears the soils which meet Level A can be used for any purpose the Post sees fit. However, the areas where stockpiles 11 and 12 were located appeared to have petroleum releases above the level D criteria for DRO (12,400 mg/kg). Since soil contamination exists above cleanup levels, ADEC requests the Army submit a corrective action plan for remediation of the footprint areas at stockpiles 11 and 12.

Action Date: 2/1/1993
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: ADEC letter to ARMY RE: Request for approval to process petroleum contaminated soil Jan. 21. 1993. Request from the Army to thermally treat 30 overpack drums of petroleum contaminated soil using Soil Processing Inc’s treatment unit. The soil contamination resulted from surface spillage of various types of fuel and oil. The Department does not object to treating the soil in this manner on the conditions that prior Department approval is obtained and that only non-hazardous waste soil is processed. Based on the information provided, it cannot be determined if the soil is hazardous waste or not. The Department requests the Army provide proof that a hazardous

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

waste determination has been made on the overpacked soil prior to thermally treating it.

Action Date: 2/1/1990
Action: Update or Other Action
DEC Staff: Jennifer Roberts
Action Description: Jennifer Roberts filled out an Oil and Hazardous Materials Incident Report Form spill 90-2-1-5-032-2. Responsible party: US Army, cause-landfill activities, Contaminants: Fuels, oils, chlorinated solvents, metals. Assessment under way.

Action Date: 12/7/1992
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: ADEC letter to Army re: Soil Stockpile POL Remediation at Fort Richardson, AK DACA 85-92-C-0048. Meeting with Army on site December 3, 1992 at the Fort Richardson Landfill to inspect the construction of the proposed soil treatment area, and discuss the Department's concerns with the proposal. Further review of the information and the site inspection have identified additional concerns. Quality assurance program plan (QAPP) for Little Susitna Construction Company cannot be approved since the company does not have any staff qualified as defined in Alaska's UST regulations (18 AAC 78.995), to coduct sampling and reporting activities associated with regulated tanks. The sampling and analysis frequencies outlined in the proposal are acceptable, however the work must be conducted by qualified persons in accordance with an approved QAPP. During the site inspection, we were informed that a qualified person from RZA-AGRA will conduct all field sampling activities. The department requests submittal of a letter amending the plan which identifiies who will conduct the sampling and reporting and which approved QAPP will be followed. The Department approves the proposed soil treatment process on the following conditions:1. Dcoumentation be submitted, prior to startup, clearly identifying who will conduct sampling and analysis and which approved QAPP will be followed.2. Notification prior to, and documentation of, successful testing to demonstrate the integrity of the liner in the settling pond. 3. Submittal of as-builts for the settling pond within one week of start-up of treatment. Failure to comply with the above requests within twenty (20) days of receipt of this letter shall result in revocation of the approval.

Action Date: 11/19/1992
Action: Cleanup Plan Approved
DEC Staff: Louis Howard
Action Description: ADEC letter to Dan Owens CORPS re: Revised Plans for Soil Stockpile POL Remediation at Fort Richardson, Alaska dated November 13, 1992 DACA 85-92-C-0048. The Department has reviewed the revised documents for the above project received on November 19, 1992. All of the concerns raised on the October 28, 1992 meeting with the CORPS, Soil Processing Inc. and ADEC staff have been adequately addressed in the document.

Action Date: 11/18/1992
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: ADEC letter to SPI George Cline RE: Ft. Richardson soil incineration project ADEC project no. 9321-IWW-027. The Department has completed

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

its review of the materials delivered by Bob Langberg of Little Susitna Construction Co. received in this office November 17, 1992, which included a follow-up letter and settling pond plans. While it is clear that the soil incineration process will be recycling the filtered wastewater from the lined settling ponds, the Department is still concerned with the dewatering process of the pond upon termination of this project. At this time, it is expected that there will be an appreciable quantity of water collected in the settling ponds and the Department would like to know how dewatering will be accomplished. Therefore, subject to the following conditions, approval to operate is granted by this Department in accordance with 18 AAC 72 Wastewater Disposal Regulations: 1. Plan of procedure for dewatering settling pond upon termination of the project. Testing of water prior to discharge.2. Submittal of as-built plans of the settling pond and site plans under the stamp of a Professional Engineer (P.E.) registered in the state of Alaska.

Action Date: 10/7/1992
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: ADEC letter to Dan Owens CORPS re: Approval for use of asphalt as a substitute for soils from the Fort Richardson Landfill. Use of an asphalt pad for stockpiling the petroleum contaminated soil instead of reinforced polyethylene liner as per the long-term guidance. This variance is only for this particular project and no other. Generally speaking, the use of asphalt as petroleum impervious surface is allowed only under temporary stockpiling of less than 90 days. The department will allow Soil Processing Inc. to use asphalt as an alternative to a reinforced liner provided no stockpile awaiting treatment is allowed to remain on the asphalt for more than 90 days. All other applicable long-term stockpiling requirements and guidelines will remain in effect for the life of the project.

Action Date: 10/16/1992
Action: Update or Other Action
DEC Staff: John Halverson
Action Description: ADEC letter to Garrison Commander George Vakalis RE: Petroleum Contaminated Soil, Fort Richardson Landfill. On September 17, 1992, the Department issued the Army a Compliance Advisory for failure to contain petroleum contaminated soil which is stockpiled at Fort Richardson's landfill. While the Department has not received a written response to our letter, there has been discussion between the Army and DEC staff. The Army has taken some measures towards addressing the issue, however, the compliance advisory still needs to be addressed. The October 7, 1992 plan to thermally treat the soils calls for use of settling ponds for recycling water from the scrubber system on the thermal treatment unit. The plan does not call for use of liners beneath the ponds. Discharging water to the ground without containment will result in hydraulic loading immediately above the landfill. This would most likely contribute to leachate problems at the landfill. The Department cannot approve the plan until it is demonstrated that water from the settling ponds will not contribute to leachate generation. The plan calls for installation of a water well in the landfill area to provide water for the thermal treatment process. Installing a well in the landfill may create a conduit for contaminants to reach the water table. The Department cannot approve installation of a water well within the landfill unless it can be

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

documented that the well will not result in additional ground water contamiantion at the site. A secondary concern over placing the well in, or down-gradient from, the landfill is that the groundwater beneath the site may contain contaminants that would make it unsuitable for use in cleanup operations.

Action Date: 10/15/1997
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on a draft remedial action report for soil stockpiles generated from LUST removals which were stored at the Fort Richardson Landfill. Soils were sampled from within and below the stockpiles prior to being sent to a thermal treatment facility. No contamination was present beneath the stockpiles and post treatment sampling showed soils were below Level A criteria which allowed the Army to reuse soils at the Post in non-environmentally sensitive areas. One stockpile from Area F will be treated separately due to detectable amounts of Trichloroethylene (TCE) that prevented it from being thermally treated. The levels are below RCRA action levels (<0.19 mg/kg vs. 0.5mg/kg) for TCE and may be a good candidate for treatment at the Alaska Pollution Control calciner in Palmer.

Action Date: 10/12/1992
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: ADEC letter to George Cline SPI re: additional comments on the Soil Management Plan submitted on October 7, 1992. An asphalt pad will be used for stockpiling the petroleum contaminated soil instead of a reinforced polyethylene liner as per the long-term guidance. This variance is only for this particular project and not for use as a settling pond. Item 6 of the Addendum to the soil management plan still requires the use of liners and liner specifications from the manufacturer needs to be submitted to the Department. The procedures for seam sealing of liners needs to be approved by the manufacturer of the liner. The Department requests that a single continuous layer of visqueen be used, because of the possibilty of the sealed seams leaking liquid from the surge pit into the surrounding soils. A layer of sand of adequate thickness must be placed beneath the liner to protect it from damage. Liner specifications for the storage pit need to be submitted to the Department. The Department is concerned that the fines will have a shorter retention time in the treatment system than the coarser soils. There is the potential that the fines will have residual contamination above maximum allowable limits. Adeqate sampling of water and fines from the discharge must be performed before being mixed back into the treatment material.

Action Date: 1/9/1990
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Anchorage Western District Office (AWDO) received copies of the quality control plans and sampling/analysis, quality assurance/control plans for the Fort Richardson Landfill Investigation.

Action Date: 1/29/1998
Action: Report or Workplan Review - Other

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

DEC Staff: Louis Howard
Action Description: ADEC letter to Army re: Fort Richardson Landfill Remedial Action Report Contract No. DACA85-94-D-0016 Delivery order No. 0004 December 1997. ADEC has reviewed the document and has no substantive comments regarding the document. It appears the landfill stockpiles have been treated to ADEC's Level A criteria or better and the soils beneath the former stockpiles have not been impacted. Area F soil stockpiles await further treatment and ADEC anticipates reviewing the work plan for remediation of this stockpile sometime in the near future.

Action Date: 1/29/1992
Action: Report or Workplan Review - Other
DEC Staff: Jennifer Roberts
Action Description: ADEC letter to ARMY RE: Contaminated Stockpiles report for Forts Richardson, Wainwright, & Greely Alaska. Contract No. DACA85-88-D-0014 Deliver order no. 22 Dec. 1991. The introduction to the report states that the objective .of the work is to meet Florida Department of Ecology requirements. The report must reference Alaska's Guidance for Storage, Remediation, & Disposal of Petroleum Contaminated Soils, which is included in the Guidance Manual for Underground Storage Tank Regulations (18 AAC 78), dated June 18, 1991.Work outlined in the report is acceptable for characterizing stockpiles in order to evaluate soil treatment options, however, the Department cannot accept the data for verification that any of the stockpiles meet acceptable cleanup levels for closure. The fact that composite sampling techniques were used, the low sampling frequency per volume of soil, & the type of analytical methods used do not conform with department requirements for documenting whether or not soil piles meet cleanup levels. Therefore, stockpiles numbered 6, 7, 12, & 13 must be included in future treatment plans or must be further characterized before any decisions can be made with regard to cleanup levels.The report indicates that stockpiles numbered 14 & 15 are not properly contained. Stockpiles must be lined & covered in accordance with the- Department's guidance for stockpiling contaminated soils or other approved methods. Please note that long-stockpiling (180 days - two years) requires pre-approval of a work plan by the Department. Stockpile 14 was not characterized during the scope of this project.The source of the stockpile is listed as unknown. The soil must be properly characterized in order to determine acceptable treatment &/or disposal methods. Stockpiles numbered 2 & 9 were shown to contained measurable concentrations of organic halogens when analyzed using EPA method 9020. EPA method 9020 measures total organic halogens but does not identify or quantify specific compounds that may be present. Therefore, the Department cannot accept the data for stockpiles numbered 2 & 9 as adequate for characterizing these stockpiles. Sampling & analysis using EPA methods 8010 or 8240 is appropriate for characterization of these stockpiles, or other soils suspected of containing halogenated organic substances. The Department requests that additional characterization of these stockpiles be conducted.Analytical results have shown that stockpiles numbered 2 & 16 contain polychlorinated biphenyls. Due to the PCB contamination, access to these stockpiles must be controlled. This may be accomplished through the use of signs & fences or other institutional controls implemented by the Army. These controls which limit access of human & wildlife contact with PCB contaminated soils must be in place within 14 days of receipt of this letter. The Department requests that a stockpiling plan be

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

submitted for DEC review & approval which addresses methods for controlling access. The Department also request that a treatment &/or disposal plan addressing these stockpiles be submitted for review & approval.The report indicates that landfarming & cell bioremediation are the preferred methods of treating the majority of the stockpiled soils. However, no specific details for such treatment were provided. While the Department has no objections to the concept of using landfarming or cell bioremediation to treat most of these soils, the Department requests that a detailed work plan, prepared in accordance with the Guidance Manual for Underground Storage Tank Regulations (18 AAC 78), be submitted for review & approval prior to any treatment.The Department requests that in the future all workplans for investigation & cleanup of contaminated sites be submitted ninety (90) days in advance of any scheduled work. This schedule allows for a thirty (30) day review period by the Department, twenty (20) days for any necessary revisions by the Army, another thirty (30) days for the Department to review the revised document & grant approval, & an additional ten (10) days for unforeseen delays. This request is based on a need to insure that field work is conducted in accordance with applicable state guidelines & regulatory requirements, thereby helping to insure that work does not have to be redone.During a site inspection on May 23, 1990 department staff observed inadequate containment of stockpiled soil in the main soil storage area & the area where stockpiles numbered 14 & 15 are located. Due to improper c9ntainment of contaminated soils, these soil storage areas will need to be investigated to determine if they have been impacted by the stockpiled soils. The Department requests that a work plan be submitted to address this matter.See site file for additional information.

Action Date: 1/29/1990
Action: Enforcement Agreement or Order
DEC Staff: Jennifer Roberts
Action Description: ARMY letter to Jennifer Roberts (ADEC) re: NOV 89-21-05-2008-01 dated September 25, 1989. 3 violations were cited and are dealt with below.Exposed friable asbestos was removed and properly disposed of the day of Henry Friedman's (Solid Waste Program) visit, September 15, 1989. The human waste pit had been properly closed by the time of the thrid inspection, as mentioned in the NOV. THe sludge pit has been identified on the site plan, but has since been closed to all further use. The junk vehicles and debris in the fire training area has been buried. The 3 access points have been secured as well as possible, but routine inspections of the landfill will be added to the Operations and Maintenance Plan to discourage further illegal dumping, and to remedy violations in a more timely manner. We request that this Notice of Violation be considered resolved. Edwin R. Ruff, Colonel, U.S. Army, Director of Engineering and Housing.

Action Date: 1/25/1991
Action: Report or Workplan Review - Other
DEC Staff: John Halverson
Action Description: Letter to Army RE: UST and Contaminated Soil at Fort Richardson File L76.01-3. Following our meeting on January 24, 1990, a check of our files and logs found no record of receiving the soil pile characterization plan referred to during the meeting. Please forward a copy to the Anchorage District Office of the Alaska Department of Environmental Conservation for review and comment. As discussed

JBER-FT. RICH LANDFILL UST SOIL PILES CF040 (Continued) **S110144079**

during the meeting, I am forwarding a copy of our Soil Petroleum Hydrocarbon Analysis table with the corresponding notes and definitions. This should assist the Army in preparing work plans for the coming field season.

Contaminants:
Staff: Not reported

Contaminate Name1: JBER-Ft. Rich Landfill UST Soil Piles CF040
Contaminate Level Description1: Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1: Soil

Control Type: No ICs Required
Control Details Description1: Advance approval required to transport soil or groundwater off-site.
Contaminant CTD: Not reported
Contaminant CDR: Not reported
Comments: Not reported

V101 **JBER-FT. RICH BLDG 750 UST 153 USTA 2 PARTY** **SHWS S110144156**
WSW **BUILDING 750 ALT ID 16A NEAR SECOND AND D STREET** **LUST N/A**
1/2-1 **FORT RICHARDSON (JBER), AK 99505**
0.792 mi.
4182 ft. **Site 1 of 2 in cluster V**

Relative:
Lower

Actual:
295 ft.

SHWS:
File Number: 2102.26.048
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259054
Longitude: -149.701954
Hazard ID: 25062
Problem: UST was a 1,000- gallon used oil tank located at building 750. Low concentrations of DRO & RRO were found in confirmation samples collected as part of the UST closure on May 13, 1998. USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or ClosureUSTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:
Action Date: 8/13/1998
Action: Underground Storage Tank Site Characterization or Assessment
DEC Staff: * Not Assigned
Action Description: ADEC received a copy of the site assessment report.

Action Date: 5/13/1998
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Source Removal: UST was removed from the ground on May 13, 1998.

Action Date: 5/13/1998
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 3/10/1999
Action: Site Closure Approved

JBER-FT. RICH BLDG 750 UST 153 USTA 2 PARTY (Continued) **S110144156**

DEC Staff: * Not Assigned
Action Description: ADEC project manager issued a NFA closing the site. The May 13, 1998, closure of UST, Alternate ID 16A, located on the north side of building 750, Fort Richardson, Alaska. Facility ID 0-000788, ADEC tank 153. Event Id 2274.The Department of Environmental Conservation (Department) has reviewed the site assessment report it received on August 13, 1998, documenting the closure of the above mentioned underground storage tank (UST). The report summarizes the information collected during closure of the 1000-gallon UST that was used to store used oil at Building 750. Since, both the UST closure and the site assessment report were completed prior to the adoption of the January 22, 1999 regulations, the Department conducted its review of the site assessment report using the November 3, 1995 regulations, in effect at the time of the closure. Based on the information and laboratory data presented in the site assessment document, no further action is required by the Department. Please note, the Department believes the consultant errored in determining the matrix score of 26 for this site. Based on the volume of excavated contaminated overburden (20 cy later used to backfill the UST excavation), and the unknown volume of contaminated soil left in place at the bottom of the UST excavation, 31 is a more appropriate matrix score. A matrix score of 31 equates to a category ???B??? site, which has more stringent cleanup standards than a category ???C??? site. However, since the levels of contamination found were below category ???B??? cleanup standards, the change in the matrix score does not alter the Department???s decision for no further action required.In the future, should contaminated soil or groundwater be discovered on site that exceeds state cleanup standards, appropriate site assessment and cleanup would be required in accordance with applicable State regulations.

LUST:
Facility Name: JBER-FT. RICH BLDG 750 UST 153 USTA 2 PARTY
Facility Status: Cleanup Complete
Record Key: 199821X013301
File ID: 2102.26.048
Oname: U.S. Air Force
Lat/Lon: 61.25905 -149.7019
Lust Event ID: 2274
CS or Lust: LUST
Borough: Anchorage
Staff: No Longer Assigned
Site Type: Military Installation - Base/Post/Other
Horizontal Datum: NAD83

V102
WSW
1/2-1
0.792 mi.
4182 ft.

JBER-FT. RICH BLDG 750 UST 108 USTA 2 PARTY **SHWS** **S110144145**
D & 2ND STS., NW CORNER, FORMERLY FORT RICHARDSON BEFORE 10/ **N/A**
FORT RICHARDSON (JBER), AK 99505

Site 2 of 2 in cluster V

Relative:
Lower

Actual:
295 ft.

SHWS:
File Number: 2102.26.048
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.259054

JBER-FT. RICH BLDG 750 UST 108 USTA 2 PARTY (Continued) **S110144145**

Longitude: -149.701954
Hazard ID: 24132
Problem: USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or ClosureUSTA 2 Party Attach I Petroleum Contaminated Soil Stockpiles Located at the Landfill

Actions:

Action Date: 8/19/1994
Action: Site Closure Approved
DEC Staff: * Not Assigned
Action Description: Results From Additional UST Soil PID Screening AnalysesThe Department of Environmental Conservation, Defense Facilities Oversight group, (ADEC) has received a fax of the document listed above on August 19, 1994. The analytical results for bldgs. 750E, 750W, 778, 784, 812, 980, 45726, and 55295 show levels well below the most stringent cleanup criteria. ADEC considers the UST sites closed out. However, closing out these sites does not limit nor preclude ADEC from requesting futureremediation or site investigation at a later date. If new information indicates that there ispreviously undiscovered contamination or exposures that causes an increased risk to humanhealth or the environment, then future investigation and/or remedial actions will be required.

Action Date: 2/5/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from the Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested anexplanation for the lack of spill protection on a number of underground storagetanks(UST) located at Fort Richardson. Below you will find a listing of those regulatedtanks that were in question and an explanation of how the spill control requirement ismet:Tank 108A-This is a used oil UST with an ILS-350 interstitial monitor/overfillalarm system. The tank's spill control is a catchement basin(s)lfloor drain systemattached to an oil water separator. The tank is filled through manually pouring oilinto either one of the floor drains or into an oil sink. The system is nonpressurized,and gravity fed.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Janice Adair
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by ADEC (Janice Adair Regional Administrator-Southcentral Office) and U.S. Army. The purpose of the agreement is to bring Fort Richardson into compliance with the Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding Alaska Department of Military and Veterans Affairs and Army National Guard USTs). All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.Site Assessment or Svstem Tightness Test29. The Army shall conduct a site assessment* or a system tightness test, as required by AS 46.03.380(b) and 18 AAC

JBER-FT. RICH BLDG 750 UST 108 USTA 2 PARTY (Continued) **S110144145**

78.01S(i)(3), on all USTs located at Ft. Richardson, or permanently close the USTs in accordance with 40 CFR 280 and 18 AAC 78. If site assessments or system tests have been conducted, the Army shall submit proof of compliance by the deadlines set forth in the USTMP. Site Assessments or System Tightness Tests shall be conducted under the schedules in 18 AAC 78.015(i)(3) or, in order to come into compliance, as scheduled in the USTMP. All tightness testing work will be conducted by a certified UST worker as required by 18 AAC 78.400. Site Assessment work will be conducted pursuant to 18 AAC 78 and an ADEC-approved Quality Assurance Program Plan (QAPP). With respect to UST recordkeeping requirements, the Army shall compile all required records by the date set forth in the USTMP and shall thereafter maintain and update those records as required by 18 AAC 78 and 40 CFR 280.Release Investigation Reports31. The Army shall submit to ADEC a Release Investigation* report for each UST site having a documented release* of petroleum products or hazardous substances. These reports will be submitted by the deadlines in the USTMP. The Release Investigation report shall contain all information required by 18 AAC 78.230(b), 18 AAC 78.240(c) and the following: 1) a detailed written or, if applicable, visual description of all work performed and summary of all pertinent data prepared by the Army and its consultants, 2) monitoring well construction data and3) soil boring logs; 4) site maps detailing existing improvements and (if known) 5) the location of former fuel dispensing equipment, 6) water table elevation maps, 7) petroleum-product level and thickness (isoplot) maps, 8) organic-contaminant concentration maps, 9) aquifer interpretations, 10) other potential source areas within 1/4 mile, 11) data deliverables as outlined in 18 AAC 78, 12) interpretations of field observations and analytical data, 13) a completed Site Assessment/Release Investigation Summary Form, and 14) recommendations for any follow up work. 32. If upon review of a Release Investigation report the ADEC reasonably determines additional contamination assessment is required, ADEC shall notify the Army in writing. This writing will set forth the reason(s) the ADEC concluded that additional assessment is required.111. Site shall mean a distinct area of contamination or potential contamination.112. Site assessment shall mean the investigation of suspected contamination resulting from an unpermitted release of oil or hazardous substance as further defined in 18 AAC 78.090 (Site characterization and assessment). 110. Release shall have the meaning in AS 46.03.826 [(9) release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance.]

Action Date:	11/1/1991
Action:	Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff:	* Not Assigned
Action Description:	LCAU; :LCAU Date changed DB conversion

Action Date:	10/31/1991
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	1/10/1997

JBER-FT. RICH BLDG 750 UST 108 USTA 2 PARTY (Continued) **S110144145**

Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: DECISION DOCUMENT FOR NO FURTHER REMEDIAL ACTION PLANNED BUILDING 750, UNDERGROUND STORAGE TANK 108 FORT RICHARDSON, ALASKA received. 1. PURPOSE FOR REMEDIAL ACTIONThis decision document describes the rationale for No Further Remedial Action Planned at Building 750, Fort Richardson, Alaska. This alternative was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the National Contingency Plan (NCP), the Resource Conservation and Recovery Act (RCRA), and AR 200-1, as applicable.Building 750, located at the intersection of Richardson Drive and Second Street, is the Motor Pool for 1st/501st Airborne. Underground storage tank (UST) 108 was removed July 1991. Soil samples taken during the removal contained Total Recoverable Petroleum Hydrocarbons at 29,000 milligrams/kilogram. Due to the level of contamination the Fort Richardson-State of Alaska, Department of Environmental Conservation (ADEC) UST Compliance Agreement required a release investigation be conducted. The release investigation consisted of three (3) soil borings ranging from 21.5 to 45.5 feet below ground surface. Total Recoverable Petroleum Hydrocarbons ranging from 14 mg/kg to 74 mg/kg was the sole contaminant found at the site. ADEC site closure was received on 10 May 1994.The Directorate of Public Works, Environmental Resource Department developed this decision document with concurrence from the Alaska Department of Environmental Conservation (ADEC). Attached is a letter of concurrence from ADEC. 2. SUMMARY OF SITE RISKSoil contamination at this site is below the ADEC level A standard of 2000 mg/kg Total Petroleum Hydrocarbons specified in 18 Alaska Administrative Code 78. Contaminant levels are within accepted levels and are expected to pose no risk to employees or customers at the site. 3. SUMMARY OF REMEDIAL ALTERNATIVESEvaluation of remedial alternatives was not conducted for this site. Residual contamination levels at the site required a release investigation, but contaminant levels measured during the investigation were all within ADEC accepted standards.4. PUBLIC/COMMUNITY INVOLVEMENTInformation concerning investigation and remediation of underground storage tank sites is incorporated in both fact sheets and public meetings developed for Fort Richardson???s on-going community relations program.5. DECLARATIONBecause this remedy will not result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, the five-year review will not apply to this action.

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103 **FTRS-011-R-01 PISTOL RANGE** **UXO** **1018153414**
SSW **5312 KENNEY AVE** **N/A**
1/2-1 **ANCHORAGE, AK**
0.890 mi.
4697 ft.

Relative: UXO:
Lower
Actual: DoD Component: Air Force
316 ft. Installation Name: JBER-RICHARDSON
Facility Address 2: Not reported
Site ID: SR011
Site Type: Small Arms Range
Latitude: 61.246600

FTRS-011-R-01 PISTOL RANGE (Continued) **1018153414**

Longitude: -149.685400

104
West
1/2-1
0.893 mi.
4717 ft.

JBER-FT. RICH TU085 BLDG 972 UST 106 **SHWS** **S108941727**
BLDG 972, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **LUST** **N/A**
FORT RICHARDSON (JBER), AK 99505 **INST CONTROL**

Relative:
Lower

Actual:
301 ft.

SHWS:
File Number: 2102.26.020
Staff: Not reported
Facility Status: Cleanup Complete
Latitude: 61.264043
Longitude: -149.705483
Hazard ID: 23000
Problem: Bldg. 972 was a world war II vintage storage warehouse. UST was removed in July 1994. USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:
Action Date: 9/29/1994
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: USARAK institutional control policies and procedures received. The draft USARAK Command Policy Memorandum, ICs standard operating procedure and revised excavation clearance request have been finalized. To ensure the effectiveness of institutional controls, all organizational units and tenant activities will be informed on an annual basis of the institutional controls on contaminated soils and groundwater in effect on USARAK property. Where institutional controls are applicable to any organization, tenant, or activity, land use restrictions shall be incorporated into either a lease or Memorandum of Agreement, as appropriate. Costs for any and all remedial actions and fines and/or stipulated penalties levied as a result of a violation of an established institutional control shall be funded by the violating activity or organization.

Action Date: 9/28/1994
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 9/28/1994
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the Site Assessment report, Bldg 972, Former UST 106 Facility No. 0-00788 July 14, 1994The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC)has received, on September 12, 1994 a copy of the above referenced report. Below are ADEC'scomments.5.2 Discussion page 11The text states the cleanup criteria is level C, however that is incorrect. Based on information from other consultants' reports at Fort Richardson, the annual precipitation has been calculated to be approximately 13 to 20 inches per year (Univ. of AK, Anchorage, Environmental Atlas ... 1972). This correction would result in a cleanup score to 20 or a level D cleanup (2000 ppm). Since the highest amount of soil contamination detected does not exceed this amount, ADEC considers bldg. 972 UST 106 closed out.Soil remains at

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

site above Level A criteria but below Level D (700 mg/kg DRO).

Action Date:	9/28/1994
Action:	Site Added to Database
DEC Staff:	* Not Assigned
Action Description:	Not reported

Action Date:	8/26/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	ADEC has reviewed JBER's responses to ADEC's comments for TU073, TU083 and TU085. The responses to comments are acceptable and the documents may be finalized.

Action Date:	8/13/2013
Action:	Report or Workplan Review - Other
DEC Staff:	Louis Howard
Action Description:	Staff provided review comments on the draft UFP-QAPPPage 31TU085-SB01 The text states: ???Approximately one sample from uncontaminated soils that is representative of the source zone will be analyzed for foc.???JBER may collect one foc soil sample for whatever purpose it desires, however, the results for the one foc sample may not be used to derive any cleanup level under the Site Cleanup Rules (Method Three or Method Four). WS 15 states that the foc samples will be collected and analyzed in accordance with ADEC Technical Memorandum 08-002, Guidelines for Total Organic Carbon (TOC) Sample Collection and Data Reduction for Method Three and Method Four (ADEC, 2008). Page 32Soil Excavation (If Required)The text states: ???If potential risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulative risk estimate to exceed the risk standard will be evaluated.???Not necessarily correct, remedial options that address the contaminants of concern which exceed maximum allowable concentrations will be also evaluated regardless of HRC risk calculation results. See comment 1 regarding MAC. Indications of risk or no risk by the HRC is not the sole criteria on whether action will take place at a site on JBER-Richardson or JBER-Elmendorf. Page 33The text states: ???During excavation, the PID will be used to screen soil using a level of 20 parts per million (ppm) to separate ???dirty??? soil from ???clean??? soil at a rate of one field screening sample per every 10 yards of soil. SOP-16 (Appendix B of the Basewide UFP-QAPP) provides the methodologies to be followed for field screening. The ???dirty??? and ???clean??? soil will be placed into separate stockpiles. Discrete soil samples will be collected from stockpiles and submitted for laboratory analysis of GRO, DRO, RRO, petroleum-related VOCs (BTEXN), and PAHs at a rate of two for the first 50 cubic yards of stockpiled soil with an additional sample for each additional 50 cubic yards.???20 PPM on the PID is an arbitrary ???clean??? vs. ???dirty??? threshold and does not definitively determine whether or not the soil is contaminated above applicable regulatory levels. Any positive deflection on the PID is an indication of potential contaminated soil. Discrete soil samples will be taken from both stockpiles (???clean??? < 20 ppm PID reading and ???dirty??? 20 ppm and higher PID reading) for definitive laboratory testing. At previous investigations at other DoD installations there have been

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

instances where diesel range organics in soil have been well above 10,250 mg/kg and the arbitrary field screening level of 10 ppm on the PID was used at that time for ???clean??? vs. ???dirty??? soil: PID reading (DRO laboratory result)6 ppm (11,600 mg/kg), 10 ppm (35,800 mg/kg), 12 ppm (28,200 mg/kg), 17 ppm (67,200 mg/kg), and 19 ppm (17,300 mg/kg).

Action Date: 8/1/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for review and comment.The overall objective for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600) (ADEC, 2012a; ADEC, 2012b). If 18 AAC 75 Method Two criteria are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under Method Three will be used to assess whether site conditions meet ADEC risk criteria (in which case, a ???cleanup complete without ICs??? determination will be requested) or whether the site poses unacceptable risk (in which case, further remediation may be required). If unacceptable risk is indicated by the HRC or if vadose zone soils exceed maximum allowable concentrations, then remedial options will be evaluated that address the contaminants of concern and associated exposure routes that contribute enough risk to cause the cumulativerisk estimate to exceed the risk standard.One boring will be drilled at former confirmation sample 94-972-BE to resample the soil atthe location and depth where previous sampling showed exceedances of the migration togroundwater criteria for DRO to determine the vertical extent of contamination, and tocollect source area soil samples for gasoline-range organics (GRO), residual range organics(RRO), polycyclic aromatic hydrocarbons (PAHs), petroleum-related volatile organiccompounds (VOCs) (benzene, ethylbenzene, toluene, xylenes, and naphthalene [BTEXN]),volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH)analysis.Three borings will be drilled around the former tank to assess the lateral extent ofcontamination. Samples will be analyzed for GRO, DRO, petroleum-related VOCs(BTEXN), and PAHs.Up to approximately 20 primary soil samples will be collected and analyzed for GRO, DRO,RRO, petroleum-related VOCs (BTEXN), and PAHs. One of the soil samples will also beanalyzed for EPH and VPH. One of the soil samples will be analyzed for soil bulk density,grain size distribution, specific gravity, and soil moisture content. One of the soil sampleswill be collected from below the contaminated soil source and analyzed for fraction oforganic carbon (foc).If any of the borings are drilled to groundwater, a groundwater sample will be collected andanalyzed for petroleum-related VOCs (BTEXN), GRO, DRO, RRO, PAHs, VPH, and EPH.

Action Date: 6/6/2012
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft Project Management Plan received.Performance ObjectiveSite ClosurePotential RiskThe nature and extent of soil contamination in the upper 25 feet is greater than anticipated.Groundwater impacts are

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

discovered during site characterization.Risk MitigationExcavate soil as needed (estimate 250 yd3) to achieve SC. Monitoring wells will be installed, and groundwater contamination will be addressed with a technology that is appropriate to the nature and extent of the plume to achieve SC within the POP.Date of Achieving Performance Objective2nd Quarter FY 2014. Planned ApproachPrepare an approved Characterization Workplan. Coordinate, mobilize, and execute Characterization Workplan by installing and sampling two soil borings and collect one hydropunch groundwater sample.Use HRC to evaluate SC based on risk to future residential receptors for all pathways.
Prepare an approved Site Characterization Report documenting HRC risk evaluation. Prepare an approved Site Closure Report requesting Cleanup Complete without ICs. Receive concurrence from ADEC that site has achieved Cleanup Complete without ICs and provide documentation to AFCEE.

Action Date: 6/25/2014
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: The Alaska Department of Environmental Conservation (ADEC) has completed a review of the environmental records associated with the site TU085 (ADEC CS Database Hazard ID 23000) located on Joint Base Elmendorf-Richardson in Anchorage, Alaska. ADEC concurs with the recommendations to conduct soil gas samples should be collected to determine whether contamination is present in soil gas at concentrations that could pose a potential indoor air risk to future buildings. Samples should be collected from two locations (near soil borings TU085-SB01 and TU085-SB06) at a depth of approximately 8 feet bgs to assess the potential worst-case scenario. Sampling would be conducted in accordance with the Soil Gas Sampling Plan Addendum to the Basewide QAPP. Soil gas concentrations would then be compared to ADEC shallow soil gas target concentrations to determine whether further action is necessary to achieve ???Cleanup Complete??? and to estimate a soil target area that required further action, if necessary. Finalize the draft site characterization report.

Action Date: 6/2/2015
Action: Institutional Control Record Removed
DEC Staff: Louis Howard
Action Description: Institutional Controls have been removed.

Action Date: 6/17/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 75922 name: autogenerated pm edit - Fort Richardson - Bldg 972 UST 106

Action Date: 6/13/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft SC report received for review & comment.ConclusionsBased on previous investigations & the 2013 site characterization field investigation, two separate areas of soil contamination defined by DRO (former UST source area) & B(a)P (area outside the former UST source area) in soil at concentrations above project screening levels. All analytes detected above screening levels, with the exception of B(a)P, were associated with the former UST source area.

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

B(a)P was not associated with the former UST source area & was evaluated as a separate, limited area of contamination.Former UST Source Area??? DRO in soil is above the screening level (250 mg/kg) covers an area approximately 100' long & 155' wide centered on boring TU085-SB01/94-972-BE, starting at a depth of 5' bgs & reaching a total depth of approximately 30' bgs (387,500 cu. ft [14,400 cyds]). GRO, 1-MN, 2-MN, & naphthalene are a smaller component of the NAPL source & are within an area of approximately 50 by 45'.??? Direct contact/ingestion & outdoor inhalation pathways are considered complete at the present time because the DRO is above the ADEC Table B2 Method Two Soil Cleanup Level at depths less than 15' bgs (4,340 mg/kg 10-15' bgs). ??? The vapor intrusion & GW ingestion exposure pathways are considered incomplete at the present time because there are no buildings or GW wells onsite.??? Ingestion of GW is considered a potentially complete future exposure pathway because GW wells could be installed in the future. The potential future indoor air exposure pathway is considered potentially complete because PAH is above 18 AAC 75 Table B1 could be present within 30' from a future building foundation.??? The rounded cumulative cancer risk estimates for the future industrial & hypothetical residential exposure scenarios for direct contact, outdoor inhalation, & GW ingestion are below the regulatory risk standard of 1E-05.??? The cumulative noncancer HI estimate for the future industrial & hypothetical residential exposure scenarios for direct contact, outdoor inhalation, & GW ingestion is below the regulatory risk standard of 1. Potential risks posed by the GRO & DRO aromatic & aliphatic fractions are below the regulatory risk standard of 1 for direct contact, outdoor inhalation, & GW ingestion pathways.??? The migration to GW criteria are attained in surface & subsurface soils in accordance with 18 AAC 75.340, supporting a Cleanup Complete determination.Area Outside Former UST Source Area??? B(a)P was detected above project screening levels in the 0-5' depth range from boring TU085-SB06 (vertically separate from the former UST DRO source area).??? Because the contamination is present in the upper 15' of soil, the direct contact/ingestion & outdoor inhalation pathways are considered potentially complete.??? The VI & GW ingestion exposure pathways are considered incomplete at the present time because there are no buildings or GW wells onsite.??? Ingestion of GW is considered a potentially complete future exposure pathway because GW wells could be installed in the future.??? The potential future indoor air exposure pathway is considered incomplete because B(a)P is not considered a sufficiently volatile compound per ADEC VI Guidance (ADEC, 2012c).??? Risk posed by B(a)P above screening levels outside the source area was assessed using the ADEC online Method Three & Cumulative Risk Calculator. Results indicate that B(a)P concentrations under the current industrial & residential exposure scenario do not pose unacceptable risk for cumulative cancer or noncancer risk standards (Appendix C-3) for direct contact, outdoor inhalation, or GW ingestion pathways.RecommendationsFormer UST Source AreaBecause concentrations of 1-MN, 2-MN, & Naph are above their most conservative Table B1 cleanup levels within 30' of the ground surface, soil gas samples should be collected to determine whether contamination is present in soil gas at concentrations that could pose a potential indoor air risk to future buildings. Samples should be collected from two locations (near soil borings TU085-SB01 & TU085-SB06) at a depth of approximately 8' bgs to assess the potential worst-case scenario. Sampling would be conducted in accordance with the Soil Gas Sampling

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

Plan Addendum to the Basewide QAPP (WESTON, 2013b). Soil gas concentrations would then be compared to ADEC shallow soil gas target concentrations to determine whether further action is necessary to achieve ???Cleanup Complete??? & to estimate a soil target area that required further action, if necessary.Area Outside of the Former UST Source AreaNo further action is recommended for the area outside the former UST Source Area, because there was no unacceptable risk identified.

Action Date: 6/1/2015
Action: Cleanup Complete Determination Issued
DEC Staff: Louis Howard
Action Description: Staff provided a cleanup complete determination for the referenced site. The HRC was used to evaluate risk from petroleum contamination at TU085. The HRC is designed for sites with petroleum contamination???specifically the petroleum fractions, BTEX, PAHs, and other compounds dissolved in petroleum???with the intention and purpose of assessing human health risk from this type of contamination. Subsequent to the 2013 site investigation, soil gas sampling for 1-Methylnaphthalene, 2-Methylnaphthalene, and naphthalene was conducted. Concentrations of soil gas at 8 feet bgs are below the ADEC shallow soil gas target levels for these contaminants of concern and soil screening results show that the subsurface is well-oxygenated and has low carbon dioxide. Soil gas does not pose a risk to future building occupants.Based on a review of the environmental records, ADEC has determined that TU085 has been adequately characterized and has achieved the applicable requirements under the site cleanup rules. ADEC is issuing this written determination that cleanup is complete, subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. A ???cleanup complete??? designation will be entered for TU085 in the Contaminated Sites Database.

Action Date: 2/3/2015
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Staff sent Air Force email regarding soil gas sampling. *Sites TU075, TU085, and TU074 at JBER-Richardson [currently ADEC has received the SC Report addendum for TU074 and will not provide any comments on it until the leak check test is performed at a predetermined site of the contractor's (CH2MHILL) choosing as agreed upon below from the November 25, 2014 meeting notes.] AND*Sites CG702, SO552, ST048, SO525, TU091 at JBER-Elmendorf *please do not submit any SC reports/SC report addendums to ADEC for review from these sites if there is a Cleanup Complete request since they are being held up until such time that ADEC has observed and the leak checks performed by the contractor at the selected site have passed. If they include a CC with ICs request, they may not be dependent the leak check results. It will have to be determined on a case by case basis. There will be a helium leak check on JBER-Elmendorf this week (Thursday at 11 a.m. at SO552) which will determine the fate for the 2014 soil gas sites (e.g. CG702, SO552, ST048, SO525, TU091). The path forward was outlined as follows: * At each site with a site closure objective, inspect soil gas probes for obvious damage that may have compromised the surface seal since the probe was last sampled. o Sites TU075, TU085, and TU074 at JBER-Richardson o Sites CG702, SO552, ST048,

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

SO525, TU091 at JBER-Elmendorf * Select a site at each installation (JBER-Elmendorf and JBER-Richardson) for additional helium leak checks of all probes at that site. * Provide ADEC 48 hours advance notice of the helium leak check/shroud measurements, so ADEC staff can observe field procedures, any necessary repairs, and testing and measurements (helium concentrations in the port and under the shroud). * If a leak test fails at a specific probe, the seal will be repaired, the leak test performed again at that probe, and soil gas resampled for all probes at the site. * If all leak tests pass for all of the probes at the site, no resampling of the soil gas at the site will be required. * If ADEC notes a systematic problem (absent noticeable damage, leak checks fail for all probes at a site and multiple attempts to seal/repair the probes fail), then ADEC will require the 2014 soil gas data for those sites to be rejected. Following this occurrence of systemic failure (i.e. failure to get a leak check to pass at multiple sites and multiple soil gas probes even after remedies are attempted), JBER, ADEC, Weston, and CH2MHILL will meet to discuss to remedy the situation.

Action Date: 11/25/2014
Action: Meeting or Teleconference Held
DEC Staff: Louis Howard
Action Description: Soil Gas Sampling JBER Nov. 25, 2014 meetingObjectives of the meeting were to (1) discuss Alaska Department of Environmental Conservation (ADEC) comments (dated October 13, 2014 and November 18, 2014) on the Draft Site Characterization Addendum for Sites TU075 and TU085 regarding soil gas sampling field documentation and (2) the path forward to achieve ADEC concurrence with Cleanup Complete (Site Closure) for those sites and others where soil gas sampling was conducted during the 2014 field season.ADEC comments regarding additional documentation of the helium leak check that is conducted prior to soil gas sampling are noted below.??? ???ADEC requests the Air Force describe in detail where the documentation that helium underneath the shroud was greater than ten percent (10). It appears that this section is the only place where this statement is documented. This information must also be documented in field notes and/or soil gas sampling log.??? Without documentation required supporting a helium leak check, ADEC does not have full confidence in the soil gas data to support a closure determination at this time and the report addendum and initial Site Characterization report for TU085 cannot and will not be approved.??? The concentration of helium gas under the shroud is not reported on soil gas sampling logs or in the field notes; ADEC will require that a leak check be conducted again by the Air Force and at least a three day notice provided to ADEC???s project manager so technical staff can be on site and observe the procedure from start to finish.???ADEC commented that without documentation that the helium concentration beneath the shroud was greater than 10 percent, either on the sampling log or in the field notes, ADEC will not concur with site closure and will require that leak checks be conducted again for all soil gas probes present at one site on each installation (JBER-Elmendorf and JBER-Richardson). ADEC will also require that a representative(s) is on site to observe these additional helium leak checks from start to finish. There was discussion regarding the potential for the soil gas probes to be compromised due to Base operations and weather since initial installation and sampling (dating back to June 2014) and what additional action would be required if a leak check fails.The path

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

forward was outlined as follows:??? At each site with a site closure objective, inspect soil gas probes for obvious damage that may have compromised the surface seal since the probe was last sampled.o Sites TU075, TU085, and TU074 at JBER-Richardsono Sites CG702, SO552, ST048, SO525, TU091 at JBER-Elmendorf??? Select a site at each installation (JBER-Elmendorf and JBER-Richardson) for additional helium leak checks of all probes at that site.??? Provide ADEC 48 hours advance notice of the helium leak check/shroud measurements, so ADEC staff can observe field procedures, any necessary repairs, and testing and measurements (helium concentrations in the port and under the shroud).??? If a leak test fails at a specific probe, the seal will be repaired, the leak test performed again at that probe, and soil gas resampled for all probes at the site.??? If all leak tests pass for all of the probes at the site, no resampling of the soil gas at the site will be required.??? If ADEC notes a systematic problem (absent noticeable damage, leak checks fail for all probes at a site and multiple attempts to seal/repair the probes fail), then ADEC will require the 2014 soil gas data for those sites to be rejected. Following this occurrence of systemic failure (i.e. failure to get a leak check to pass at multiple sites and multiple soil gas probes even after remedies are attempted), JBER, ADEC, Weston, and CH2MHILL will meet to discuss to remedy the situation.

Action Date: 11/10/2014
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Report addendum received for review and comment. Soil gas screening at TU085-SV01 and TU085-SV02 indicated that the soil is well oxygenated(17.2 and 19.2 percent, respectively) and contains carbon dioxide (2.1 and 1.0 percent,respectively) above the normal atmospheric concentration; methane was not detected. Soil gasscreening results are included in Table 1 and can be found in the field sampling logs(Appendix A-1).Results of the TO-17 analysis for 1-MN, 2-MN, and naph are included in Table 2 and are shownon Figure 1, along with select soil sample results from 2013. Results for 1-MN, 2-MN, and naphin soil gas at 8 feet bgs (the approximate depth of a potential future basement) are nondetect.The sample quantitation limits are included in Table 2 and are below the ADEC shallow soil gastarget levels. A review of the data quality evaluation (Appendix B-1) indicates that overall precision and accuracy of the data are sufficient for project objectives. The ambient air blank was free of contamination, and no data required qualification. The complete laboratory data package is included in Appendix B-2.CONCLUSIONS AND RECOMMENDATIONSMultiple lines of evidence indicate that the vapor intrusion exposure pathway for potential futureresidential and industrial scenarios is insignificant at TU085. Specifically, concentrations of1-MN, 2-MN, and naph in soil gas at 8 feet bgs are below the ADEC shallow soil gas target levels,and soil screening results show that the subsurface is well-oxygenated and has low carbon dioxideand low negligible methane concentrations (Table 1 and Appendix A-1), indicating that subsurfaceconditions are sufficient to support biodegradation and attenuation processes. Based on thisinformation, soil gas does not pose a risk to future residents. Therefore, it is recommended that no further investigation is performed and the site is granted a designation of ???Cleanup Complete??? by ADEC.

JBER-FT. RICH TU085 BLDG 972 UST 106 (Continued) **S108941727**

LUST:

Facility Name:	JBER-FT. RICH TU085 BLDG 972 UST 106
Facility Status:	Cleanup Complete
Record Key:	1994210027101
File ID:	2102.26.020
Oname:	U.S. Air Force
Lat/Lon:	61.26404 -149.7054
Lust Event ID:	2684
CS or Lust:	LUST
Borough:	Anchorage
Staff:	No Longer Assigned
Site Type:	Military Installation - Base/Post/Other
Horizontal Datum:	NAD83

Inst Control:

Hazard ID:	23000
Facility Status:	Cleanup Complete
Action:	Institutional Control Record Established
Action Date:	9/29/1994
File Number:	2102.26.020

Hazard ID:	23000
Facility Status:	Cleanup Complete
Action:	Institutional Control Record Removed
Action Date:	6/2/2015
File Number:	2102.26.020

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105 WNW 1/2-1 0.974 mi. 5142 ft.

JBER-FT. RICH BLDG 920 UST 95 USTA 2 PARTY **SHWS** **S110144135**
CIRCLE LOOP ROAD, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Actual: 309 ft.

SHWS:

File Number:	2102.38.044
Staff:	Not reported
Facility Status:	Cleanup Complete
Latitude:	61.273116
Longitude:	-149.709412
Hazard ID:	22983
Problem:	Building was demolished in a fire training exercise in the fall of 1996. UST 95 was removed. Meets level D cleanup criteria.USTA 2 Party Attach. D UST System Compliance Schedule for Upgrade or Closure

Actions:

Action Date:	9/28/1994
Action:	Site Closure Approved
DEC Staff:	David Allen
Action Description:	Letter to Army re: Site Assessment Report Bldg. 920 Former UST 95 Facility No. 0-00788 July 20, 1994. The text states the cleanup criteria is level C. Based on information from other consultants' reports at Fort Richardson, the annual precipitation has been calculated to be approximately 13 to 20 inches per year (Univ. of AK Anchorage Environmental Atlas???1972). This correction would result in a cleanup score of 20 or category D: gasoline range organics (GRO)-1,000 mg/kg, diesel range organics-2,000 mg/kg, residual range organics-2,000 mg/kg, benzene-0.5 mg/kg, Total BTEX-100 mg/kg. Since

JBER-FT. RICH BLDG 920 UST 95 USTA 2 PARTY (Continued) **S110144135**

the highest amount of contamination detected (1,900 mg/kg DRO) does not exceed this amount, ADEC will consider Bldg. 920 UST 95 closed out. This closure does not preclude future remedation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause an unacceptable risk to human health, safety or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected. ADEC reserves all of its rights under Title 46 of Alaska Statutes, 18 AAC 75, and 18 AAC 78 to request additional activities in the future if necessary to address these risks.

Action Date: 9/24/1994
Action: Leaking Underground Storage Tank Cleanup Initiated - Petroleum
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 9/24/1994
Action: Site Added to Database
DEC Staff: * Not Assigned
Action Description: Not reported

Action Date: 8/21/2002
Action: Update or Other Action
DEC Staff: Cynthia Pring-Ham
Action Description: RECKEY has automatically been generated.

Action Date: 3/22/1996
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from ADEC CS Program to Sam Swearingen (Army) re: Release investigation for Bldg. 920 UST 95. Based upon a review of the information submitted no further assessment or remediation of the site is requested at this time, The closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination is excavated. DEC reserves all of its rights under Title 46 of Alaska Statutes and 18 AAC 78 to request additional activities in the future if necessary to address these risks. ADEC requests any monitoring wells installed as part of these investigations to be added to a Post-wide groundwater monitoring well network established under CERCLA FFA (or the Two-Party Agreement). The buildings covered by this decision are: 914 UST 137, 920 UST 95, 926 UST 96, 932 UST 97, 934 UST 98, 936 UST 99, 944 UST 100, 946 UST 101, 950 UST 102, 962 UST 105, and 968 UST 34. This decision requires the Army to control digging or any excavation in area and that institutional controls will be in place to control access to contaminated soils.

106
WSW
1/2-1
0.981 mi.
5181 ft.

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA — **SHWS** **S107029083**
1ST & D STREETS FTRS-06 FTRS-64, FORMERLY FORT RICHARDSON BE — **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Actual:
289 ft.

SHWS:

File Number:	2102.26.004
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Facility Status:	Cleanup Complete - Institutional Controls
Latitude:	61.259255
Longitude:	-149.707715
Hazard ID:	1790
Problem:	The site was and is the site of the DPW heavy equipment maintenance shop. Used oil UST 14 (1,000 gallons) was removed in 1987 petroleum contamination found at site. A leachability assessment was conducted for the site. It was determined that groundwater contamination did not come from the UST site and the site was closed with ICs. All contamination has been dealt with to the maximum extent practicable, no further action required or planned. ER,A Eligible Response Complete FTRS-06 Bldg 740 UST 14 also known as FTRS-64 Bldg 740 UST 14, Public Works Motorpool. UST Fac. ID 0-00788 Last Staff Assigned was Howard. Formerly known as Building 740 - DEH Mobile Equipment Repair/Welding/Machine/Sheet Metal Shops. Site N095, Site W018, 1990 RFA SWMU 17, 18, 19. EPA ID: AK6214522157

Actions:

Action Date:	9/21/1993
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	A.G. letter (Breck Tostevin) to Tamela J. Tobia, OS Judge Advocate for the Army. Letter states that a separate petroleum site compliance agreement should be separate from the CERCLA federal facility agreement. The petroleum site restoration agreement would function as a two-party agreement under the FFA. It would track the basic provisions of the UST Agreement but be tailored to the State's contaminated site regulations and would interface with the FFA. All petroleum sites addressed under the Two Party agreement would be reviewed in the final operable unit of the FFA and actions taken would be memorialized in a Record of Decision (ROD) under the FFA.

Action Date:	9/14/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Update to Post-wide review of institutional controls received which includes this site. Soil contamination has been secured under an asphaltic cap, removing the potential for direct dermal exposure, and inhalation, or ingestion of contaminated dust or soils. There are no potable water wells within one mile radius of Building 740, with no current plans to have one installed. Any maintenance or construction activity involving excavation or drilling on Fort Richardson requires a site specific work authorization permit. Each permit application is checked by the Environmental Resources Department against known ICs and contaminated sites. Enforcement of ICs and Dig Permit requirements will ensure that potential exposure of workers or other personnel at this site to residual soil contaminants is minimized through selection and use of personnel protective equipment (PPE) appropriate to the contaminants at the site.Because this remedy will result in hazardous substances remaining on site above levels that allow for unlimited use and unrestricted exposure, a review will be

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA 2 PARTY (Continued) **S107029083**

conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Action Date: 8/30/2013
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided review comments on the draft work plan.Executive SummaryPage ES-3Site-Specific Proposed WorkIt should be noted that sites with existing contaminated GW will require that migration to GW cleanup levels be used for soil & ICs will be required. Once GW is below Table C for a period of time (consistent with & per the latest approved ???Basewide Monitoring Program Well Sampling Frequency Decision Guide (Attachment 1 Memo to the Site File for OUs 4, 5, & 6 September 2003)??? two rounds annual GW monitoring), the maximum allowable concentrations in soil may become the cleanup levels as determined by ADEC on a case by case basis. The text states: ???Up to approximately 24 primary soil samples will be collected & analyzed for DRO, RRO, PAHs, & VOCs (BTEX plus naphthalene [BTEXN]).???All VOCs will be required to be reported in addition to BTEXN due to PCE being found an order of magnitude above the cleanup level in the location of UST 14. Tetrachloroethylene (PCE) was detected in sample 93FRU108SL above the migration to GW cleanup level of 0.024 mg/kg at 0.29 mg/kg (4.2.2 Volatile Aromatic Organic Compounds (Method 8010/8020) Page 21, EMCON Final RI Report Former UST No. 14 Bldg. 740 July 12, 1994). This PCE soil result cannot be discounted & ignored as part of this site characterization. Both ADEC required methanol preserved soil samples & EPA???s low-level analysis with SW8260 for VOCs shall be used at this site investigation associated with the former waste oil UST (UST 14). NOTE: EPA no longer accepts sodium bisulfate preserved samples for SW8260; instead use VOC/VOA vials with a water carrier. GW analysis will need to include VOCs (specifically PCE & its daughter products since it was detected in the soil above migration to GW cleanup levels & UST 14 is the source of the contamination). ADEC requests clarification on whether or not sampling for ethylene dibromide (EDB) was conducted at the site during GW monitoring. EDB analysis is required for used oil sources per ADEC???s Draft Field Sampling Guidance (May 2010). This guidance document updates & expands the sampling procedures currently found in the Underground Storage Tank (UST) Procedures Manual, adopted by reference in the 18 AAC 78 regulations. EDB analysis with either method 8011 or 504.1 must be used to quantify EDB in GW. Method 8260 will quantify EDB in GW; however, the detection limits do not meet the Table C cleanup level of 0.00005 mg/L.Historical Soil Boring Location & Results ??? Building 740Please locate sample location, depth & result for sample 93FRU108SL on the figure (e.g. AP-3268 10??? bgs 0.29 mg/kg). Conceptual Site ModelLand Use ConsiderationsThe text states: ???Concentrations of petroleum hydrocarbons in soil at TU064 exceed ADEC???s cleanup levels for unrestricted use.??? This is partially true. A more correct statement would be: ???Concentrations of petroleum hydrocarbons & PCE in soil at TU064 exceed ADEC???s cleanup levels for unrestricted use.???Page 20Data Gaps3rd BulletVOCs beyond petroleum related VOC data for soils need to be reported (e.g. PCE & all potential daughter products). See comment 1 regard SW8260 methanol & low-level analysis sampling requirements for soil. GW analysis will need to include VOCs (specifically PCE & its daughter products since it was detected in

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA 2 PARTY (Continued) **S107029083**

the soil above migration to GW cleanup levels & UST 14 is the source of the contamination).Project Action Limits & Laboratory-Specific Detection/Quantitation LimitsTarget Analyte ListVOCs beyond petroleum related VOC data for soils need to be analyzed for & reported (e.g. PCE & all potential daughter products). See comment 1 regard SW8260 methanol & low-level analysis sampling requirements for soil. As a waste oil source, ADEC requests information on whether GW was ever sampled for EDB with an appropriate method with a detection limit below the Table C cleanup level of 0.00005 mg/L. EPA 8011 or EPA 504.1 should be used when evaluating ethylene dibromide (EDB). EPA 8260 will quantify EDB in ground water; however, the detection limits do not meet the Table C cleanup level of 0.00005 mg/L (ADEC Draft Field Sampling Guidance Appendix F May 2010). If EDB is not detected in GW as part of this sampling for TU064, then it can be removed from consideration as a contaminant of concern. Project Soil Screening LevelsVOCsAdd PCE & all potential daughter products to the table for VOCs. Project GW Screening LevelsVOCsAdd PCE & all potential daughter products to the table for VOCs. Add EDB (ethylene dibromide or 1,2-Dibromomethane CAS Number 106-93-4).

Action Date: 8/29/2007
Action: GIS Position Updated
DEC Staff: Louis Howard
Action Description: 61.259 N latitude -149.7074 longitude

Action Date: 8/19/1997
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Memorandum from Army for Institutional Controls for soil and groundwater at Building 740. 1. Attached find a map delineating the area covered by institutional controls at Bldg 740, the Decision Document for Bldg 740, and the State of Alaska, Department of Environmental Conservation (ADEC) concurrence with using institutional controls to control contaminated soils and groundwater at Bldg 740.2. Underground storage tank (UST) 14, Bldg 740 was incorporated in the Fort Richardson-ADEC UST Compliance Agreement in 1993, making investigation and corrective action at this site enforceable under 18 Alaska Administrative Code (AAC) 78 and 40 CFR 280. Any excavation, required for facility maintenance, within the area indicated on the above referenced map shall be coordinated with the Fort Richardson Environmental Coordinator. The Environmental Coordinator shall ensure proper worker personnel protective equipment selection. Further, the Environmental Coordinator shall ensure that any contaminated soils encountered are properly managed and, if necessary, disposed of in accordance with all relevant and appropriate regulations.3. Both carbon tetrachloride and chloroform have been detected in groundwater monitoring wells in the vicinity of Bldg 740. Groundwater wells, other than for environmental monitoring purposes, shall not be drilled at this site. Failure to inform the Environmental Coordinator may result in violation of 18 AAC 78, the FRA-ADEC UST Compliance Agreement and 40 CFR 280, resulting in fines already stipulated in the Agreement.

Action Date: 7/31/2013
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft UFP-QAPP received for review and comment. The overall objective

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA 2 PARTY (Continued) **S107029083**

for the site is to meet ???unrestricted or residential site use??? criteria and achieve a ???cleanup complete without institutional controls (ICs)??? determination. To meet this objective, soil and groundwater samples will be collected to characterize risk to human health and the environment within the framework of the ADEC site cleanup process (Title 18 Alaska Administrative Code Chapter 75 [18 AAC 75] Sections 325 to 390 and 18 AAC 78 Section 600)(ADEC, 2012a; ADEC, 2012b). If ADEC Method Two cleanup criteria as established under18 AAC 75 are exceeded, the Hydrocarbon Risk Calculator (HRC) approach under MethodThree will be used to assess whether site conditions meet ADEC risk criteria (in which case, a???cleanup complete without ICs??? determination will be requested) or whether the site posesunacceptable risk (in which case, further remediation may be required).If unacceptable risk is indicated by the HRC, or if vadose zone soils exceed maximum allowableconcentrations, then remedial options will be evaluated that address the contaminants of concernand associated exposure routes that contribute enough risk to cause the cumulative risk estimateto exceed the risk standard.At TU064, four new soil borings will be drilled as shown on Figure 3 and discussed in thefollowing list:Two borings will be drilled at former borings AP-3268 and AP-3271 to accomplish thefollowing: (1) resample the soil at the location and depth where previous sampling showedthe maximum exceedances of the migration to groundwater criteria for DRO and residualrangeorganics (RRO); and (2) collect source area soil samples for analysis of GRO, polycyclic aromatic hydrocarbons (PAHs), volatile petroleum hydrocarbons (VPH), and extractable petroleum hydrocarbons (EPH).Two borings will be drilled west and south of the former tank to assess the lateral extent ofcontamination.Up to approximately 24 primary soil samples will be collected and analyzed for DRO, RRO,PAHs, and VOCs (BTEX plus naphthalene [BTEXN]). Three of the soil samples will also be analyzed for GRO, EPH and VPH. One of the soil samples will be analyzed for soil bulk density, grain size distribution, specific gravity, and soil moisture content. One of the soil samples will be collected from below the contaminated soil source and analyzed for fraction of organic carbon.Groundwater will be collected from existing onsite monitoring well AP-3532 if it is viable and contains sufficient water for purging. The collected groundwater will be analyzed for GRO, DRO, RRO, ethylene dibromide, VOCs (BTEXN), and PAHs.

Action Date: 6/12/1991
Action: Update or Other Action
DEC Staff: Tim Law
Action Description: June 12, 1991 Resource Conservation & Recovery Act (RCRA) HW Management Compliance Evaluation Inspection Report documents Tim Law, Daniel Hartung, Vic Vickaryous, Geoffrey Kany, of ADEC's RCRA program inspection the Post for compliance with the provisions of the compliance agreement (FFCA) on April 29, April 30, 1991Building 740 - DEH Mobile Equipment Repair/welding/Machine Sheet Metal ShopsMr. Frank Faust and Mr. Gary Skaggs were present to show the inspection team around Building 740. Observed were two 55-gallon containers both approximately half full with spent solvent. One container was adjacent to the dip tank and the other was just outside of the back door. This solvent has a flash point of 110 degrees F as a product, according to the MSDS sheet that Mr. Faust showed Mr. Kany. An adequate hazardous waste determination has not been made on the contents of these two drums of solvent, in violation of 40 CFR 262.11

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA 2 PARTY (Continued) **S107029083**

and Paragraph 21.A. of the FFCA. This OEH operation normally brings their spent solvent over to the SPERS Shop in Building 974 for reclamation when the containers become filled with&183;spent solvent. Neither container was labeled hazardous waste nor had the accumulation start date clearly marked on the container, in violation of Paragraphs 21.C. and 21.0. of the FFCA. These recyclable materials were not being managed in accordance with 40 CFR 261.6(b), which requires that 40 CFR 262.34(a) be complied with for generators.The fenced-in waste accumulation point out behind Building 740 had containers of contaminated diesel, contaminated fuel, and contaminated antifreeze. Ms. Scott insisted that all of these materials would be reutilized without having to be first treated or filtered; such that they do not have to be accumulated as regulated hazardous waste.

Action Date: 6/10/2013
Action: Exposure Tracking Model Ranking
DEC Staff: Louis Howard
Action Description: Initial ranking with ETM completed for source area id: 72768 name: auto-generated pm edit Ft. Rich Bldg. 740 UST 14 DPW Maint

Action Date: 5/8/1996
Action: Institutional Control Record Established
DEC Staff: Louis Howard
Action Description: Based on the information submitted and the data from the monitoring wells installed at the sites (Buildings 740 UST 14 and Building 796 UST 27), it appears the detected contaminants (carbon tetra chloride/chloroform) were not from the two underground storage tank sites. ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. Area noted on Post Management plans and maps as an area requiring ICs and waste management and disposal at a permitted facility if soil were to be excavated at any time in the future. Closure of the sites under the UST Management Plan Agreement is granted by ADEC. As a part of ADEC’s conditions to granting closure, ICs restricting any access to the groundwater and contaminated soils at the site will be required. The closure does not preclude future remediation or site investigation if new information indicates there is previously undiscovered contamination from the USTs or exposures which cause unacceptable risk to human health or the environment. Future investigation and/or remedial actions may be required if contamination exceeding these risks are detected or if the contamination at either site (740 and 796) is excavated by the Army (or its contractors, tenants, or lease holders) for any reason in the future. ADEC reserves all of its rights under Title 46 of the Alaska Statutes and 18 AAC 78 to request additional activities in the future if necessary to address these risks. ADEC requests the monitoring wells installed at the sites be added to the post-wide ground water monitoring network to be established under the CERCLA FFA. ADEC concurs with the request to address the groundwater contamination as a part of Operable Unit D. Because this remedy will result in hazardous substances remaining on site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

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Action Date: 5/8/1996
Action: Conditional Closure Approved
DEC Staff: Louis Howard
Action Description: Release investigation showed diesel contaminated soils at site above matrix Level C criteria. Leaching assessment shows that contaminants will not reach groundwater. Site closed out with access restrictions to soil and groundwater. Closing out the site does not preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that previously undiscovered contamination or exposures lead to groundwater contamination above the applicable water quality criteria (18 AAC 70) or pose a risk to human health, wildlife or the environment, then future investigation and or remedial actions will be required by ADEC.The following policy applies for soil regulated under 18 AAC 75 and 18 AAC 78 that is proposed for disposal off site from where it was generated. If the following criteria is met, ADEC approval and/or an institutional control(s) are not required:1. The soil meets the most stringent Method Two, Migration to Groundwater, Table B2 cleanup level, and the most stringent standards for those chemicals under Table B1;2. The soil may only be disposed of at any non-environmentally sensitive location in the Under 40 or Over 40 annual precipitation zone;3. The soil is not placed within 100 feet of water wells, surface waters, and drainage ditches; and4.The written approval from the landowner of the off-site location is required.The off site disposal of all other soil subject to the site cleanup rules that does not meet the criteria above shall be reviewed by the ADEC project manager in order to determine if the off-site disposal action poses a current or future risk to human health or the environment. The final approval to dispose of soil off site that does not meet the criteria shall be made by the ADEC Section Manager.Terms used in this document have the meaning given in 18 AAC 75.990 including: ???environmentally sensitive area??? means a geographic area that, in the department's determination, is especially sensitive to change or alteration, including: (A) an area of unique, scarce, fragile, or vulnerable natural habitat; (B) an area of high natural productivity or essential habitat for living organisms; (C) an area of unique geologic or topographic significance that is susceptible to a discharge; (D) an area needed to protect, maintain, or replenish land or resources, including floodplains, aquifer recharge areas, beaches, and offshore sand deposits; (E) a state or federal critical habitat, refuge, park, wilderness area, or other designated park, refuge, or preserve; and (F) an area that merits special attention as defined at 6 AAC 80.170 (Repealed see AS 46.40.210(1)) ???area which merits special attention??? means a delineated geographic area within the coastal area which is sensitive to change or alteration and which, because of plans or commitments or because a claim on the resources within the area delineated would preclude subsequent use of the resources to a conflicting or incompatible use, warrants special management attention, or which, because of its value to the general public, should be identified for current or future planning, protection, or acquisition; these areas, subject to council definition of criteria for their identification, include:(A) areas of unique, scarce, fragile or vulnerable natural habitat, cultural value, historical significance, or scenic importance; (B) areas of high natural productivity or essential habitat for living resources; (C) areas of substantial recreational value or opportunity;(D) areas where development of facilities is dependent upon the utilization of,

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or access to, coastal water;(E) areas of unique geologic or topographic significance which are susceptible to industrial or commercial development; (F) areas of significant hazard due to storms, slides, floods, erosion, or settlement; and (G) areas needed to protect, maintain, or replenish coastal land or resources, including coastal flood plains, aquifer recharge areas, beaches, and offshore sand deposits.

Action Date: 5/31/1994
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Due to the high levels of diesel range organics (DRO) and total petroleum hydrocarbons (TPH) at the site, ADEC requested installation of a groundwater monitoring well, number AP-3532, to confirm contamination did not extend to groundwater. Neither DRO or TPH were discovered. However, groundwater samples contained chloroform and carbon tetrachloride above the maximum contaminant levels (MCL)/risk based concentrations (RBC) of 0.16 parts per billion (ppb) and 0.15 ppb, respectively. Soil samples taken during installation of the groundwater monitoring wells showed no evidence of carbon tetrachloride or chloroform contamination, indicating that UST 14 was not the source of these contaminants.

Action Date: 5/17/1994
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff reviewed and commented on the April 1994 Draft Release Investigation report, Former UST 14 Building 740 Contract No. DACA85-93-D-0013, Fort Richardson, Alaska.The Alaska Department of Environmental Conservation-Defense Facilities Oversight group (ADEC) has received, on May 6, 1994, a copy of the above referenced report for building 740. Below are our comments regarding the report.2.2 Geology and Hydrogeology pages 5 and 6The text states there is one well AP-2980 located within one-quarter mile of the site completed in 24 feet with groundwater at 23 feet. The exact location could not be determined by looking at the post map (fig. 1) or any other figure listed in the report. Please provide the information on its exact location in relation to the site. 5.2 Evaluation of Potential Remedial Alternatives page 36While the numerical leaching model MMSOILS predicts that petroleum impacted soil will notpresent a danger to the groundwater through leaching, ADEC will require additional measures beyond capping with asphalt material in order to ensure the groundwater is not impacted. Prior to ADEC accepting the no further remedial action alternative, the Army will be required to install a monitoring well located downgradient from the site. Downgradient will be assumed to mean in a westerly direction from the site based on information presented in section 2.2 of the report.The well will be sampled for petroleum hydrocarbon contaminants-Leo diesel range organics,gasoline range organics, BTEX, and total petroleum hydrocarbons. If groundwater sampling from the monitoring well shows no petroleum impacts and the site is capped with asphalt material, then ADEC will consider the site closed out. Closing out of this site does not limit nor preclude ADEC from requesting future remediation or site investigation at a later date. If new information indicates that there is previously undiscovered contamination or exposures that may cause an increased risk to human health or the environment, then future investigation and/or remedial actions may be

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required by ADEC. It is recommended that the new monitoring well be added to the existing Fort Richardson groundwater monitoring network for regular sampling.

Action Date: 4/5/1991
Action: Enforcement Agreement or Order
DEC Staff: Tim Law
Action Description: RCRA Federal Facility Compliance Agreement signed. On 6/8-9/89 inspection by EPA and ADEC of the Post to determine its compliance status with RCRA. Two 55 gallon containers, half full with spent solvent were noted. One container was adjacent to the dip tank and the other was just outside of the back door. An adequate hazardous waste determination has not been made on the contents of these two drums of solvent, in violation of 40 CFR 262.11 and paragraph 21.A. of the FFCA. Neither container was labeled hazardous waste nor had the accumulation start date clearly marked on the container, in violation of paragraphs 21.C. and 21.D. of the FFCA. These recyclable materials were not being managed in accordance with 40 CFR 261.6(b), which requires that 40 CFR 262.34(a) be complied with for generators.Required compliance action- Fort Richardson shall determine if its waste located at building 740 is a hazardous waste and comply with 40 CFR 262.11. Fort Richardson shall obtain a detailed chemical and physical analysis of a representative sample of waste or use knowledge of the waste to determine if wastes are hazardous wastes, as required by 40 DFR 262.11, 40 CFR 265.13(a)(1) and 40 CFR 268.

Action Date: 4/30/1987
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Facility ID 0-000788 500 gallon used oil Underground Storage Tank (UST) 14, Bldg 740, located at the intersection of D Street and First Street, was removed and replaced with a new UST in 1987. During excavation total petroleum hydrocarbon (TPH) contamination was encountered in the soil at up to 1,080 parts per million (ppm).

Action Date: 4/21/1998
Action: Site Ranked Using the AHRM
DEC Staff: Bill Petrik
Action Description: Ranking action added now because it was not added when the site was originally ranked.

Action Date: 2/5/1995
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Letter from Army to ADEC. On January 13, 1995, you met with Mr. Samuel P. Swearingen, and Major Kevin Gardener of the Environmental Compliance Branch. At this time you requested an explanation for the lack of spill protection on a number of underground storage tanks(UST) located at Fort Richardson. Below you will find a listing of those regulated tanks that were in question and an explanation of how the spill control requirement is met:Tank14A- This is a used oil USTwith an ILS-350 interstitial monitor/overfill alarm system. The tank's spill control system consists of a catchement basin/floor drain system attached to an oil water separator. The tank is filled through manually pouring oil into either one of the floor drains or into an oil sink. The system is non-pressurized, and gravity fed.

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Action Date:	12/30/1988
Action:	Update or Other Action
DEC Staff:	Ron Klein
Action Description:	UST Database shows a 1,000 gallon UST 14 at Bldg. 740 DEH Maintenance to be leaking. It was installed in 1975 and is in use.

Action Date:	12/17/1997
Action:	Site Added to Database
DEC Staff:	Louis Howard
Action Description:	Petroleum contamination.

Action Date:	12/13/1995
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	The Army sent ADEC a letter-SUBJECT: Closure UST Sites for UST Number 14(Bldg 740) and UST Number 27(Bldg 796)As requested in your letters dated 17 May 1994, and 16 May 1994 groundwater wells were installed at Bldg 740 and 796, respectively. Once installed the wells were to be sampled to determine if the underground storage tanks (UST) number 14 and 27, at Bldg 740 and Bldg 796, respectively, had impacted the groundwater. These wells numbered AP-3532 (Bldg 740) and AP-3533 (Bldg 796) were sampled and the results reported by the Alaska District Corps of Engineers in the GROUNDWATER STUDY: FALL 1994 & SPRING 1995, FORT RICHARDSON, ALASKA report. Based upon the samples analyzed chloroform and carbon tetrachloride were detected at Bldg 740 at 1.6and 1.4 ug/L, respectively. At Bldg 796 these contaminants were detected at 0.2 and 1.6 ug/L, respectively.While these analytes exceed their respective risk based concentration (RBC) levels, there is no evidence to suggest that these compounds were ever stored in either UST. Furthermore, neither chloroform nor carbon tetrachloride were detected in any of the soil boring samples taken during UST release investigations conducted at these sites. It appears, therefore, that thegroundwater is being impacted by a contaminant plume of unknown origin, that is not associated with either UST.USARAK requests that contaminated soils associated with USTs 14 and 27, be granted closure under 18 AAC 78. Wells AP-3532 and AP-3533, along with other wells in the general area, will be resampled in the first quarter of 1996 to attempt to identify the upgradient source of the chloroform and carbon tetrachloride. Any corrective action taken to address groundwater contamination, if deemed necessary, would be conducted under the Fort Richardson-EPA-ADEC Federal Facility Agreement.

Action Date:	12/12/2001
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	1. All organizations conducting activities on United States Army Alaska (USARAK) controlled land are responsible for complying with established institutional controls (ICs). ICs are administrative, procedural, and regulatory measures to control human access to and usage of property. They are applicable to all known or suspected contaminated sites where contamination has been left in place.2. These controls have been established to implement the selected remedial actions agreed upon by the U.S. Army (Army), the U.S. Environmental Protection Agency (USEPA), and the Alaska Department of Environmental Conservation (ADEC) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act

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(CERCLA) as amended by the Superfund Amendment Reauthorization Act (SARA). These controls also apply to remedial actions agreed upon under Two-Party Compliance Agreements. These agreements are concluded between USARAK and ADEC and apply to petroleum/oil/lubricants- (POL) contaminated sites.3. ICs such as limitations on access, water use, excavations, and property transfers will supplement engineering controls as appropriate for short-term and long-term management to prevent or limit human and environmental exposure to hazardous substances, pollutants, or contaminants. Specific ICs include, among other things: limitations on the depth and location of excavations, prohibition of or restrictions on well drilling and use of ground water, requirements for worker use of personal protective equipment, site monitoring, and prohibition of certain land uses, types of vehicles, etc. 4. Organizational units, tenants, and support/contractor organizations must obtain an Excavation Clearance Request (ECR) for all soil disturbing activities impacting soils six inches or more below the ground surface. The review process for approval of an ECR begins with the identification of the current status (known or suspected hazardous waste site or ???clean??? site) of a work location. ECR???s for work in known or suspected hazardous waste sites:a. will include specific limitations and controls on such work;b. will include specific IC procedures, and notification, monitoring, reporting, and stop work requirements;c. may include procedures for management, characterization, and disposal of any soil or groundwater encountered or removed; d. will identify ???project managers??? for both the unit/contractor requesting the work and DPW Environment Resources.5. The DPW project manager will conduct on-site inspections of each work site (at which ICs apply) to determine continued compliance with the terms and conditions of the approved ECR. DPW has the authority to revoke ECR approval if the specified terms and conditions are not being met. ECR forms are available at the Customer Service Desks at: a. Building 730 at Fort Richardson; b. Building 3015 at Fort Wainwright; c. Building 605 at Fort Greely.6. USARAK has negotiated (with USEPA and/or ADEC) decision documents and/or Records of Decision (RODs) that mandate the implementation of ICs USARAK Directorate of Public Works, Environmental Resources Department (PWE), maintains copies of all decision documents and RODs requiring ICs in its real property files. PWE provides regularly updated post maps showing all areas affected by ICs. These maps can easily be accessed by using an approved intranet mapping interface application. Copies of these maps will be available to each directorate, activity, and tenant organization. To ensure the effectiveness of ICs, all organizational units and tenant activities will be informed on an annual basis of ICs on contaminated soils and groundwater in effect near their facilities. 7. ICs are enforceable by the U.S. Environmental Protection Agency (USEPA) and the Alaska Department of Environmental Conservation (ADEC). Failure to comply with an IC mandated in a decision document or ROD will violate the USARAK Federal Facility Agreement and may result in stipulated fines and penalties. This does not include the costs of corrective actions required due to violation of an established IC.

Action Date: 11/30/2017
Action: Update or Other Action
DEC Staff: Louis Howard
Action Description: Draft VI report received for review and comment. Benzene, PCE, and TCE were detected in indoor air during FSE1 and FSE2, and in outdoor

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air during FSE2. PCE and TCE were not detected in outdoor air during FSE1. Indoor air concentrations were higher than outdoor air concentrations during both sampling events. Benzene and PCE were the only COIs detected in soil gas during FSE1. There is no spatial bias apparent in the locations of the COI detections in ambient air or soil gas. The presence of benzene and PCE in soil gas and indoor air suggest the potential presence of a complete VI pathway. Based on the above lines of evidence, the VI pathway is considered potentially complete at Building 740.See site file for additional information.

Action Date: 11/12/1993
Action: Enforcement Agreement or Order
DEC Staff: Louis Howard
Action Description: State-Fort Richardson Underground Storage Tank Compliance Agreement signed by the ADEC and the U.S. Army. Purpose of the agreement is to bring Fort Richardson into compliance with Underground Storage Tank (UST) regulations and avoid the expense of formal enforcement proceedings. The Army agrees to perform the necessary inventory, record keeping, registration, upgrading or closure, tightness testing, site assessment, release reporting, release investigation, and corrective action (remediation) associated with USTs at Fort Richardson (excluding Alaska Department of Military and Veterans Affairs and Army National Guard USTs). Listed in Attachment B as requiring a release investigation plan for UST 14.

Action Date: 10/17/1993
Action: Site Characterization Report Approved
DEC Staff: Louis Howard
Action Description: Release investigation showed diesel contaminated soils at site above matrix Level C criteria. The only contaminants of concern are diesel range organics (DRO) and TPH, at up to 7,400 ppm and 12,733 ppm, respectively. These contaminants, above the allowable contaminant levels specified in 18 AAC 78, were discovered down to 33.5 feet below ground surface (bgs). All other contaminants including gasoline, benzene, toluene, and tetrachloroethylene met acceptable risk based concentrations.A leaching assessment shows that contaminants will not reach groundwater. Recommend close out site with institutional controls.

Action Date: 1/29/2015
Action: Report or Workplan Review - Other
DEC Staff: Louis Howard
Action Description: Staff provided comments on the draft SC report. The status shall remain unchanged at ???Cleanup complete with institutional controls???. Contaminants of ConcernDiesel range organics (DRO), benzene, trichloroethylene (TCE) & tetrachloroethene (PCE).Cleanup LevelsThe cleanup level for soils at TU064 containing DRO is 10,250 mg/kg in the Under 40-inch Zone based on the ingestion pathways within the 0 to 15??? interval below ground surface (bgs). The cleanup level for soil containing benzene is 0.025 mg/kg in the Under 40-inch Zone based on the migration to GW pathway. The cleanup level for soil containing TCE is 0.020 mg/kg in the Under 40-inch Zone based on the migration to GW pathway. The cleanup level for soil containing PCE is 0.024 mg/kg in the Under 40-inch Zone based on the migration to GW pathway.In 2014, DRO was measured up to 3,790 mg/kg at TU064-SB07 (adjacent to AP-3268) near the former UST location, at a depth of 15 to 20 feet bgs. Benzene was detected above the

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migration to GW cleanup level of 0.025 mg/kg in the soil collected from the ground surface to 5 feet bgs in TU064-SB01 at 0.0272 mg/kg, & in the soil collected from 10 to 15 feet bgs in TU064-SB07 at 0.0314(J) mg/kg. TCE was observed above the migration to GW cleanup level (0.02 mg/kg) ranging from 0.028(J) mg/kg in TU064-SB07 at 5 to 10 feet bgs to 0.0611 mg/kg in TU064-SB01 at 10 to 15 feet bgs. The only detections of PCE in soil above the migration to GW cleanup level (0.024 mg/kg) were between 0 & 15 feet bgs in 2014 soil boring TU064-SB07 at concentrations ranging from 0.0325 mg/kg (at 0 to 5 feet bgs) to 0.299 mg/kg (at 5 to 10 feet bgs), & at 10 feet bgs in historical soil boring AP-3268 at a concentration of 0.29 mg/kg.There were no exceedences of Table C cleanup levels for any contaminant of concern from the well sampled at TU064. GW was measured at approximately 110 feet bgs during the 2013 sampling event. The local GW is known to flow toward the northwest. The nearest drinking water well is 1.25 miles south-southwest of TU064.TCE & PCE were detected above 18 AAC 75.342(c) Table B1 Soil Cleanup Levels in soil within 100 feet of Building 740 & within 100??? of the ground surface. Therefore, the vapor intrusion (VI) exposure pathway is potentially complete. Risks from the VI exposure pathway have not been quantitatively evaluated. The building is currently unoccupied & should the building become occupied or used on an intermittent, temporary or permanent basis, it will be necessary for the Air Force to assess possible vapor intrusion risk from TCE, PCE & benzene in the soil as soon as possible. ADEC considers this issue a high priority, especially given the recent EPA 2012 TCE memorandum regarding cancer risk, chronic noncancer & short-term non-cancer effects from exposure to TCE indoor air contamination by women child bearing age for commercial/industrial buildings.An ecoscoping form was completed for TU064 & no observed surface soil staining, no impacted vegetation, no surface water or sediment runoff from the site. The ecoscoping form indicates that a more in-depth risk evaluation is not needed & that the TU064 site conditions are protective of the environment.Based on a review of the environmental records, ADEC has determined that TU064 has been adequately characterized, however, institutional controls (ICs) will remain in place. ADEC is issuing this written determination that cleanup is complete with ICs subject to a future department determination that the cleanup is not protective of human health, safety, welfare, or of the environment [18 AAC 75.380(d)]. Additionally, JBER shall establish an IC signifying the need to quantitatively assess vapor intrusion (VI) if the building occupancy changes, the building is used for any purpose by individuals (i.e. infrequent, short term, temporary or permanent basis) or new construction is planned because of the potential future exposure through the indoor air pathway from contaminated soil. A ???cleanup complete with ICs??? designation will remain in place for TU064 in the Contaminated Sites Database.1.Any proposal to transport soil or GW off-site from TU064 requires ADEC approval in accordance with 18 AAC 75.325. A ???site??? [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership (see figure below).2.Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. 3.Notations of these requirements shall be made on the Environmental Restoration map/ Base General Plan which will show up during a dig permit review/work clearance request process.

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Action Date:	1/12/2015
Action:	Update or Other Action
DEC Staff:	Louis Howard
Action Description:	Draft Site Characterization Report received for review and comment.The following conclusions were made regarding TU064:??? Based on previous investigations and the 2013/2014 site characterization field investigation,DRO, benzene, PCE, benzo(a)pyrene, and TCE were detected above screening levels at the site and are considered COPCs. Historical detections of GRO and RRO were not observed in the 2013 and 2014 results.??? There are three source areas of contamination at TU064: a large area of petroleum contaminatedsurface soil mixed with various VOCs from surface spills associated with Building 740 operations; a smaller area of subsurface soil contaminated with petroleum hydrocarbons (DRO) mixed with various VOCs originating from the former leaking UST; and a very small area north of the surface petroleum contamination where only concentrations of TCE are present in soil above the screening levels, suggesting a possible separate surface spill. The surface and subsurface soil contaminated with petroleum hydrocarbons and VOCs overlap near the former UST, and as such is treated as one continuous area of contamination.??? The aerial extent of petroleum (DRO-) contaminated soil (the highest detected and most widespread COPC) is approximately 80 feet long and 80 feet wide centered around the former UST area, and extends from the ground surface to a total depth of approximately 30 feet bgs (approximately 190,000 cubic feet or 7,100 cubic yards). Contamination has been laterally andvertically defined for all analytes.??? A groundwater sample collected from existing monitoring well AP-3532 was reported to contain a carbon tetrachloride concentration of 0.71 &181;g/L, which is above the project screening level of 0.50 &181;g/L, but was well below the ADEC Table C cleanup level of 5 &181;g/L. The groundwater contamination observed in monitoring well AP-3532 does not appear to be associated with soil contamination observed at TU064.??? Using the HRC for soil and groundwater within the petroleum contaminated area, the cumulative carcinogenic risk and noncarcinogenic HI estimates, based on both industrial and hypothetical residential exposure scenarios, are below the regulatory risk standards for soil direct contact/ingestion, outdoor air inhalation, and groundwater ingestion.??? Using the HRC for soil and groundwater within the petroleum contaminated area, potential risks posed by the GRO, DRO, and RRO aromatic and aliphatic fractions are below the regulatory risk standard of 1 for direct contact, outdoor inhalation, and groundwater ingestion pathways. Therefore, the site meets the ADEC risk criteria for bulk hydrocarbons. Using the online Method Three and Cumulative Risk Calculator for soil within the TCEcontamination area, cumulative carcinogenic risk and noncarcinogenic HI estimates meet theregulatory risk standards for all scenarios.??? TCE, PCE, and benzene were detected above 18 AAC 75.342(c) Table B1 Soil Cleanup Levels in soil within 100 feet of Building 740. Therefore, the vapor intrusion exposure pathway is currently complete. Risks from the vapor intrusion exposure pathway have not been quantitatively evaluated.??? No potential risks to ecological receptors were observed for TU064, and potentially completeecological exposure pathways at TU064 are considered insignificant. The site achieved the???off-ramp??? in Part 3, Habitat, of the Ecoscoping form (see Appendix D).The following are recommended for TU064:??? No further investigation is necessary to characterize the nature and extent of COPCs presentin soil at

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TU064.??? No remedial action is necessary for the petroleum hydrocarbons present at TU064.??? Though Building 740 is currently unoccupied, if the occupational status of the buildingchanges, further evaluation will be necessary to assess possible vapor intrusion risk from TCE,PCE, and benzene in soil.

Contaminants:

Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU064 Bldg 740 UST 14 DPW Maint USTA
Contaminate Level Description1:	> Table C
Contaminate Media1:	Groundwater
Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	When Contaminated Soil is Accessible, Remediation Should Occur
Contaminant CTD:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan.
Contaminant CDR:	Area noted on Post Management plans and maps as an area requiring ICs and waste management and disposal at a permitted facility if soil were to be excavated at any time in the future. Annual briefings to active units, tenants and leaseholders for existing ICs.
Comments:	Not reported
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU064 Bldg 740 UST 14 DPW Maint USTA
Contaminate Level Description1:	> Table C
Contaminate Media1:	Groundwater
Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	Excavation / Soil Movement Restrictions
Contaminant CTD:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan.
Contaminant CDR:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. Five year review in 2008. Annual briefings for tenants, active units and leaseholders on existing ICs and excavation clearance forms required.
Comments:	Not reported
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU064 Bldg 740 UST 14 DPW Maint USTA
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil

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Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	When Contaminated Soil is Accessible, Remediation Should Occur
Contaminant CTD:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan.
Contaminant CDR:	Area noted on Post Management plans and maps as an area requiring ICs and waste management and disposal at a permitted facility if soil were to be excavated at any time in the future. Annual briefings to active units, tenants and leaseholders for existing ICs.
Comments:	Not reported
Staff:	Louis Howard, 9072697552 louis.howard@alaska.gov
Contaminate Name1:	JBER-Ft. Rich TU064 Bldg 740 UST 14 DPW Maint USTA
Contaminate Level Description1:	Between Method 2 Migration to Groundwater and Human Health/Ingestion/Inhalation
Contaminate Media1:	Soil
Control Type:	Land Use Plan / Maps / Base Master Plan
Control Details Description1:	Excavation / Soil Movement Restrictions
Contaminant CTD:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. The Army has established Standard Operating Procedures & a Geographic Information System based tracking system to ensure the land use restrictions are enforced. The IC system has been incorporated into the post wide Master Plan.
Contaminant CDR:	ICs are required since level of soil contaminated with petroleum is above those levels which would allow for unrestricted use. Dig permit required for any soil activity in area managed by Public Works Environmental staff. Five year review in 2008. Annual briefings for tenants, active units and leaseholders on existing ICs and excavation clearance forms required.
Comments:	Not reported

Inst Control:

Hazard ID:	1790
Facility Status:	Cleanup Complete - Institutional Controls
Action:	Institutional Control Record Established
Action Date:	5/8/1996
File Number:	2102.26.004

Count: 15 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ANCHORAGE	S109256106	FAA - ANCHORAGE AIR ROUTE TRAFFIC	5400 DAVIS HIGHWAY NEAR BONIFA		VCP
FORT RICHARDSON	S116464049	AKANG - ARMY AVIATION STATION FACI	AASF BRYANT AIRFIELD		RGA LUST
FORT RICHARDSON	S116464048	AKANG - ARMY AVIATION STATION FACI	AASF BRYANT AIRFIELD,		RGA LUST
FORT RICHARDSON	S108032550	FORT RICHARDSON BRYANT AIRFIELD IM	BRYANT AIRFIELD	99505	NPDES
FORT RICHARDSON	S116464052	AKANG - ARMY AVIATION SUPPORT FACI	FT. RICHARDSON		RGA LUST
FORT RICHARDSON	S116464051	AKANG - ARMY AVIATION SUPPORT FACI	FT. RICHARDSON,		RGA LUST
FORT RICHARDSON (JBE	S122879989	JBER-FT. RICH BLDG 750 UST 152	BUILDING 750; NW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879987	JBER-FT. RICH BLDG 702 UST 72	BUILDING 702; SW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879991	JBER-FT. RICH BLDG 756 UST 155	BUILDING 756; NW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879988	JBER-FT. RICH BLDG 740 UST 151	BUILDING 740; NW OF INTERSECTO	99505	SHWS
FORT RICHARDSON (JBE	S122879990	JBER-FT. RICH BLDG 755 UST 154	BUILDING 755; NE OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879984	JBER-FT. RICH BLDG 952 USTS 180 &	CIRCLE DRIVE FORMERLY FORT RIC	99505	SHWS
FORT RICHARDSON (JBE	S122879983	JBER-FT. RICH BLDG 796 USTS 161 &	DAVIS HIGHWAY AND 5TH STREET;	99505	SHWS
FORT RICHARDSON (JBE	S122879982	JBER-FT. RICH BLDG 796 UST 160	DAVIS HIGHWAY AND 5TH STREET;	99505	SHWS
FORT RICHARDSON (JBE	S118731763	JBER-FT. RICH MORTAR RANGES 1A & 2	EAGLE BAY, FORMERLY FORT RICHA	99505	SHWS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 29

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 07/16/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/27/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 79

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

SHWS: Contaminated Sites Database

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 09/25/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 10/24/2018
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 09/06/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 09/27/2018
Number of Days to Update: 2

Source: Department of Environmental Conservation
Telephone: 907-269-7632
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/09/2047
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/09/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 10

Source: Department of Environmental Conservation
Telephone: 907-465-5301
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/09/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 12
Source: Department of Environmental Conservation
Telephone: 907-269-7504
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

AST: Regulated Aboveground Storage Tanks
The list covers "regulated" facilities with storage capacities above 10,000 barrels (or 5,000 barrels of crude).

Date of Government Version: 01/05/2005
Date Data Arrived at EDR: 01/06/2005
Date Made Active in Reports: 02/02/2005
Number of Days to Update: 27
Source: Department of Environmental Conservation
Telephone: 907-465-5231
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Site Listing

A listing of sites with engineering controls in place included in the Contaminated Sites.

Date of Government Version: 09/25/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 10/24/2018
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

Inst Control: Contaminated Sites with Institutional Controls
Contaminated sites that have institutional controls.

Date of Government Version: 09/25/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 10/24/2018
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program sites
Sites involved in the Voluntary Cleanup Program.

Date of Government Version: 08/24/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/27/2018
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Identified and/or Proposed Brownfields Sites
Brownfield properties are defined by U.S Environmental Protection Agency (EPA) as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contamination." DEC is developing resources to assist eligible entities in Alaska in applying for EPA brownfields grants. The program also will provide technical assistance and perform some site assessments, The purpose of these assessments is to assist local redevelopment efforts on previously contaminated properties that are vacant or underused.

Date of Government Version: 09/25/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 10/24/2018
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-451-2166
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Recycling Facilities
A listing of Recycling centers in the state of Alaska.

Date of Government Version: 12/29/2014
Date Data Arrived at EDR: 12/30/2014
Date Made Active in Reports: 02/02/2015
Number of Days to Update: 34

Source: Department of Environmental Conservation
Telephone: 907-269-7802
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/03/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 86

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

CDL: Illegal Drug Manufacturing Sites

A list of properties that have been determined to be illegal drug manufacturing sites.

Date of Government Version: 02/12/2018
Date Data Arrived at EDR: 02/13/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 907-269-7543
Last EDR Contact: 05/18/2018
Next Scheduled EDR Contact: 08/27/2018
Data Release Frequency: Varies

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 05/18/2018
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 86

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

SPILLS: Spills Database

Oil and hazardous substance releases to be reported to the Department of Environmental Conservation.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 10/18/2018
Date Made Active in Reports: 10/24/2018
Number of Days to Update: 6

Source: Department of Environmental Conservation
Telephone: 907-465-5242
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Semi-Annually

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 07/21/2010
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/08/2013
Number of Days to Update: 36

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/17/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/27/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 100
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/03/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/21/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/24/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/07/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/05/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 92
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/03/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/17/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 80

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 09/11/2018
Next Scheduled EDR Contact: 11/19/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/20/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/29/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 37

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 30

Source: EPA
Telephone: (206) 553-1200
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 87

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/22/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Quarterly

AIRS: AIRS Facility Listing
A listing of permitted airs facilities.

Date of Government Version: 07/09/2018
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 38

Source: Department of Environmental Conservation
Telephone: 907-451-2103
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites
A listing of coal ash disposal site locations.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 17

Source: Department of Environmental Conservation
Telephone: 907-451-2135
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Facility Listing
A listing of drycleaning facilities in Alaska.

Date of Government Version: 02/15/2006
Date Data Arrived at EDR: 02/16/2006
Date Made Active in Reports: 03/15/2006
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-269-7577
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: No Update Planned

Financial Assurance 1: Financial Assurance Information Listing
Financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/09/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 12

Source: Department of Environmental Conservation
Telephone: 907-269-8149
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Quarterly

Financial Assurance 2: Financial Assurance Information Listing
Financial Assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 04/24/2007
Date Data Arrived at EDR: 04/26/2007
Date Made Active in Reports: 05/14/2007
Number of Days to Update: 18

Source: Department of Environmental Conservation
Telephone: 907-269-7802
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

NPDES: Wastwater Discharge Permit Listing
A listing of permitted wastewater facilities.

Date of Government Version: 09/17/2018
Date Data Arrived at EDR: 09/18/2018
Date Made Active in Reports: 09/27/2018
Number of Days to Update: 9

Source: Department of Environmental Conservation
Telephone: 907-465-5480
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

UIC: UIC Information
A listing of underground injection control wells.

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 12

Source: Oil & Gas Conservation Commission
Telephone: 907-793-1224
Last EDR Contact: 08/10/2018
Next Scheduled EDR Contact: 11/26/2018
Data Release Frequency: Quarterly

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Conservation in Alaska.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists.Compiled from Records formerly available from the Department of Environmental Conservation in Alaska.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/04/2014
Number of Days to Update: 187

Source: Department of Environmental Conservation
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 08/01/2018
Date Made Active in Reports: 08/31/2018
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/01/2018
Next Scheduled EDR Contact: 11/12/2018
Data Release Frequency: Quarterly

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facilities Database
Source: Department of Education & Early Development
Telephone: 907-465-2800

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Classification and Mapping
Source: Alaska Natural Heritage Program
Telephone: 907-235-2218

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BRYANT ARMY AIRFIELD
47430 WESTBROOK AVE
JBER, AK 99505

TARGET PROPERTY COORDINATES

Latitude (North):	61.264716 - 61° 15' 52.98''
Longitude (West):	149.668109 - 149° 40' 5.19''
Universal Tranverse Mercator:	Zone 6
UTM X (Meters):	356917.7
UTM Y (Meters):	6794991.5
Elevation:	341 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property:	N/A
Source:	USGS 7.5 min quad index

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

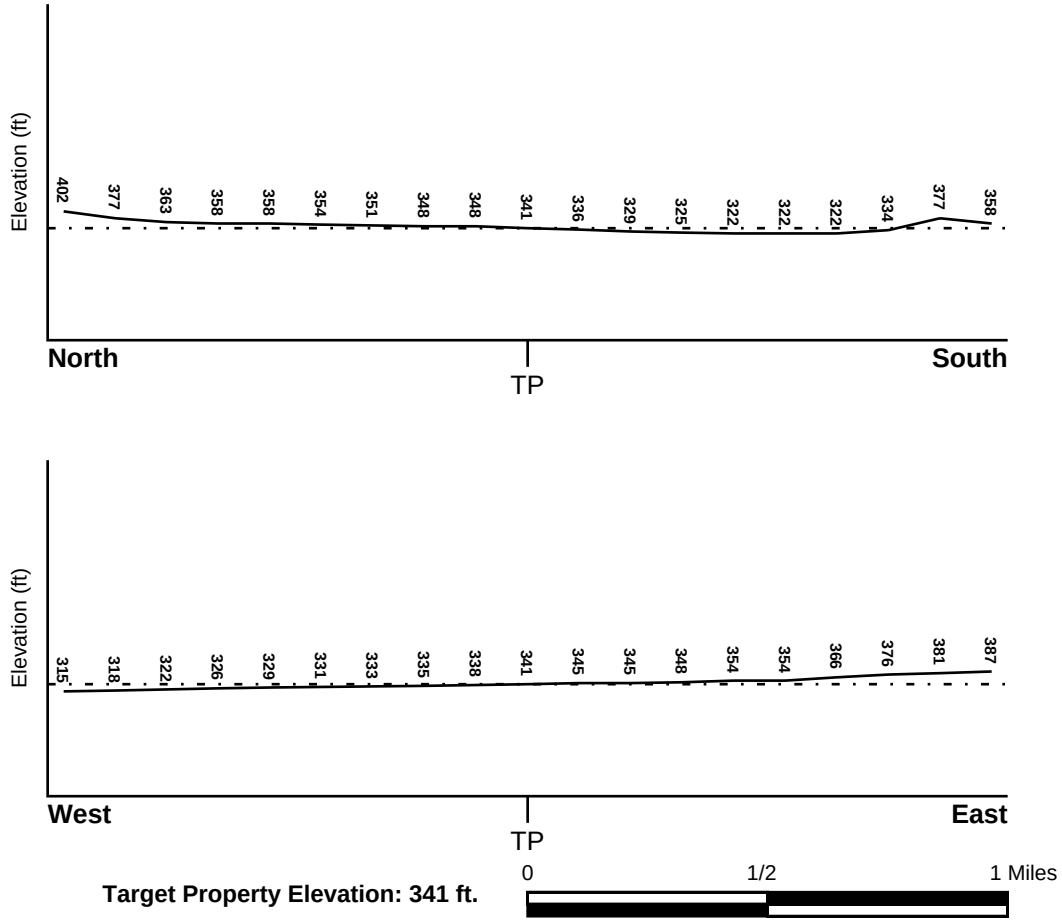
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
0200050375D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
Not Reported	N

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

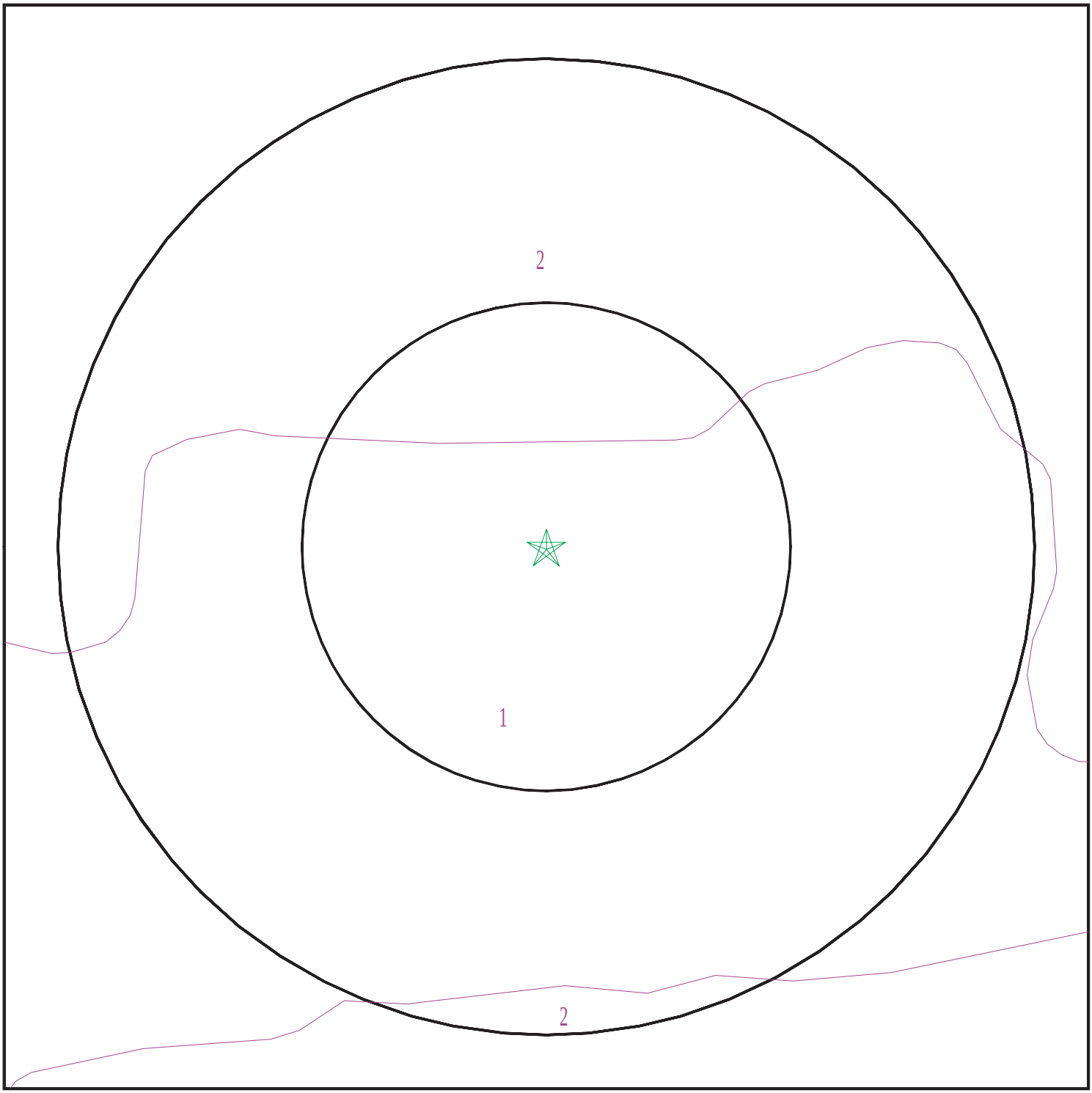
Era: -
System: -
Series: -
Code: N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5471178.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:23 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Cryorthents

Soil Surface Texture: very gravelly sandy loam

Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	very gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42.34 Min: 4	Max: 7 Min: 5.7

Soil Map ID: 2

Soil Component Name: Kashwitna

Soil Surface Texture: moderately decomposed plant material

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	moderately decomposed plant material	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
2	3 inches	5 inches	silt loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
3	5 inches	16 inches	silt loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
4	16 inches	18 inches	gravelly sandy loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
5	18 inches	59 inches	very gravelly sand	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile

FEDERAL USGS WELL INFORMATION

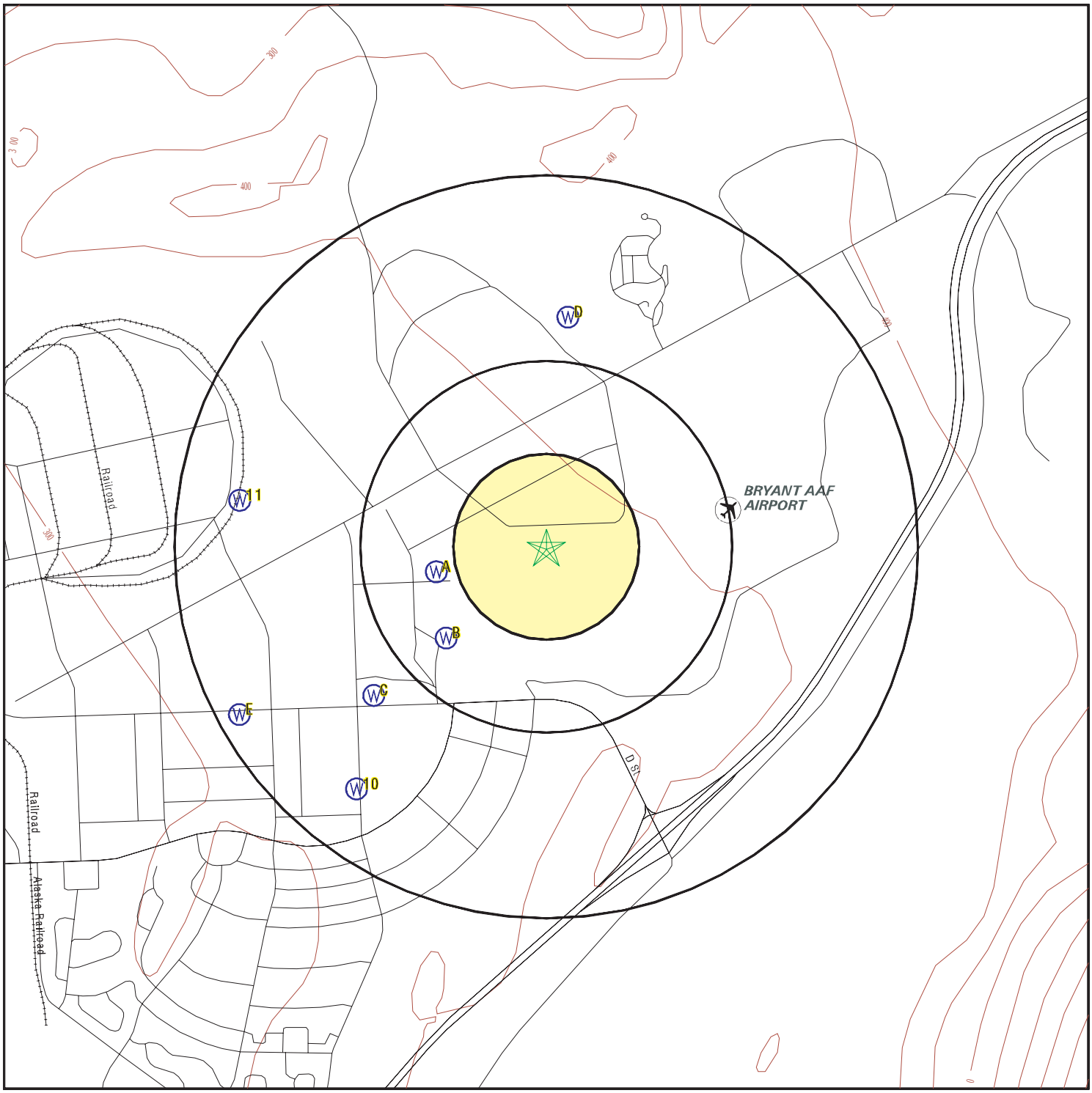
MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000020957	1/4 - 1/2 Mile WSW
A2	USGS40000020958	1/4 - 1/2 Mile WSW
B3	USGS40000020952	1/4 - 1/2 Mile SW
B4	USGS40000020951	1/4 - 1/2 Mile SW
B5	USGS40000020955	1/4 - 1/2 Mile SW
C6	USGS40000020939	1/2 - 1 Mile SW
C7	USGS40000020940	1/2 - 1 Mile SW
D8	USGS40000020993	1/2 - 1 Mile North
D9	USGS40000020992	1/2 - 1 Mile North
10	USGS40000020904	1/2 - 1 Mile SW
11	USGS40000020970	1/2 - 1 Mile West
E12	USGS40000020929	1/2 - 1 Mile WSW
E13	USGS40000020930	1/2 - 1 Mile WSW
E14	USGS40000020931	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

PHYSICAL SETTING SOURCE MAP - 5471178.2s



County Boundary
Major Roads
Contour Lines
Airports
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
Oil, gas or related wells

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:23 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
WSW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000020957**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BAD1	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	31.5	Well Hole Depth Units:	ft

A2
WSW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000020958**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BAD3	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	25.5	Well Hole Depth Units:	ft

B3
SW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000020952**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD6	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	26	Well Hole Depth Units:	ft

B4
SW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000020951**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD4	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported

Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	26.5	Well Hole Depth Units:	ft

B5
SW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000020955**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD5	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	37	Well Depth Units:	ft
Well Hole Depth:	39	Well Hole Depth Units:	ft

C6
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020939**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01300207CBA 1 019	Type:	Well
Description:	ADDED SEQ.NO. AND MAP NO. 11/04/98		
HUC:	19020401	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	25.5
Well Depth Units:	ft	Well Hole Depth:	25.5
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1985-07-31
Feet below surface:	17.5	Feet to sea level:	Not Reported
Note:	Not Reported		

C7
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020940**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01300207CBA 2 019	Type:	Well
Description:	ADDED SEQ.NO. AND MAP NO. 11/04/98		
HUC:	19020401	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	36
Well Depth Units:	ft	Well Hole Depth:	36
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1985-08-01
Feet below surface:	17	Feet to sea level:	Not Reported
Note:	Not Reported		

D8
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000020993**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400231DBD	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	24.5	Well Depth Units:	ft
Well Hole Depth:	24.5	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1986-12-02
Feet below surface:	24	Feet to sea level:	Not Reported
Note:	Not Reported		

D9
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000020992**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400231DAD	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	25	Well Depth Units:	ft
Well Hole Depth:	25	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1986-12-02
Feet below surface:	24	Feet to sea level:	Not Reported
Note:	Not Reported		

10
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020904**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232CCAC1 001	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19501018
Well Depth:	61.7	Well Depth Units:	ft
Well Hole Depth:	62	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1950-10-26
Feet below surface:	58.50	Feet to sea level:	Not Reported
Note:	Not Reported		

11
West
1/2 - 1 Mile
Lower

FED USGS **USGS40000020970**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400231DAA	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	162	Well Depth Units:	ft
Well Hole Depth:	162.8	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1994-03-07
Feet below surface:	149	Feet to sea level:	Not Reported
Note:	Not Reported		

E12
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020929**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD1	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	20.5	Well Depth Units:	ft
Well Hole Depth:	20.5	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1990-08-06
Feet below surface:	19	Feet to sea level:	Not Reported
Note:	Not Reported		

E13
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020930**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD2	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	24.3	Well Depth Units:	ft
Well Hole Depth:	25.5	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1990-08-06
Feet below surface:	19.5	Feet to sea level:	Not Reported
Note:	Not Reported		

E14
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000020931**

Organization ID:	USGS-AK	Organization Name:	USGS Alaska Water Science Center
Monitor Location:	SB01400232BDD3	Type:	Well
Description:	Not Reported	HUC:	19020401
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	20.5	Well Depth Units:	ft
Well Hole Depth:	20.5	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1990-08-07
Feet below surface:	19.5	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for ANCHORAGE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for ANCHORAGE COUNTY, AK

Number of sites tested: 128

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.830 pCi/L	98%	2%	0%
Living Area - 2nd Floor	0.300 pCi/L	100%	0%	0%
Basement	1.295 pCi/L	96%	4%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Classification and Mapping
Source: Alaska Natural Heritage Program
Telephone: 907-235-2218

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Source: Department of Administration, Oil & Gas Conservation Commission.
Oil and gas well locations in the state.

RADON

State Database: AK Radon
Source: University of Alaska Fairbanks
Telephone: 907-474-7201
Radon Information

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

Bryant Army Airfield
47430 Westbrook Ave
Jber, AK 99505

Inquiry Number: 5471178.2s
October 31, 2018

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

47430 WESTBROOK AVE
JBER, AK 99505

COORDINATES

Latitude (North):	61.2647160 - 61° 15' 52.97''
Longitude (West):	149.6681090 - 149° 40' 5.19''
Universal Tranverse Mercator:	Zone 6
UTM X (Meters):	356917.7
UTM Y (Meters):	6794991.5
Elevation:	341 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	N/A
Source:	U.S. Geological Survey

MAPPED SITES SUMMARY

Target Property Address:
47430 WESTBROOK AVE
JBER, AK 99505

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	FORT RICHARDSON MILI		DOD	Same	1 ft.
1	JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	SHWS	Higher	1 ft.
A2	JBER-FT. RICH BLDG 4	ROOSEVELT DRIVE AND	SHWS	Higher	1 ft.
A3	JBER-FT. RICH BLDG 4	RANDALL ROAD N. OF B	SHWS	Higher	1 ft.
B4	JBER-FT. RICH TU009	NW CORNER OF DAVIS H	SHWS	Higher	1 ft.
C5	JBER-FT. RICH BLDG 4	WESTBROOK AVE. BRYAN	SHWS	Lower	1 ft.
A6	JBER-FT. RICH BLDG 4	NEAR BLDG 47431; ROO	SHWS, LUST, INST CONTROL	Higher	1 ft.
B7	JBER-FT. RICH TU036	RANDALL ROAD & DAVIS	SHWS, INST CONTROL	Higher	1 ft.
C8	JBER-FT. RICH TU037	BLDG 47-438 WESTBROO	SHWS, INST CONTROL	Lower	1 ft.
D9	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	LUST	Lower	1 ft.
D10	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD S. O	SHWS	Lower	1 ft.
D11	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	SHWS	Lower	1 ft.
E12	JBER-FT. RICH TU069	RANDALL ROAD N. OF B	SHWS	Higher	1 ft.
E13	JBER-FT. RICH BLDG 4	SOUTH SIDE OF DAVIS	SHWS	Higher	1 ft.
F14	NATIONAL GUARD OMS 6	ACCESS RD CAMP CARRO	LUST	Lower	1 ft.
15	JBER-FT. RICH BLDG 4	NEAR BLDG 47431 WEST	SHWS, LUST	Higher	1 ft.
16	JBER-FT. RICH AFFF A	EASTERN SIDE OF BRYA	SHWS	Higher	1 ft.
17	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	SHWS	Lower	1 ft.
18	JBER-FT. RICH AKARNG	WESTBROOK AVENUE, FO	SHWS	Higher	1 ft.
C19	JBER-FT. RICH AKARNG	FORMERLY FORT RICHAR	LUST	Lower	1 ft.
F20	JBER-FT. RICH AKARNG	AASF BRYANT AIRFIELD	SHWS	Lower	1 ft.
C21	JBER-FT. RICH BLDG 4	WESTBROOK AVE. BRYAN	LUST	Lower	1 ft.
C22	JBER-FT. RICH AKARNG	FORMERLY FORT RICHAR	SHWS	Lower	1 ft.
D23	JBER-FT. RICH TU057	WESTBROOK AVE. & W.	SHWS, INST CONTROL	Lower	1 ft.
D24	JBER-FT. RICH BLDG 4	WESTBROOK AVE. SOUTH	SHWS, LUST	Lower	1 ft.
F25	JBER-FT. RICH AKARNG	AASF BRYANT AIRFIELD	LUST	Lower	1 ft.
F26	NATIONAL GUARD OMS 6	ACCESS RD CAMP CARRO	SHWS	Lower	1 ft.
G27	JBER-FT. RICH CHARLI	CHARLIE ROW, FORMERL	SHWS	Lower	1 ft.
G28	JBER-FT. RICH BLDG 4	BRYANT AIRFIELD, N.	SHWS	Lower	1 ft.
29	JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	LUST	Higher	43, 0.008, NW
30	JBER-FT. RICH BLDG 5	NE SIDE OF BLDG. 57-	SHWS	Higher	267, 0.051, NNW
31	JBER-FT. RICH AFFF A	GRAVEL PITS E. OF BR	SHWS, INST CONTROL	Higher	578, 0.109, ENE
32	JBER-FT. RICH FTR198	AREA BOUNDED BY D ST	SHWS	Lower	628, 0.119, SW
33	JBER-FT. RICH SS013	WEST OF 6TH STREET N	SHWS	Lower	1194, 0.226, WSW
H34	JBER-FT. RICH BLDG 9	FIRST STREET	LUST	Lower	1199, 0.227, West
H35	JBER-FT. RICH BLDG 9	FIRST STREET, FORMER	SHWS	Lower	1204, 0.228, West
H36	JBER-FT. RICH BLDG 9	1ST STREET FAC ID 0-	SHWS	Lower	1204, 0.228, West
I37	JBER-ELMENDORF ST430	F-15E FUEL TANK STOR	LUST	Lower	1362, 0.258, WSW
I38	JBER-ELMENDORF ST430	F-15E FUEL TANK STOR	SHWS	Lower	1364, 0.258, WSW

MAPPED SITES SUMMARY

Target Property Address:
47430 WESTBROOK AVE
JBER, AK 99505

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
I39	JBER-FT. RICH TU058	6TH STREET FAC ID 0-	SHWS	Lower	1364, 0.258, WSW
I40	JBER-FT. RICH TU058	EAST OF C & 2ND STRE	SHWS	Lower	1364, 0.258, WSW
41	JBER-FT. RICH SS119	WEST OF 5TH STREET &	SHWS	Lower	1375, 0.260, WSW
42	JBER-FT. RICH OUD DU	OTTER LK-ROOSEVELT R	SHWS	Higher	1457, 0.276, NNW
43	AKARNG FT. RICHARDSO	BLDG. 57112, DAVIS H	SHWS	Higher	1535, 0.291, NE
44	JBER-FT. RICH FTR269	5TH STREET AND D STR	SHWS	Lower	1692, 0.320, WSW
J45	JBER-FT. RICH TU053	DAVIS HIGHWAY FTRS-5	SHWS, INST CONTROL	Lower	1778, 0.337, West
46	JBER-FT. RICH BLDG 4	BUILDING 49000 E OF	LUST	Higher	1830, 0.347, ENE
K47	EARECKSON AIR STATIO	AIRCRAFT MOCKUP/DRUM	SHWS, INST CONTROL	Lower	1861, 0.352, WSW
J48	JBER-FT. RICH BLDG 7	5TH STREET & DAVIS H	SHWS	Lower	1870, 0.354, West
49	JBER-FT. RICH SS090	6TH AND A STREETS, F	SHWS	Lower	1950, 0.369, SW
K50	JBER-FT. RICH BLDG 7	5TH & D STS. NE CORN	LUST	Lower	1959, 0.371, WSW
K51	JBER-FT. RICH BLDG 7	5TH & D STS., NE COR	SHWS	Lower	1962, 0.372, WSW
52	FTRS-007-R-01 RIFLE	5312 KENNEY AVE	UXO	Lower	1977, 0.374, SSW
K53	JBER-FT. RICH BLDG 7	5TH & D STS., NE COR	SHWS	Lower	2010, 0.381, WSW
L54	JBER-FT. RICH OUD BL	5TH & DAVIS HWY., N.	SHWS, LUST	Lower	2011, 0.381, WNW
55	JBER-FT. RICH AFFF A	N. OF MAIN CANTONMEN	SHWS, INST CONTROL	Lower	2018, 0.382, NW
L56	EARECKSON AIR STATIO	USTS 605-1 THROUGH -	SHWS	Lower	2084, 0.395, WNW
57	JBER-FT. RICH BLDG 7	5TH ST. & DAVIS HWY.	SHWS, LUST	Lower	2107, 0.399, WSW
M58	JBER-FT. RICH BLDG 7	D STREET & FIFTH STR	SHWS	Lower	2171, 0.411, WSW
N59	JBER-FT. RICH AT035	E SIDE OF 5TH STREET	SHWS	Lower	2190, 0.415, WSW
N60	JBER-FT. RICH AT035	~350 FT SW OF WAREHO	SHWS	Lower	2190, 0.415, WSW
M61	JBER-FT. RICH BLDG 7	D & 5TH STS. SW CORN	LUST	Lower	2231, 0.423, WSW
M62	JBER-FT. RICH BLDG 7	D & 5TH STS., SW COR	SHWS	Lower	2231, 0.423, WSW
63	JBER-FT. RICH OUD GR	OLD FT. RICH. LANDFI	SHWS, ENG CONTROLS, INST CONTROL	Higher	2351, 0.445, NW
O64	JBER-FT. RICH TU073	CIRCLE DRIVE AND NOR	SHWS	Lower	2379, 0.451, WNW
O65	JBER-FT. RICH BLDG 9	CIRCLE DRIVE AND NOR	SHWS	Lower	2379, 0.451, WNW
P66	JBER-FT. RICH BLDG 9	5TH STREET FAC ID 0-	SHWS, INST CONTROL	Lower	2384, 0.452, West
Q67	JBER-FT. RICH TU074	WAREHOUSE STREET, CI	SHWS, INST CONTROL	Lower	2469, 0.468, West
Q68	JBER-FT. RICH BLDG 9	CIRCLE DRIVE	LUST	Lower	2478, 0.469, West
69	JBER-FT. RICH TU117	5TH & D STS. FAC ID	SHWS	Lower	2490, 0.472, WSW
R70	JBER-FT. RICH BLDG 3	FTRS-84 SITE SUMMIT	LUST	Lower	2517, 0.477, SW
R71	JBER-FT. RICH BLDG 3	FTRS-84 SITE SUMMIT	SHWS	Lower	2520, 0.477, SW
72	JBER-FT. RICH TU949	5TH & D STS., SW COR	SHWS, INST CONTROL	Lower	2526, 0.478, WSW
R73	FTRS-003-R-01 GREZEL	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R74	FTRS-005-R-01 MAHON	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R75	FTRS-009-R-01 MORTAR	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R76	FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
R77	FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW

MAPPED SITES SUMMARY

Target Property Address:
47430 WESTBROOK AVE
JBER, AK 99505

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MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
R78	FTRS-004-R-01 MCGEE	5312 KENNEY AVE	UXO	Lower	2530, 0.479, SW
P79	JBER-FT. RICH TU066	BLDG 975	LUST	Lower	2536, 0.480, West
80	JBER-FT. RICH BLDG 7	DAVIS HIGHWAY AND 5T	LUST	Lower	2545, 0.482, West
P81	JBER-FT. RICH TU066	BLDG 975, FORMERLY F	SHWS, INST CONTROL	Lower	2551, 0.483, West
S82	JBER-FT. RICH FTR266	S OF LADUE RD; N OF	SHWS	Lower	2583, 0.489, WNW
83	JBER-FT. RICH TU066	DAVIS HWY. & 5TH STR	SHWS, INST CONTROL	Lower	2602, 0.493, West
S84	JBER-FT. RICH BLDG 9	NEAR NORTH WAREHOUSE	SHWS	Lower	2636, 0.499, WNW
85	JBER-FT. RICH BLDG 7	DAVIS HIGHWAY & 5TH	SHWS, INST CONTROL	Lower	2914, 0.552, WSW
86	JBER-FT. RICH TU075	CIRCLE DRIVE AND NOR	SHWS	Lower	3311, 0.627, WNW
T87	JBER-FT. RICH BLDG 9	BLDG 962; N WAREHOUS	SHWS	Lower	3329, 0.630, West
T88	JBER-FT. RICH SS120	SOUTH SIDE OF CIRCLE	SHWS	Lower	3415, 0.647, West
U89	JBER-FT. RICH TU046	2ND & D STS., NW COR	SHWS, INST CONTROL	Lower	3538, 0.670, WSW
90	JBER-FT. RICH SO030	DAVIS HWY., 5TH STRE	SHWS, INST CONTROL	Lower	3581, 0.678, West
U91	JBER-FT. RICH BLDG 7	2ND ST. BETWEEN D ST	SHWS, LUST	Lower	3657, 0.693, WSW
U92	JBER-FT. RICH BLDG 7	BUILDING 756 ALT ID	SHWS, LUST	Lower	3795, 0.719, WSW
93	JBER-FT. RICH SS019	2ND STREET BETWEEN D	SHWS, INST CONTROL	Lower	3837, 0.727, WSW
94	JBER-FT. RICH OUD OL	CIRCLE ROAD N. OF MA	SHWS, INST CONTROL	Lower	3843, 0.728, WNW
95	FORT RICHARDSON (USA		NPL, SEMS, US ENG CONTROLS, US INST CONTROL, ROD	Lower	3885, 0.736, WSW
96	JBER-FT. RICH ADAL C	5TH STREET & CHILKOO	SHWS	Lower	3962, 0.750, SW
97	JBER-FT. RICH TU082	CIRCLE DRIVE	SHWS	Lower	3973, 0.752, West
98	JBER-FT. RICH BLDG 4	BLDG 47-799 STOCKADE	SHWS	Lower	4004, 0.758, WSW
99	JBER-FT. RICH BLDG 9	CIRCLE DRIVE	SHWS	Lower	4082, 0.773, WNW
100	JBER-FT. RICH LANDFI	CIRCLE ROAD FTRS-40,	SHWS	Lower	4098, 0.776, WNW
V101	JBER-FT. RICH BLDG 7	BUILDING 750 ALT ID	SHWS, LUST	Lower	4182, 0.792, WSW
V102	JBER-FT. RICH BLDG 7	D & 2ND STS., NW COR	SHWS	Lower	4182, 0.792, WSW
103	FTRS-011-R-01 PISTOL	5312 KENNEY AVE	UXO	Lower	4697, 0.890, SSW
104	JBER-FT. RICH TU085	BLDG 972, FORMERLY F	SHWS, LUST, INST CONTROL	Lower	4717, 0.893, West
105	JBER-FT. RICH BLDG 9	CIRCLE LOOP ROAD, FO	SHWS	Lower	5142, 0.974, WNW
106	JBER-FT. RICH TU064	1ST & D STREETS FTRS	SHWS, INST CONTROL	Lower	5181, 0.981, WSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: A review of the NPL list, as provided by EDR, and dated 07/17/2018 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON (USA		***WSW 1/2 - 1 (0.736 mi.)***	***95***	***29***
Cerclis ID:: 1001455				
EPA Id: AK6214522157				

State- and tribal - equivalent CERCLIS

SHWS: A review of the SHWS list, as provided by EDR, and dated 09/25/2018 has revealed that there are 82 SHWS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG T	ROOSEVELT & STAMBONE	0 - 1/8 (0.000 mi.)	1	8
Facility Status: Cleanup Complete				
Hazard ID: 934				
Hazard ID: 24076				
JBER-FT. RICH BLDG 4	ROOSEVELT DRIVE AND	0 - 1/8 (0.000 mi.)	A2	8
Facility Status: Cleanup Complete				
Hazard ID: 3019				
JBER-FT. RICH BLDG 4	RANDALL ROAD N. OF B	0 - 1/8 (0.000 mi.)	A3	8
Facility Status: Cleanup Complete				
Hazard ID: 3018				
JBER-FT. RICH TU009	NW CORNER OF DAVIS H	0 - 1/8 (0.000 mi.)	B4	8

Facility Status: Cleanup Complete Hazard ID: 25861				
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 25064	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***9***
JBER-FT. RICH TU036 Facility Status: Cleanup Complete Hazard ID: 2763	***RANDALL ROAD & DAVIS***	***0 - 1/8 (0.000 mi.)***	***B7***	***9***
JBER-FT. RICH TU069 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2756	RANDALL ROAD N. OF B	0 - 1/8 (0.000 mi.)	E12	10
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 2405	SOUTH SIDE OF DAVIS	0 - 1/8 (0.000 mi.)	E13	11
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 25063	***NEAR BLDG 47431 WEST***	***0 - 1/8 (0.000 mi.)***	***15***	***11***
JBER-FT. RICH AFFF A Facility Status: Active Hazard ID: 26758	EASTERN SIDE OF BRYA	0 - 1/8 (0.000 mi.)	16	11
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 2729	WESTBROOK AVENUE, FO	0 - 1/8 (0.000 mi.)	18	12
JBER-FT. RICH BLDG 5 Facility Status: Cleanup Complete Hazard ID: 2575	NE SIDE OF BLDG. 57-	NNW 0 - 1/8 (0.051 mi.)	30	14
JBER-FT. RICH AFFF A Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2777	***GRAVEL PITS E. OF BR***	***ENE 0 - 1/8 (0.109 mi.)***	***31***	***14***
JBER-FT. RICH OUD DU Facility Status: Cleanup Complete Hazard ID: 2779	OTTER LK-ROOSEVELT R	NNW 1/4 - 1/2 (0.276 mi.)	42	17
AKARNG FT. RICHARDSO Facility Status: Cleanup Complete Hazard ID: 944	BLDG. 57112, DAVIS H	NE 1/4 - 1/2 (0.291 mi.)	43	17
JBER-FT. RICH OUD GR Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 430	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***22***

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 23910	WESTBROOK AVE. BRYAN	0 - 1/8 (0.000 mi.)	C5	9
JBER-FT. RICH TU037 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 4087	***BLDG 47-438 WESTBROO***	***0 - 1/8 (0.000 mi.)***	***C8***	***9***
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1486	BRYANT AIRFIELD S. O	0 - 1/8 (0.000 mi.)	D10	10
JBER-FT. RICH BLDG 4	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	D11	10

Facility Status: Cleanup Complete Hazard ID: 24121 Hazard ID: 23640				
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1230	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	17	11
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 24618	AASF BRYANT AIRFIELD	0 - 1/8 (0.000 mi.)	F20	12
JBER-FT. RICH AKARNG Facility Status: Cleanup Complete Hazard ID: 24824	FORMERLY FORT RICHAR	0 - 1/8 (0.000 mi.)	C22	12
JBER-FT. RICH TU057 Facility Status: Cleanup Complete Hazard ID: 939	***WESTBROOK AVE. & W.***	***0 - 1/8 (0.000 mi.)***	***D23***	***13***
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 23874	***WESTBROOK AVE. SOUTH***	***0 - 1/8 (0.000 mi.)***	***D24***	***13***
NATIONAL GUARD OMS 6 Facility Status: Cleanup Complete Hazard ID: 23032	ACCESS RD CAMP CARRO	0 - 1/8 (0.000 mi.)	F26	13
JBER-FT. RICH CHARLI Facility Status: Cleanup Complete Hazard ID: 1493	CHARLIE ROW, FORMERL	0 - 1/8 (0.000 mi.)	G27	14
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 1494	BRYANT AIRFIELD, N.	0 - 1/8 (0.000 mi.)	G28	14
JBER-FT. RICH FTR198 Facility Status: Active Hazard ID: 26084	AREA BOUNDED BY D ST	SW 0 - 1/8 (0.119 mi.)	32	15
JBER-FT. RICH SS013 Facility Status: Active Hazard ID: 26056	WEST OF 6TH STREET N	WSW 1/8 - 1/4 (0.226 mi.)	33	15
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 23314	FIRST STREET, FORMER	W 1/8 - 1/4 (0.228 mi.)	H35	15
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 2035	1ST STREET FAC ID 0-	W 1/8 - 1/4 (0.228 mi.)	H36	16
JBER-ELMENDORF ST430 Facility Status: Cleanup Complete Hazard ID: 23421	F-15E FUEL TANK STOR	WSW 1/4 - 1/2 (0.258 mi.)	I38	16
JBER-FT. RICH TU058 Facility Status: Cleanup Complete Hazard ID: 2033	6TH STREET FAC ID 0-	WSW 1/4 - 1/2 (0.258 mi.)	I39	16
JBER-FT. RICH TU058 Facility Status: Cleanup Complete Hazard ID: 2754	EAST OF C & 2ND STRE	WSW 1/4 - 1/2 (0.258 mi.)	I40	16
JBER-FT. RICH SS119	WEST OF 5TH STREET &	WSW 1/4 - 1/2 (0.260 mi.)	41	17

Facility Status: Cleanup Complete Hazard ID: 26522				
JBER-FT. RICH FTR269 Facility Status: Active Hazard ID: 25677	5TH STREET AND D STR	WSW 1/4 - 1/2 (0.320 mi.)	44	17
JBER-FT. RICH TU053 Facility Status: Cleanup Complete Hazard ID: 2753	***DAVIS HIGHWAY FTRS-5***	***W 1/4 - 1/2 (0.337 mi.)***	***J45***	***17***
EARECKSON AIR STATIO Facility Status: Active Hazard ID: 42	***AIRCRAFT MOCKUP/DRUM***	***WSW 1/4 - 1/2 (0.352 mi.)***	***K47***	***18***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 1491	5TH STREET & DAVIS H	W 1/4 - 1/2 (0.354 mi.)	J48	18
JBER-FT. RICH SS090 Facility Status: Active Hazard ID: 26005	6TH AND A STREETS, F	SW 1/4 - 1/2 (0.369 mi.)	49	18
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23958	5TH & D STS., NE COR	WSW 1/4 - 1/2 (0.372 mi.)	K51	19
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 1490	5TH & D STS., NE COR	WSW 1/4 - 1/2 (0.381 mi.)	K53	19
JBER-FT. RICH OUD BL Facility Status: Cleanup Complete Hazard ID: 23951	***5TH & DAVIS HWY., N.***	***WNW 1/4 - 1/2 (0.381 mi.)***	***L54***	***19***
JBER-FT. RICH AFFF A Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2793	***N. OF MAIN CANTONMEN***	***NW 1/4 - 1/2 (0.382 mi.)***	***55***	***20***
EARECKSON AIR STATIO Facility Status: Cleanup Complete Hazard ID: 40	USTS 605-1 THROUGH -	WNW 1/4 - 1/2 (0.395 mi.)	L56	20
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23635	***5TH ST. & DAVIS HWY.***	***WSW 1/4 - 1/2 (0.399 mi.)***	***57***	***20***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 4462	D STREET & FIFTH STR	WSW 1/4 - 1/2 (0.411 mi.)	M58	20
JBER-FT. RICH AT035 Facility Status: Cleanup Complete Hazard ID: 26038	E SIDE OF 5TH STREET	WSW 1/4 - 1/2 (0.415 mi.)	N59	21
JBER-FT. RICH AT035 Facility Status: Active Hazard ID: 25870	~350 FT SW OF WAREHO	WSW 1/4 - 1/2 (0.415 mi.)	N60	21
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 23962	D & 5TH STS., SW COR	WSW 1/4 - 1/2 (0.423 mi.)	M62	21
JBER-FT. RICH TU073 Facility Status: Cleanup Complete	CIRCLE DRIVE AND NOR	WNW 1/4 - 1/2 (0.451 mi.)	O64	22

Hazard ID: 26068				
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26067	CIRCLE DRIVE AND NOR	WNW 1/4 - 1/2 (0.451 mi.)	O65	22
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 1792	***5TH STREET FAC ID 0-***	***W 1/4 - 1/2 (0.452 mi.)***	***P66***	***22***
JBER-FT. RICH TU074 Facility Status: Cleanup Complete Hazard ID: 1791	***WAREHOUSE STREET, CI***	***W 1/4 - 1/2 (0.468 mi.)***	***Q67***	***23***
JBER-FT. RICH TU117 Facility Status: Active Hazard ID: 2766	5TH & D STS. FAC ID	WSW 1/4 - 1/2 (0.472 mi.)	69	23
JBER-FT. RICH BLDG 3 Facility Status: Cleanup Complete Hazard ID: 23424	FTRS-84 SITE SUMMIT	SW 1/4 - 1/2 (0.477 mi.)	R71	24
JBER-FT. RICH TU949 Facility Status: Cleanup Complete Hazard ID: 1483	***5TH & D STS., SW COR***	***WSW 1/4 - 1/2 (0.478 mi.)***	***72***	***24***
JBER-FT. RICH TU066 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 23303	***BLDG 975, FORMERLY F***	***W 1/4 - 1/2 (0.483 mi.)***	***P81***	***26***
JBER-FT. RICH FTR266 Facility Status: Cleanup Complete Hazard ID: 25871	S OF LADUE RD; N OF	WNW 1/4 - 1/2 (0.489 mi.)	S82	26
JBER-FT. RICH TU066 Facility Status: Cleanup Complete Hazard ID: 2755	***DAVIS HWY. & 5TH STR***	***W 1/4 - 1/2 (0.493 mi.)***	***83***	***26***
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26050	NEAR NORTH WAREHOUSE	WNW 1/4 - 1/2 (0.499 mi.)	S84	26
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 2792	***DAVIS HIGHWAY & 5TH***	***WSW 1/2 - 1 (0.552 mi.)***	***85***	***27***
JBER-FT. RICH TU075 Facility Status: Cleanup Complete Hazard ID: 26069	CIRCLE DRIVE AND NOR	WNW 1/2 - 1 (0.627 mi.)	86	27
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 25998	BLDG 962; N WAREHOUS	W 1/2 - 1 (0.630 mi.)	T87	27
JBER-FT. RICH SS120 Facility Status: Active Hazard ID: 26747	SOUTH SIDE OF CIRCLE	W 1/2 - 1 (0.647 mi.)	T88	27
JBER-FT. RICH TU046 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 1233	***2ND & D STS., NW COR***	***WSW 1/2 - 1 (0.670 mi.)***	***U89***	***28***
JBER-FT. RICH SO030 Facility Status: Cleanup Complete Hazard ID: 1232	***DAVIS HWY., 5TH STRE***	***W 1/2 - 1 (0.678 mi.)***	***90***	***28***
JBER-FT. RICH BLDG 7	***2ND ST. BETWEEN D ST***	***WSW 1/2 - 1 (0.693 mi.)***	***U91***	***28***

Facility Status: Cleanup Complete Hazard ID: 24131				
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 25061	***BUILDING 756 ALT ID***	***WSW 1/2 - 1 (0.719 mi.)***	***U92***	***28***
JBER-FT. RICH SS019 Facility Status: Cleanup Complete Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 1229 Hazard ID: 1240	***2ND STREET BETWEEN D***	***WSW 1/2 - 1 (0.727 mi.)***	***93***	***29***
JBER-FT. RICH OUD OL Facility Status: Active Hazard ID: 941	***CIRCLE ROAD N. OF MA***	***WNW 1/2 - 1 (0.728 mi.)***	***94***	***29***
JBER-FT. RICH ADAL C Facility Status: Cleanup Complete Hazard ID: 1236	5TH STREET & CHILKOO	SW 1/2 - 1 (0.750 mi.)	96	30
JBER-FT. RICH TU082 Facility Status: Cleanup Complete Hazard ID: 26066	CIRCLE DRIVE	W 1/2 - 1 (0.752 mi.)	97	30
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 23326	BLDG 47-799 STOCKADE	WSW 1/2 - 1 (0.758 mi.)	98	30
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 26065	CIRCLE DRIVE	WNW 1/2 - 1 (0.773 mi.)	99	31
JBER-FT. RICH LANDFI Facility Status: Cleanup Complete Hazard ID: 2752	CIRCLE ROAD FTRS-40,	WNW 1/2 - 1 (0.776 mi.)	100	31
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 25062	***BUILDING 750 ALT ID***	***WSW 1/2 - 1 (0.792 mi.)***	***V101***	***31***
JBER-FT. RICH BLDG 7 Facility Status: Cleanup Complete Hazard ID: 24132	D & 2ND STS., NW COR	WSW 1/2 - 1 (0.792 mi.)	V102	31
JBER-FT. RICH TU085 Facility Status: Cleanup Complete Hazard ID: 23000	***BLDG 972, FORMERLY F***	***W 1/2 - 1 (0.893 mi.)***	***104***	***32***
JBER-FT. RICH BLDG 9 Facility Status: Cleanup Complete Hazard ID: 22983	CIRCLE LOOP ROAD, FO	WNW 1/2 - 1 (0.974 mi.)	105	32
JBER-FT. RICH TU064 Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 1790	***1ST & D STREETS FTRS***	***WSW 1/2 - 1 (0.981 mi.)***	***106***	***32***

State and tribal leaking storage tank lists

LUST: A review of the LUST list, as provided by EDR, and dated 08/09/2018 has revealed that there are 20 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 eventid: 25064 Facility Status: Cleanup Complete	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***9***
JBER-FT. RICH BLDG 4 eventid: 25063 Facility Status: Cleanup Complete	***NEAR BLDG 47431 WEST***	***0 - 1/8 (0.000 mi.)***	***15***	***11***
JBER-FT. RICH BLDG T eventid: 24076 Facility Status: Cleanup Complete	ROOSEVELT & STAMBONE	NW 0 - 1/8 (0.008 mi.)	29	14
JBER-FT. RICH BLDG 4 eventid: 26881 Facility Status: Open	BUILDING 49000 E OF	ENE 1/4 - 1/2 (0.347 mi.)	46	18

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 eventid: 24121 eventid: 23640 Facility Status: Cleanup Complete	BRYANT AIRFIELD SW C	0 - 1/8 (0.000 mi.)	D9	10
NATIONAL GUARD OMS 6 eventid: 23032 Facility Status: Cleanup Complete	ACCESS RD CAMP CARRO	0 - 1/8 (0.000 mi.)	F14	11
JBER-FT. RICH AKARNG eventid: 24824 Facility Status: Cleanup Complete	FORMERLY FORT RICHAR	0 - 1/8 (0.000 mi.)	C19	12
JBER-FT. RICH BLDG 4 eventid: 23910 Facility Status: Cleanup Complete	WESTBROOK AVE. BRYAN	0 - 1/8 (0.000 mi.)	C21	12
JBER-FT. RICH BLDG 4 eventid: 23874 Facility Status: Cleanup Complete	***WESTBROOK AVE. SOUTH***	***0 - 1/8 (0.000 mi.)***	***D24***	***13***
JBER-FT. RICH AKARNG eventid: 24618 Facility Status: Cleanup Complete	AASF BRYANT AIRFIELD	0 - 1/8 (0.000 mi.)	F25	13
JBER-FT. RICH BLDG 9 eventid: 23314 Facility Status: Cleanup Complete	FIRST STREET	W 1/8 - 1/4 (0.227 mi.)	H34	15
JBER-ELMENDORF ST430 eventid: 23421 Facility Status: Cleanup Complete	F-15E FUEL TANK STOR	WSW 1/4 - 1/2 (0.258 mi.)	I37	16
JBER-FT. RICH BLDG 7 eventid: 23958 Facility Status: Cleanup Complete	5TH & D STS. NE CORN	WSW 1/4 - 1/2 (0.371 mi.)	K50	19
JBER-FT. RICH OUD BL	***5TH & DAVIS HWY., N.***	***WNW 1/4 - 1/2 (0.381 mi.)***	***L54***	***19***

eventid: 23951 Facility Status: Cleanup Complete				
JBER-FT. RICH BLDG 7 eventid: 23635 Facility Status: Cleanup Complete	***5TH ST. & DAVIS HWY.***	***WSW 1/4 - 1/2 (0.399 mi.)***	***57***	***20***
JBER-FT. RICH BLDG 7 eventid: 23962 Facility Status: Cleanup Complete	D & 5TH STS. SW CORN	WSW 1/4 - 1/2 (0.423 mi.)	M61	21
JBER-FT. RICH BLDG 9 eventid: 26869 Facility Status: Cleanup Complete	CIRCLE DRIVE	W 1/4 - 1/2 (0.469 mi.)	Q68	23
JBER-FT. RICH BLDG 3 eventid: 23424 Facility Status: Cleanup Complete	FTRS-84 SITE SUMMIT	SW 1/4 - 1/2 (0.477 mi.)	R70	23
JBER-FT. RICH TU066 eventid: 23303 Facility Status: Cleanup Complete - Institutional Controls	BLDG 975	W 1/4 - 1/2 (0.480 mi.)	P79	25
JBER-FT. RICH BLDG 7 eventid: 26867 Facility Status: Cleanup Complete	DAVIS HIGHWAY AND 5T	W 1/4 - 1/2 (0.482 mi.)	80	25

State and tribal institutional control / engineering control registries

ENG CONTROLS: A review of the ENG CONTROLS list, as provided by EDR, and dated 09/25/2018 has revealed that there is 1 ENG CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH OUD GR Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 430	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***22***

INST CONTROL: A review of the INST CONTROL list, as provided by EDR, and dated 09/25/2018 has revealed that there are 14 INST CONTROL sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH BLDG 4 Facility Status: Cleanup Complete Hazard ID: 25064	***NEAR BLDG 47431; ROO***	***0 - 1/8 (0.000 mi.)***	***A6***	***9***
JBER-FT. RICH TU036 Facility Status: Cleanup Complete Hazard ID: 2763	***RANDALL ROAD & DAVIS***	***0 - 1/8 (0.000 mi.)***	***B7***	***9***
JBER-FT. RICH AFFF A Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2777	***GRAVEL PITS E. OF BR***	***ENE 0 - 1/8 (0.109 mi.)***	***31***	***14***
JBER-FT. RICH OUD GR	***OLD FT. RICH. LANDFI***	***NW 1/4 - 1/2 (0.445 mi.)***	***63***	***22***

Facility Status: Cleanup Complete - Institutional Controls
Hazard ID: 430

Lower Elevation	Address	Direction / Distance	Map ID	Page
JBER-FT. RICH TU037	***BLDG 47-438 WESTBROO***	***0 - 1/8 (0.000 mi.)***	***C8***	***9***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 4087				
JBER-FT. RICH TU057	***WESTBROOK AVE. & W.***	***0 - 1/8 (0.000 mi.)***	***D23***	***13***
Facility Status: Cleanup Complete Hazard ID: 939				
JBER-FT. RICH TU053	***DAVIS HIGHWAY FTRS-5***	***W 1/4 - 1/2 (0.337 mi.)***	***J45***	***17***
Facility Status: Cleanup Complete Hazard ID: 2753				
EARECKSON AIR STATIO	***AIRCRAFT MOCKUP/DRUM***	***WSW 1/4 - 1/2 (0.352 mi.)***	***K47***	***18***
Facility Status: Active Hazard ID: 42				
JBER-FT. RICH AFFF A	***N. OF MAIN CANTONMEN***	***NW 1/4 - 1/2 (0.382 mi.)***	***55***	***20***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 2793				
JBER-FT. RICH BLDG 9	***5TH STREET FAC ID 0-***	***W 1/4 - 1/2 (0.452 mi.)***	***P66***	***22***
Facility Status: Cleanup Complete Hazard ID: 1792				
JBER-FT. RICH TU074	***WAREHOUSE STREET, CI***	***W 1/4 - 1/2 (0.468 mi.)***	***Q67***	***23***
Facility Status: Cleanup Complete Hazard ID: 1791				
JBER-FT. RICH TU949	***5TH & D STS., SW COR***	***WSW 1/4 - 1/2 (0.478 mi.)***	***72***	***24***
Facility Status: Cleanup Complete Hazard ID: 1483				
JBER-FT. RICH TU066	***BLDG 975, FORMERLY F***	***W 1/4 - 1/2 (0.483 mi.)***	***P81***	***26***
Facility Status: Cleanup Complete - Institutional Controls Hazard ID: 23303				
JBER-FT. RICH TU066	***DAVIS HWY. & 5TH STR***	***W 1/4 - 1/2 (0.493 mi.)***	***83***	***26***
Facility Status: Cleanup Complete Hazard ID: 2755				

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

DOD: A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON MILI		0 - 1/8 (0.000 mi.)	0	8

EXECUTIVE SUMMARY

ROD: A review of the ROD list, as provided by EDR, and dated 07/17/2018 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FORT RICHARDSON (USA EPA ID:: AK6214522157		***WSW 1/2 - 1 (0.736 mi.)***	***95***	***29***

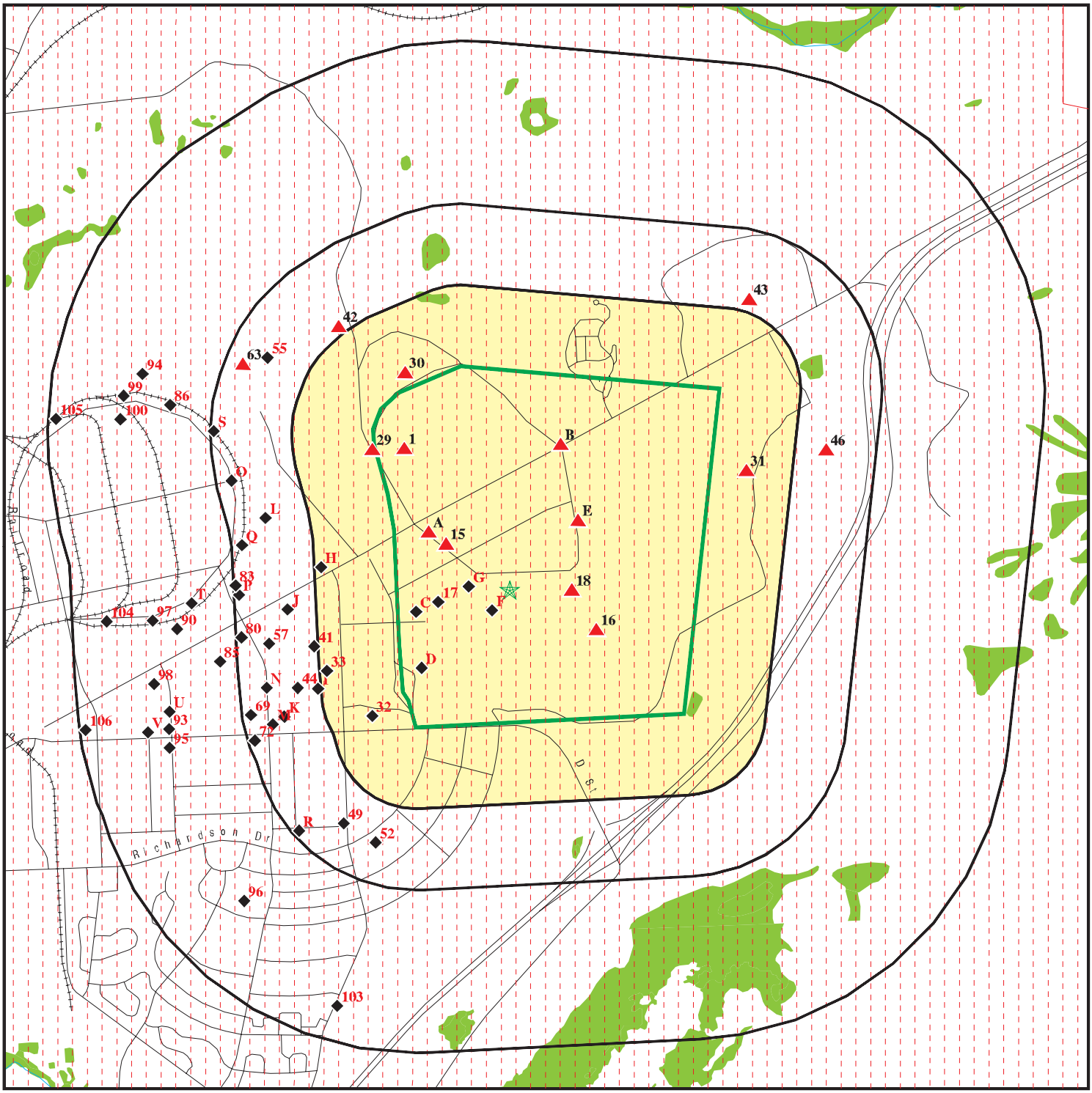
UXO: A review of the UXO list, as provided by EDR, and dated 09/30/2017 has revealed that there are 8 UXO sites within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
FTRS-007-R-01 RIFLE	5312 KENNEY AVE	SSW 1/4 - 1/2 (0.374 mi.)	52	19
FTRS-003-R-01 GREZEL	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R73	24
FTRS-005-R-01 MAHON	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R74	24
FTRS-009-R-01 MORTAR	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R75	24
FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R76	25
FTRS-013-R-01 ANTI-A	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R77	25
FTRS-004-R-01 MCGEE	5312 KENNEY AVE	SW 1/4 - 1/2 (0.479 mi.)	R78	25
FTRS-011-R-01 PISTOL	5312 KENNEY AVE	SSW 1/2 - 1 (0.890 mi.)	103	32

Count: 15 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ANCHORAGE	S109256106	FAA - ANCHORAGE AIR ROUTE TRAFFIC	5400 DAVIS HIGHWAY NEAR BONIFA		VCP
FORT RICHARDSON	S116464049	AKANG - ARMY AVIATION STATION FACI	AASF BRYANT AIRFIELD		RGA LUST
FORT RICHARDSON	S116464048	AKANG - ARMY AVIATION STATION FACI	AASF BRYANT AIRFIELD,		RGA LUST
FORT RICHARDSON	S108032550	FORT RICHARDSON BRYANT AIRFIELD IM	BRYANT AIRFIELD	99505	NPDES
FORT RICHARDSON	S116464052	AKANG - ARMY AVIATION SUPPORT FACI	FT. RICHARDSON		RGA LUST
FORT RICHARDSON	S116464051	AKANG - ARMY AVIATION SUPPORT FACI	FT. RICHARDSON,		RGA LUST
FORT RICHARDSON (JBE	S122879989	JBER-FT. RICH BLDG 750 UST 152	BUILDING 750; NW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879987	JBER-FT. RICH BLDG 702 UST 72	BUILDING 702; SW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879991	JBER-FT. RICH BLDG 756 UST 155	BUILDING 756; NW OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879988	JBER-FT. RICH BLDG 740 UST 151	BUILDING 740; NW OF INTERSECTO	99505	SHWS
FORT RICHARDSON (JBE	S122879990	JBER-FT. RICH BLDG 755 UST 154	BUILDING 755; NE OF INTERSECTI	99505	SHWS
FORT RICHARDSON (JBE	S122879984	JBER-FT. RICH BLDG 952 USTS 180 &	CIRCLE DRIVE FORMERLY FORT RIC	99505	SHWS
FORT RICHARDSON (JBE	S122879983	JBER-FT. RICH BLDG 796 USTS 161 &	DAVIS HIGHWAY AND 5TH STREET;	99505	SHWS
FORT RICHARDSON (JBE	S122879982	JBER-FT. RICH BLDG 796 UST 160	DAVIS HIGHWAY AND 5TH STREET;	99505	SHWS
FORT RICHARDSON (JBE	S118731763	JBER-FT. RICH MORTAR RANGES 1A & 2	EAGLE BAY, FORMERLY FORT RICHA	99505	SHWS

OVERVIEW MAP - 5471178.2S

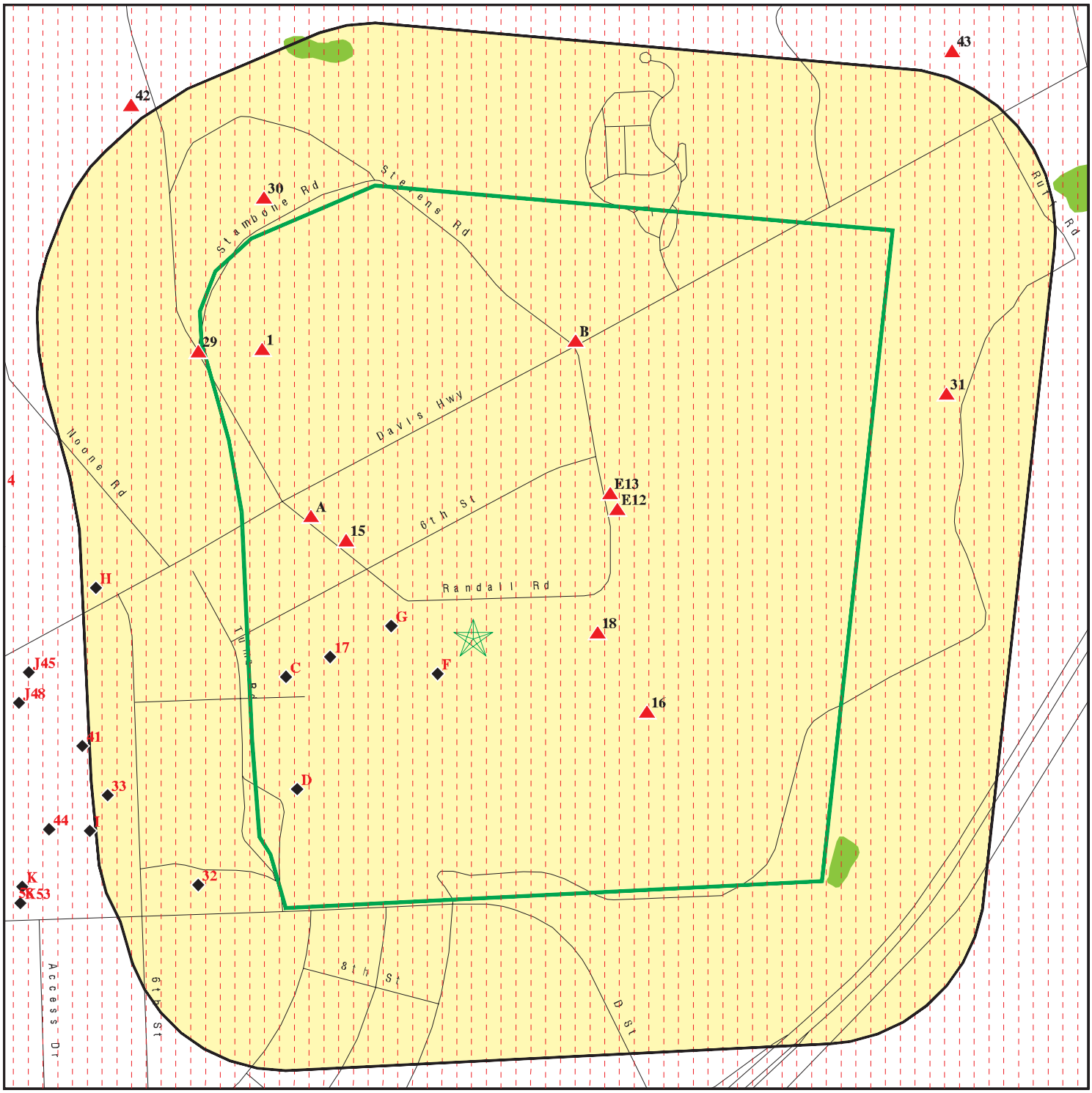


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:22 pm

DETAIL MAP - 5471178.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

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SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
		INQUIRY #:	5471178.2s
LAT/LONG:	61.264716 / 149.668109	DATE:	October 31, 2018 2:23 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	1	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		26	3	33	20	NR	82
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		9	1	10	NR	NR	20
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	1	NR	NR	1
INST CONTROL	0.500		5	0	9	NR	NR	14
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		1	0	0	0	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	1	NR	1
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	7	1	NR	8
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	41	4	60	23	0	128

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

DOD Region
< 1/8
1 ft.

FORT RICHARDSON MILITARY RESERVATION
FORT RICHARDSON MILITARY (County), AK

DOD

CUSA148534
N/A

Click here for full text details

1
< 1/8
1 ft.

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6
ROOSEVELT & STAMBONE STS., FORMERLY FORT RICHARDSON BEFORE 1
FORT RICHARDSON (JBER), AK 99505

SHWS

S110144152
N/A

Click here for full text details

Relative: Higher

SHWS
Hazard ID: 934
Hazard ID: 24076
Facility Status: Cleanup Complete

A2
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 P
ROOSEVELT DRIVE AND WESTBROOK CC-FTRS-10, FORMERLY FORT RICH
FORT RICHARDSON (JBER), AK 99505

SHWS

S110144085
N/A

Click here for full text details

Relative: Higher

SHWS
Hazard ID: 3019
Facility Status: Cleanup Complete

A3
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 HOT E1 UST 213 FRSERA 2 P
RANDALL ROAD N. OF BLDG. 47431 CC-FTRS-10, FORMERLY FORT RIC
FORT RICHARDSON (JBER), AK 99505

SHWS

S110144084
N/A

Click here for full text details

Relative: Higher

SHWS
Hazard ID: 3018
Facility Status: Cleanup Complete

B4
< 1/8
1 ft.

JBER-FT. RICH TU009 DAVIS HIGHWAY UST
NW CORNER OF DAVIS HIGHWAY AND STEVENS ROAD INTERSECTION
FORT RICHARDSON (JBER), AK 99505

SHWS

S111750317
N/A

Click here for full text details

Relative: Higher

SHWS
Hazard ID: 25861
Facility Status: Cleanup Complete

C5 **JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PAR** **SHWS** **S110144148**
WESTBROOK AVE. BRYANT AIRFIELD, FORMERLY FORT RICHARDSON BEF **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 23910
Facility Status: Cleanup Complete

A6 **JBER-FT. RICH BLDG 47431 HOT E2 UST 214 FRSERA 2 P** **SHWS** **S110144158**
NEAR BLDG 47431; ROOSEVELT DR & WESTBROOK CC-FTRS-10, FORMER **LUST** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505** **INST CONTROL**
1 ft.

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 25064
Facility Status: Cleanup Complete

LUST
eventid: 25064
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 25064
Facility Status: Cleanup Complete

B7 **JBER-FT. RICH TU036 BLDG 47022 UST** **SHWS** **S110144183**
RANDALL ROAD & DAVIS HWY., FORMERLY FORT RICHARDSON BEFORE 1 **INST CONTROL** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 2763
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 2763
Facility Status: Cleanup Complete

C8 **JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4** **SHWS** **S107029066**
BLDG 47-438 WESTBROOK AVE NEAR TUMA RD., FORMERLY FORT RICHA **INST CONTROL** **N/A**
< 1/8 **FORT RICHARDSON (JBER), AK 99505**
1 ft.

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 4087

JBER-FT. RICH TU037 BRYANT ARMY AIRFIELD JP-4 (Continued) **S107029066**

Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 4087
Facility Status: Cleanup Complete - Institutional Controls

D9
< 1/8
1 ft.

JBER-FT. RICH BLDG 47642 UST 94 W. OF AERO. HNGR U **LUST** **S108941495**
BRYANT AIRFIELD SW CORNER SOUTH OF WESTBROOK AVE. **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Click here for full text details

LUST
eventid: 24121
eventid: 23640
Facility Status: Cleanup Complete

D10
< 1/8
1 ft.

JBER-FT. RICH BLDG 47641 AEROCLUB USTA 2 PARTY **SHWS** **S110144111**
BRYANT AIRFIELD S. OF WESTBROOK AVE. FTRS-56, FORMERLY FORT **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Click here for full text details

SHWS
Hazard ID: 1486
Facility Status: Cleanup Complete

D11
< 1/8
1 ft.

JBER-FT. RICH BLDG 47641 UST 70, AEROCLUB HANGAR **SHWS** **S110144144**
BRYANT AIRFIELD SW CORNER; SOUTH OF WESTBROOK AVE., FORMERLY **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Lower

Click here for full text details

SHWS
Hazard ID: 24121
Hazard ID: 23640
Facility Status: Cleanup Complete

E12
< 1/8
1 ft.

JBER-FT. RICH TU069 BLDG 47203 UST 93 USTA 2 PARTY **SHWS** **S110144178**
RANDALL ROAD N. OF BRYANT army AIRFIELD FTRS-69, FORMERLY FO **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative:
Higher

Click here for full text details

SHWS
Hazard ID: 2756
Facility Status: Cleanup Complete - Institutional Controls

E13
< 1/8
1 ft.

JBER-FT. RICH BLDG 47220 UST 1159
SOUTH SIDE OF DAVIS HWY. FTRS-14 FAC ID 0-00-788 UST 207, FO
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144119**
N/A

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 2405
Facility Status: Cleanup Complete

F14
< 1/8
1 ft.

NATIONAL GUARD OMS 6 - FT. RICH
ACCESS RD CAMP CARROL
FORT RICHARDSON (JBER), AK 99505

LUST **S105096399**
N/A

Relative: Lower

Click here for full text details

LUST
eventid: 23032
Facility Status: Cleanup Complete

15
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 HOT #E1 UST 213 FRSERA 2
NEAR BLDG 47431 WESTBROOK ROAD
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144157**
LUST **N/A**

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 25063
Facility Status: Cleanup Complete

LUST
eventid: 25063
Facility Status: Cleanup Complete

16
< 1/8
1 ft.

JBER-FT. RICH AFFF AREA 04 FIRE STATION 5 BLDG 480
EASTERN SIDE OF BRYANT ARMY NATIONAL GUARD AIRFIELD, FORMERL
FORT RICHARDSON (JBER), AK 99505

SHWS **S120900074**
N/A

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 26758
Facility Status: Active

17
< 1/8
1 ft.

JBER-FT. RICH BLDG 47642 AEROCLUB USTA 2 PARTY
BRYANT AIRFIELD SW CORNER S. OF WESTBROOK AVENUE, FORMERLY F
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144104**
N/A

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 1230
Facility Status: Cleanup Complete

18
< 1/8
1 ft.

JBER-FT. RICH AKARNG - AASF **SHWS** **S110144123**
WESTBROOK AVENUE, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 2729
Facility Status: Cleanup Complete

C19
< 1/8
1 ft.

JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACIL **LUST** **S108941669**
FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

LUST
eventid: 24824
Facility Status: Cleanup Complete

F20
< 1/8
1 ft.

JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACIL **SHWS** **S109256519**
AASF BRYANT AIRFIELD, FORMERLY FORT RICHARDSON BEFORE 10/01/ **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 24618
Facility Status: Cleanup Complete

C21
< 1/8
1 ft.

JBER-FT. RICH BLDG 47438 USTS 65, 67-69 USTA 2 PAR **LUST** **S108941530**
WESTBROOK AVE. BRYANT AIRFIELD **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

LUST
eventid: 23910
Facility Status: Cleanup Complete

C22
< 1/8
1 ft.

JBER-FT. RICH AKARNG - ARMY AVIATION SUPPORT FACIL **SHWS** **S109256654**
FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 24824
Facility Status: Cleanup Complete

D23
< 1/8
1 ft.

JBER-FT. RICH TU057 BLDG 47662 FLYING CLUB USTA 2
WESTBROOK AVE. & W. END OF BRYANT AIRFIELD FTRS-57, FORMERLY
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S110144161
N/A

Relative:
Lower

Click here for full text details

SHWS
Hazard ID: 939
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 939
Facility Status: Cleanup Complete

D24
< 1/8
1 ft.

JBER-FT. RICH BLDG 47662 OLD FLY. CLB UTSS 89-91 U
WESTBROOK AVE. SOUTH OF. WEST END OF BRYANT AIRFIELD
FORT RICHARDSON (JBER), AK 99505

SHWS
LUST

S110144147
N/A

Relative:
Lower

Click here for full text details

SHWS
Hazard ID: 23874
Facility Status: Cleanup Complete

LUST
eventid: 23874
Facility Status: Cleanup Complete

F25
< 1/8
1 ft.

JBER-FT. RICH AKARNG - ARMY AVIATION STATION FACIL
AASF BRYANT AIRFIELD
FORT RICHARDSON (JBER), AK 99505

LUST

S105246761
N/A

Relative:
Lower

Click here for full text details

LUST
eventid: 24618
Facility Status: Cleanup Complete

F26
< 1/8
1 ft.

NATIONAL GUARD OMS 6 - FT. RICH
ACCESS RD CAMP CARROL
FORT RICHARDSON (JBER), AK 99505

SHWS

S109255552
N/A

Relative:
Lower

Click here for full text details

SHWS
Hazard ID: 23032
Facility Status: Cleanup Complete

G27
< 1/8
1 ft.

JBER-FT. RICH CHARLIE ROW FRSERA 2 PARTY — **SHWS** — **S110144112**
CHARLIE ROW, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 — **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 1493
Facility Status: Cleanup Complete

G28
< 1/8
1 ft.

JBER-FT. RICH BLDG 47431 FRSERA 2 PARTY — **SHWS** — **S110144113**
BRYANT AIRFIELD, N. SIDE FTRS-78 FAC ID 0-00788, FORMERLY FO — **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Lower

Click here for full text details

SHWS
Hazard ID: 1494
Facility Status: Cleanup Complete

29
NW
< 1/8
0.008 mi.
43 ft.

JBER-FT. RICH BLDG T57112 CAMP CARROL OMS-6 — **LUST** — **S108941526**
ROOSEVELT & STAMBONE STS. — **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher

Click here for full text details

LUST
eventid: 24076
Facility Status: Cleanup Complete

30
NNW
< 1/8
0.051 mi.
267 ft.

JBER-FT. RICH BLDG 57428 CAMP CARROLL TU948 HRC — **SHWS** — **S107029067**
NE SIDE OF BLDG. 57-428 STAMBONE ROAD CC-FTRS-09, FORMERLY F — **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 2575
Facility Status: Cleanup Complete

31
ENE
< 1/8
0.109 mi.
578 ft.

JBER-FT. RICH AFFF AREA 01 AT029 OUA RUFF ROAD FOR — **SHWS** — **S110144186**
GRAVEL PITS E. OF BRYANT ARMY AIRFIELD FTRS-29, FORMERLY FOR — **INST CONTROL** — **N/A**
FORT RICHARDSON (JBER), AK 99505

Relative: Higher

Click here for full text details

SHWS
Hazard ID: 2777
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL

JBER-FT. RICH AFFF AREA 01 AT029 OUA RUFF ROAD FORMER FTA (Continued) **S110144186**

Hazard ID: 2777
Facility Status: Cleanup Complete - Institutional Controls

32
SW
< 1/8
0.119 mi.
628 ft.

Relative:
Lower

JBER-FT. RICH FTR198 BUCKNER FIELD HOUSE EXPANSION **SHWS** **S113929832**
AREA BOUNDED BY D ST TO SOUTH, 6TH ST TO WEST, WESTBROOK AVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26084
Facility Status: Active

33
WSW
1/8-1/4
0.226 mi.
1194 ft.

Relative:
Lower

JBER-FT. RICH SS013 MP BARRACKS FTR196 **SHWS** **S113929814**
WEST OF 6TH STREET NEAR WESTBROOK AVENUE INTERSECTION, BETWE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26056
Facility Status: Active

H34
West
1/8-1/4
0.227 mi.
1199 ft.

Relative:
Lower

JBER-FT. RICH BLDG 980 TANK 42A USTA 2 PARTY **LUST** **S108941719**
FIRST STREET **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 23314
Facility Status: Cleanup Complete

H35
West
1/8-1/4
0.228 mi.
1204 ft.

Relative:
Lower

JBER-FT. RICH BLDG 980 TANK 42A USTA 2 PARTY **SHWS** **S110144133**
FIRST STREET, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23314
Facility Status: Cleanup Complete

H36
West
1/8-1/4
0.228 mi.
1204 ft.

Relative:
Lower

JBER-FT. RICH BLDG 980 UST 42 USTA 2 PARTY
1ST STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1
FORT RICHARDSON (JBER), AK 99505

SHWS **S106425043**
N/A

Click here for full text details

SHWS
Hazard ID: 2035
Facility Status: Cleanup Complete

I37
WSW
1/4-1/2
0.258 mi.
1362 ft.

Relative:
Lower

JBER-ELMENDORF ST430/9 AFID 410A 410B
F-15E FUEL TANK STORAGE BLDG. 16675 TAXIWAY 'F'
ELMENDORF AFB (JBER), AK 99506

LUST **S108941788**
N/A

Click here for full text details

LUST
eventid: 23421
Facility Status: Cleanup Complete

I38
WSW
1/4-1/2
0.258 mi.
1364 ft.

Relative:
Lower

JBER-ELMENDORF ST430/9 AFID 410A 410B
F-15E FUEL TANK STORAGE BLDG. 16675 TAXIWAY 'F'
ELMENDORF AFB (JBER), AK 99506

SHWS **S109255761**
N/A

Click here for full text details

SHWS
Hazard ID: 23421
Facility Status: Cleanup Complete

I39
WSW
1/4-1/2
0.258 mi.
1364 ft.

Relative:
Lower

JBER-FT. RICH TU058 FORMER BLDG 786 UST 26
6TH STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1
FORT RICHARDSON (JBER), AK 99505

SHWS **S106425042**
N/A

Click here for full text details

SHWS
Hazard ID: 2033
Facility Status: Cleanup Complete

I40
WSW
1/4-1/2
0.258 mi.
1364 ft.

Relative:
Lower

JBER-FT. RICH TU058 FORMER BLDG 762 USTS 19 & 20
EAST OF C & 2ND STREETS FTRS-58 FAC ID 0-00788, FORMERLY FOR
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144080**
N/A

Click here for full text details

SHWS
Hazard ID: 2754
Facility Status: Cleanup Complete

41
WSW
1/4-1/2
0.260 mi.
1375 ft.

Relative:
Lower

JBER-FT. RICH SS119 BLDG 791 **SHWS** **S118454885**
WEST OF 5TH STREET & EAST OF 6TH STREET, FORMERLY FORT RICHA **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26522
Facility Status: Cleanup Complete

42
NNW
1/4-1/2
0.276 mi.
1457 ft.

Relative:
Higher

JBER-FT. RICH OUD DUST PALLIATIVE **SHWS** **S110144129**
OTTER LK-ROOSEVELT RD-796 DAVIS HWY. FTRS-49, FORMERLY FORT **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 2779
Facility Status: Cleanup Complete

43
NE
1/4-1/2
0.291 mi.
1535 ft.

Relative:
Higher

AKARNG FT. RICHARDSON CAMP CARROLL **SHWS** **S107029073**
BLDG. 57112, DAVIS HIGHWAY **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 944
Facility Status: Cleanup Complete

44
WSW
1/4-1/2
0.320 mi.
1692 ft.

Relative:
Lower

JBER-FT. RICH FTR269C BLDG 789 COF **SHWS** **S111240562**
5TH STREET AND D STREET, FORMERLY FORT RICHARDSON BEFORE 10/ **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 25677
Facility Status: Active

J45
West
1/4-1/2
0.337 mi.
1778 ft.

Relative:
Lower

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY **SHWS** **S110144176**
DAVIS HIGHWAY FTRS-53 FAC ID 0-00788, FORMERLY FORT RICHARDS **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 2753
Facility Status: Cleanup Complete

INST CONTROL

JBER-FT. RICH TU053 BLDG 47811 UST 72 USTA 2 PARTY (Continued) **S110144176**

Hazard ID: 2753
Facility Status: Cleanup Complete

46
ENE
1/4-1/2
0.347 mi.
1830 ft.

Relative:
Higher

JBER-FT. RICH BLDG 49000 UST 250 **LUST** **S122436127**
BUILDING 49000 E OF N END OF RUNWAY **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 26881
Facility Status: Open

K47
WSW
1/4-1/2
0.352 mi.
1861 ft.

Relative:
Lower

EARECKSON AIR STATION FT02 **SHWS** **S104894000**
AIRCRAFT MOCKUP/DRUMS/FTA, NORTH END OF RUNWAY C **INST CONTROL** **N/A**
AMCHITKA, AK 99546

Click here for full text details

SHWS
Hazard ID: 42
Facility Status: Active

INST CONTROL
Hazard ID: 42
Facility Status: Active

J48
West
1/4-1/2
0.354 mi.
1870 ft.

Relative:
Lower

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY **SHWS** **S107029080**
5TH STREET & DAVIS HWY. FTRS-61, FORMERLY FORT RICHARDSON BE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1491
Facility Status: Cleanup Complete

49
SW
1/4-1/2
0.369 mi.
1950 ft.

Relative:
Lower

JBER-FT. RICH SS090 BARRACKS CONSTRUCTION DIELDRIN **SHWS** **S113929784**
6TH AND A STREETS, FORMERLY FORT RICHARDSON BEFORE 10/01/201 **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26005
Facility Status: Active

K50
WSW
1/4-1/2
0.371 mi.
1959 ft.

Relative:
Lower

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY — **LUST** — **S109261094**
5TH & D STS. NE CORNER — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 23958
Facility Status: Cleanup Complete

K51
WSW
1/4-1/2
0.372 mi.
1962 ft.

Relative:
Lower

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY — **SHWS** — **S109255922**
5TH & D STS., NE CORNER, FORMERLY FORT RICHARDSON BEFORE 10/ — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23958
Facility Status: Cleanup Complete

52
SSW
1/4-1/2
0.374 mi.
1977 ft.

Relative:
Lower

FTRS-007-R-01 RIFLE RANGE — **UXO** — **1018153409**
5312 KENNEY AVE — **N/A**
ANCHORAGE, AK

Click here for full text details

K53
WSW
1/4-1/2
0.381 mi.
2010 ft.

Relative:
Lower

JBER-FT. RICH BLDG 782 USTS 23 & 24 USTA 2 PARTY — **SHWS** — **S107029079**
5TH & D STS., NE CORNER FTRS-59 FAC ID 0-00788, FORMERLY FOR — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1490
Facility Status: Cleanup Complete

L54
WNW
1/4-1/2
0.381 mi.
2011 ft.

Relative:
Lower

JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA — **SHWS** — **S109256134**
5TH & DAVIS HWY., N. OF; CIRCLE DR. & WAREHOUSE ST, FORMERLY — **LUST** — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23951
Facility Status: Cleanup Complete

LUST
eventid: 23951

JBER-FT. RICH OUD BLDG 955 TANK 43, USED POL USTA 2 PARTY (Continued) **S109256134**

Facility Status: Cleanup Complete

55
NW
1/4-1/2
0.382 mi.
2018 ft.

Relative:
Lower

JBER-FT. RICH AFFF AREA 02 OUD LANDFILL/FTA AT052 **SHWS** **S110144190**
N. OF MAIN CANTONMENT & RUFF RD. FTRS-52, FORMERLY FORT RICH **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 2793
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 2793
Facility Status: Cleanup Complete - Institutional Controls

L56
WNW
1/4-1/2
0.395 mi.
2084 ft.

Relative:
Lower

EARECKSON AIR STATION ST43 **SHWS** **S104894041**
USTS 605-1 THROUGH -3 **N/A**
AMCHITKA, AK 99546

Click here for full text details

SHWS
Hazard ID: 40
Facility Status: Cleanup Complete

57
WSW
1/4-1/2
0.399 mi.
2107 ft.

Relative:
Lower

JBER-FT. RICH BLDG 798 USTS 30A & 30B USTA 2 PARTY **SHWS** **S109255889**
5TH ST. & DAVIS HWY., SE CORNER, FORMERLY FORT RICHARDSON BE **LUST** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23635
Facility Status: Cleanup Complete

LUST
eventid: 23635
Facility Status: Cleanup Complete

M58
WSW
1/4-1/2
0.411 mi.
2171 ft.

Relative:
Lower

JBER-FT. RICH BLDG 778 UST 22 USTA 2 PARTY **SHWS** **S110144132**
D STREET & FIFTH STREET, FORMERLY FORT RICHARDSON BEFORE 10/ **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 4462

JBER-FT. RICH BLDG 778 UST 22 USTA 2 PARTY (Continued) **S110144132**

Facility Status: Cleanup Complete

N59
WSW
1/4-1/2
0.415 mi.
2190 ft.

Relative:
Lower

JBER-FT. RICH AT035 MEB COMPLEX UST **SHWS** **S113929800**
E SIDE OF 5TH STREET, BETWEEN D STREET AND DAVIS HIGHWAY, FO **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26038
Facility Status: Cleanup Complete

N60
WSW
1/4-1/2
0.415 mi.
2190 ft.

Relative:
Lower

JBER-FT. RICH AT035 MEB COMPLEX COF **SHWS** **S112224714**
~350 FT SW OF WAREHOUSE ST & OTTER LAKE LOOP RD INTERSECTION **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 25870
Facility Status: Active

M61
WSW
1/4-1/2
0.423 mi.
2231 ft.

Relative:
Lower

JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY **LUST** **S109261055**
D & 5TH STS. SW CORNER **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 23962
Facility Status: Cleanup Complete

M62
WSW
1/4-1/2
0.423 mi.
2231 ft.

Relative:
Lower

JBER-FT. RICH BLDG 770 USTS 21A & 21B USTA 2 PARTY **SHWS** **S110144149**
D & 5TH STS., SW CORNER , FORMERLY FORT RICHARDSON BEFORE 10 **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23962
Facility Status: Cleanup Complete

63
NW
1/4-1/2
0.445 mi.
2351 ft.

Relative:
Higher

JBER-FT. RICH OUD GREASE PITS/LANDFILL
OLD FT. RICH. LANDFILL FTRS-51, FORMERLY FORT RICHARDSON BEF
FORT RICHARDSON (JBER), AK 99505

Database(s): SHWS, ENG CONTROLS, INST CONTROL
EDR ID Number: S110144175
EPA ID Number: N/A

Click here for full text details

SHWS
Hazard ID: 430
Facility Status: Cleanup Complete - Institutional Controls

ENG CONTROLS
Hazard ID: 430
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 430
Facility Status: Cleanup Complete - Institutional Controls

O64
WNW
1/4-1/2
0.451 mi.
2379 ft.

Relative:
Lower

JBER-FT. RICH TU073 BLDG 936 AND 944 FTRS-73
CIRCLE DRIVE AND NORTH WAREHOUSE STREET
FORT RICHARDSON (JBER), AK 99505

Database(s): SHWS
EDR ID Number: S113929822
EPA ID Number: N/A

Click here for full text details

SHWS
Hazard ID: 26068
Facility Status: Cleanup Complete

O65
WNW
1/4-1/2
0.451 mi.
2379 ft.

Relative:
Lower

JBER-FT. RICH BLDG 946 FTRS-76 TU076
CIRCLE DRIVE AND NORTH WAREHOUSE STREET
FORT RICHARDSON (JBER), AK 99505

Database(s): SHWS
EDR ID Number: S113929821
EPA ID Number: N/A

Click here for full text details

SHWS
Hazard ID: 26067
Facility Status: Cleanup Complete

P66
West
1/4-1/2
0.452 mi.
2384 ft.

Relative:
Lower

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 P
5TH STREET FAC ID 0-00788, FORMERLY FORT RICHARDSON BEFORE 1
FORT RICHARDSON (JBER), AK 99505

Database(s): SHWS, INST CONTROL
EDR ID Number: S107029085
EPA ID Number: N/A

Click here for full text details

SHWS
Hazard ID: 1792
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 1792

JBER-FT. RICH BLDG 979 SO031 USTS 40 & 41 USTA 2 PARTY (Continued) **S107029085**

Facility Status: Cleanup Complete

Q67
West
1/4-1/2
0.468 mi.
2469 ft.

Relative:
Lower

JBER-FT. RICH TU074 BLDG 956 UST 104 USTA 2 PARTY **SHWS** **S110144173**
WAREHOUSE STREET, CIRCLE DR. & 5TH ST., FORMERLY FORT RICHAR **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1791
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 1791
Facility Status: Cleanup Complete

Q68
West
1/4-1/2
0.469 mi.
2478 ft.

Relative:
Lower

JBER-FT. RICH BLDG 952 USTS 180 & 181 **LUST** **S122436120**
CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 26869
Facility Status: Cleanup Complete

69
WSW
1/4-1/2
0.472 mi.
2490 ft.

Relative:
Lower

JBER-FT. RICH TU117 FORMER BLDG 772 UST 130 FFA **SHWS** **S104892952**
5TH & D STS. FAC ID 0-00788 FBKS-MORSE GEN. PLANT, FORMERLY **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 2766
Facility Status: Active

R70
SW
1/4-1/2
0.477 mi.
2517 ft.

Relative:
Lower

JBER-FT. RICH BLDG 39600 USTA 2 PARTY **LUST** **S108941519**
FTRS-84 SITE SUMMIT NIKE MISSILE SITE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST
eventid: 23424
Facility Status: Cleanup Complete

R71
SW
1/4-1/2
0.477 mi.
2520 ft.

Relative:
Lower

JBER-FT. RICH BLDG 39600 USTA 2 PARTY — **SHWS** — **S110144138**
FTRS-84 SITE SUMMIT NIKE MISSILE SITE, FORMERLY FORT RICHARD — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23424
Facility Status: Cleanup Complete

72
WSW
1/4-1/2
0.478 mi.
2526 ft.

Relative:
Lower

JBER-FT. RICH TU949 BLDG 770 USTS 21A & 21B USTA 2 — **SHWS** — **S107029076**
5TH & D STS., SW CORNER CC-FTRS-05, FORMERLY FORT RICHARDSON — **INST CONTROL** — **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1483
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 1483
Facility Status: Cleanup Complete

R73
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-003-R-01 GREZELKA MACHINE GUN RANGE — **UXO** — **1018152028**
5312 KENNEY AVE — **N/A**
ANCHORAGE, AK

Click here for full text details

R74
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-005-R-01 MAHON MACHINE GUN RANGE — **UXO** — **1018152036**
5312 KENNEY AVE — **N/A**
ANCHORAGE, AK

Click here for full text details

R75
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-009-R-01 MORTAR RANGE 1B — **UXO** — **1018152042**
5312 KENNEY AVE — **N/A**
ANCHORAGE, AK

Click here for full text details

R76
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-013-R-01 ANTI-AIRCRAFT RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Click here for full text details

UXO

1018152048
N/A

R77
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-013-R-01 ANTI-AIRCRAFT RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Click here for full text details

UXO

1018152047
N/A

R78
SW
1/4-1/2
0.479 mi.
2530 ft.

Relative:
Lower

FTRS-004-R-01 MCGEE MACHINE GUN RANGE
5312 KENNEY AVE
ANCHORAGE, AK

Click here for full text details

UXO

1018152033
N/A

P79
West
1/4-1/2
0.480 mi.
2536 ft.

Relative:
Lower

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY
BLDG 975
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST

LUST
eventid: 23303
Facility Status: Cleanup Complete - Institutional Controls

LUST

S108941718
N/A

80
West
1/4-1/2
0.482 mi.
2545 ft.

Relative:
Lower

JBER-FT. RICH BLDG 796 UST 160
DAVIS HIGHWAY AND 5TH STREET BUILDING 796
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

LUST

LUST
eventid: 26867
Facility Status: Cleanup Complete

LUST

S122436118
N/A

P81
West
1/4-1/2
0.483 mi.
2551 ft.

Relative:
Lower

JBER-FT. RICH TU066 BLDG 975 TANK 38A USTA 2 PARTY
BLDG 975, FORMERLY FORT RICHARDSON BEFORE 10/01/2010
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S110144191
N/A

Click here for full text details

SHWS
Hazard ID: 23303
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 23303
Facility Status: Cleanup Complete - Institutional Controls

S82
WNW
1/4-1/2
0.489 mi.
2583 ft.

Relative:
Lower

JBER-FT. RICH FTR266 SS016 RDF SA015 RAILHEAD OPS
S OF LADUE RD; N OF CIRCLE DR; E OF RAILROAD CLASSIFICATION
FORT RICHARDSON (JBER), AK 99505

SHWS

S111750322
N/A

Click here for full text details

SHWS
Hazard ID: 25871
Facility Status: Cleanup Complete

83
West
1/4-1/2
0.493 mi.
2602 ft.

Relative:
Lower

JBER-FT. RICH TU066 BLDG 975 UST 38 USTA 2 PARTY
DAVIS HWY. & 5TH STREET FTRS-66 FAC ID 0-00788, FORMERLY FOR
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S110144177
N/A

Click here for full text details

SHWS
Hazard ID: 2755
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 2755
Facility Status: Cleanup Complete

S84
WNW
1/4-1/2
0.499 mi.
2636 ft.

Relative:
Lower

JBER-FT. RICH BLDG 934 TU070
NEAR NORTH WAREHOUSE STREET AND CIRCLE DRIVE INTERSECTION
FORT RICHARDSON (JBER), AK 99505

SHWS

S113929811
N/A

Click here for full text details

SHWS
Hazard ID: 26050
Facility Status: Cleanup Complete

85
WSW
1/2-1
0.552 mi.
2914 ft.

Relative:
Lower

JBER-FT. RICH BLDG 794 FRSERA 2 PARTY SA007
DAVIS HIGHWAY & 5TH ST. FTRS-07, FORMERLY FORT RICHARDSON BE
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S110144189
N/A

Click here for full text details

SHWS
Hazard ID: 2792
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 2792
Facility Status: Cleanup Complete

86
WNW
1/2-1
0.627 mi.
3311 ft.

Relative:
Lower

JBER-FT. RICH TU075 BLDG 932 UST 97
CIRCLE DRIVE AND NORTH WAREHOUSE STREET, FORMERLY KNOWN AS F
FORT RICHARDSON (JBER), AK 99505

SHWS

S113929823
N/A

Click here for full text details

SHWS
Hazard ID: 26069
Facility Status: Cleanup Complete

T87
West
1/2-1
0.630 mi.
3329 ft.

Relative:
Lower

JBER-FT. RICH BLDG 962 WAREHOUSE TU071 USTCA TANK
BLDG 962; N WAREHOUSE STREET & CIRCLE DRIVE
FORT RICHARDSON (JBER), AK 99505

SHWS

S113929778
N/A

Click here for full text details

SHWS
Hazard ID: 25998
Facility Status: Cleanup Complete

T88
West
1/2-1
0.647 mi.
3415 ft.

Relative:
Lower

JBER-FT. RICH SS120
SOUTH SIDE OF CIRCLE LOOP ROAD, FORMERLY FORT RICHARDSON BEF
FORT RICHARDSON (JBER), AK 99505

SHWS

S120900064
N/A

Click here for full text details

SHWS
Hazard ID: 26747
Facility Status: Active

U89
WSW
1/2-1
0.670 mi.
3538 ft.

Relative:
Lower

JBER-FT. RICH TU046 BLDG 750 USTS 15 16 USTA 2 PAR
2ND & D STS., NW CORNER FTRS-46 FAC ID 0-00788, FORMERLY FOR
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S104892991
N/A

Click here for full text details

SHWS
Hazard ID: 1233
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 1233
Facility Status: Cleanup Complete - Institutional Controls

90
West
1/2-1
0.678 mi.
3581 ft.

Relative:
Lower

JBER-FT. RICH SO030 BLDG 974 SPECIAL EQUIP REPAIR
DAVIS HWY., 5TH STREET & CIRCLE, LOOP RD., FORMERLY FORT RIC
FORT RICHARDSON (JBER), AK 99505

SHWS
INST CONTROL

S110144163
N/A

Click here for full text details

SHWS
Hazard ID: 1232
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 1232
Facility Status: Cleanup Complete

U91
WSW
1/2-1
0.693 mi.
3657 ft.

Relative:
Lower

JBER-FT. RICH BLDG 755 UST 17 USTA 2 PARTY
2ND ST. BETWEEN D ST. & DAVIS HWY. EAST SIDE
FORT RICHARDSON (JBER), AK 99505

SHWS
LUST

S109256238
N/A

Click here for full text details

SHWS
Hazard ID: 24131
Facility Status: Cleanup Complete

LUST
eventid: 24131
Facility Status: Cleanup Complete

U92
WSW
1/2-1
0.719 mi.
3795 ft.

Relative:
Lower

JBER-FT. RICH BLDG 756 UST 179 USTA 2 PARTY
BUILDING 756 ALT ID 109A NEAR SECOND & D STREET
FORT RICHARDSON (JBER), AK 99505

SHWS
LUST

S110144155
N/A

Click here for full text details

SHWS
Hazard ID: 25061

JBER-FT. RICH BLDG 756 UST 179 USTA 2 PARTY (Continued) **S110144155**

Facility Status: Cleanup Complete

LUST
eventid: 25061
Facility Status: Cleanup Complete

93
WSW
1/2-1
0.727 mi.
3837 ft.

Relative:
Lower

JBER-FT. RICH SS019 BLDG 755 UST 17 FRSERA 2 PARTY **SHWS** **S109568353**
2ND STREET BETWEEN D ST. & E. DAVIS HWY. FTRS-19, FORMERLY F **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1229
Hazard ID: 1240
Facility Status: Cleanup Complete
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 1240
Facility Status: Cleanup Complete - Institutional Controls

94
WNW
1/2-1
0.728 mi.
3843 ft.

Relative:
Lower

JBER-FT. RICH OUD OLD LANDFILL **SHWS** **S110144078**
CIRCLE ROAD N. OF MAIN CANTONMENT AREA SW OF FTA, FORMERLY F **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 941
Facility Status: Active

INST CONTROL
Hazard ID: 941
Facility Status: Active

95
WSW
1/2-1
0.736 mi.
3885 ft.

Relative:
Lower

FORT RICHARDSON (USARMY) **NPL** **1000483246**
SEMS **AK6214522157**
ANCHORAGE, AK 99505 **US ENG CONTROLS**
US INST CONTROL
ROD

Click here for full text details

NPL
Cerclis ID:: 1001455
EPA Id: AK6214522157

SEMS
Site ID: 1001455

FORT RICHARDSON (USARMY) (Continued) **1000483246**

EPA Id: AK6214522157

US ENG CONTROLS
EPA ID:: AK6214522157
EPA ID:: AK6214522157

US INST CONTROL
EPA ID:: AK6214522157

ROD
EPA ID:: AK6214522157

96
SW
1/2-1
0.750 mi.
3962 ft.

Relative:
Lower

JBER-FT. RICH ADAL COMMISSARY **SHWS** **S104892992**
5TH STREET & CHILKOOT AVE, FORMERLY FORT RICHARDSON BEFORE 1 **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1236
Facility Status: Cleanup Complete

97
West
1/2-1
0.752 mi.
3973 ft.

Relative:
Lower

JBER-FT. RICH TU082 BLDG 968 FTRS-82 **SHWS** **S113929820**
CIRCLE DRIVE **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 26066
Facility Status: Cleanup Complete

98
WSW
1/2-1
0.758 mi.
4004 ft.

Relative:
Lower

JBER-FT. RICH BLDG 47799 UST 218 **SHWS** **S110144134**
BLDG 47-799 STOCKADE ON DAVIS HWY, FORMERLY FORT RICHARDSON **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 23326
Facility Status: Cleanup Complete

99
WNW
1/2-1
0.773 mi.
4082 ft.

Relative:
Lower

JBER-FT. RICH BLDG 926 FTRS-77 TU077
CIRCLE DRIVE
FORT RICHARDSON (JBER), AK 99505

SHWS **S113929819**
N/A

Click here for full text details

SHWS
Hazard ID: 26065
Facility Status: Cleanup Complete

100
WNW
1/2-1
0.776 mi.
4098 ft.

Relative:
Lower

JBER-FT. RICH LANDFILL UST SOIL PILES CF040
CIRCLE ROAD FTRS-40, FORMERLY FORT RICHARDSON BEFORE 10/01/2
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144079**
N/A

Click here for full text details

SHWS
Hazard ID: 2752
Facility Status: Cleanup Complete

V101
WSW
1/2-1
0.792 mi.
4182 ft.

Relative:
Lower

JBER-FT. RICH BLDG 750 UST 153 USTA 2 PARTY
BUILDING 750 ALT ID 16A NEAR SECOND AND D STREET
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144156**
LUST **N/A**

Click here for full text details

SHWS
Hazard ID: 25062
Facility Status: Cleanup Complete

LUST
eventid: 25062
Facility Status: Cleanup Complete

V102
WSW
1/2-1
0.792 mi.
4182 ft.

Relative:
Lower

JBER-FT. RICH BLDG 750 UST 108 USTA 2 PARTY
D & 2ND STS., NW CORNER, FORMERLY FORT RICHARDSON BEFORE 10/
FORT RICHARDSON (JBER), AK 99505

SHWS **S110144145**
N/A

Click here for full text details

SHWS
Hazard ID: 24132
Facility Status: Cleanup Complete

103
SSW
1/2-1
0.890 mi.
4697 ft.

Relative:
Lower

FTRS-011-R-01 PISTOL RANGE **UXO** **1018153414**
5312 KENNEY AVE **N/A**
ANCHORAGE, AK

Click here for full text details

104
West
1/2-1
0.893 mi.
4717 ft.

Relative:
Lower

JBER-FT. RICH TU085 BLDG 972 UST 106 **SHWS** **S108941727**
BLDG 972, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **LUST** **N/A**
FORT RICHARDSON (JBER), AK 99505 **INST CONTROL**

Click here for full text details

SHWS
Hazard ID: 23000
Facility Status: Cleanup Complete

LUST
eventid: 23000
Facility Status: Cleanup Complete

INST CONTROL
Hazard ID: 23000
Facility Status: Cleanup Complete

105
WNW
1/2-1
0.974 mi.
5142 ft.

Relative:
Lower

JBER-FT. RICH BLDG 920 UST 95 USTA 2 PARTY **SHWS** **S110144135**
CIRCLE LOOP ROAD, FORMERLY FORT RICHARDSON BEFORE 10/01/2010 **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 22983
Facility Status: Cleanup Complete

106
WSW
1/2-1
0.981 mi.
5181 ft.

Relative:
Lower

JBER-FT. RICH TU064 BLDG 740 UST 14 DPW MAINT USTA **SHWS** **S107029083**
1ST & D STREETS FTRS-06 FTRS-64, FORMERLY FORT RICHARDSON BE **INST CONTROL** **N/A**
FORT RICHARDSON (JBER), AK 99505

Click here for full text details

SHWS
Hazard ID: 1790
Facility Status: Cleanup Complete - Institutional Controls

INST CONTROL
Hazard ID: 1790
Facility Status: Cleanup Complete - Institutional Controls

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
AK	AIRS	AIRS Facility Listing	Department of Environmental Conservation	07/09/2018	07/13/2018	08/20/2018
AK	AST	Regulated Aboveground Storage Tanks	Department of Environmental Conservation	01/05/2005	01/06/2005	02/02/2005
AK	BROWNFIELDS	Identified and/or Proposed Brownfields Sites	Department of Environmental Conservation	09/25/2018	09/27/2018	10/24/2018
AK	CDL	Illegal Drug Manufacturing Sites	Department of Environmental Conservation	02/12/2018	02/13/2018	03/21/2018
AK	COAL ASH	Coal Ash Disposal Sites	Department of Environmental Conservation	03/08/2018	03/27/2018	04/13/2018
AK	DRYCLEANERS	Drycleaner Facility Listing	Department of Environmental Conservation	02/15/2006	02/16/2006	03/15/2006
AK	ENG CONTROLS	Engineering Controls Site Listing	Department of Environmental Conservation	09/25/2018	09/27/2018	10/24/2018
AK	Financial Assurance 1	Financial Assurance Information Listing	Department of Environmental Conservation	08/09/2018	08/10/2018	08/22/2018
AK	Financial Assurance 2	Financial Assurance Information Listing	Department of Environmental Conservation	04/24/2007	04/26/2007	05/14/2007
AK	Inst Control	Contaminated Sites with Institutional Controls	Department of Environmental Conservation	09/25/2018	09/27/2018	10/24/2018
AK	LUST	Leaking Underground Storage Tank Database	Department of Environmental Conservation	08/09/2018	08/10/2018	08/20/2018
AK	NPDES	Wastwater Discharge Permit Listing	Department of Environmental Conservation	09/17/2018	09/18/2018	09/27/2018
AK	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Environmental Conservation		07/01/2013	01/17/2014
AK	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	Department of Environmental Conservation		07/01/2013	01/04/2014
AK	SHWS	Contaminated Sites Database	Department of Environmental Conservation	09/25/2018	09/27/2018	10/24/2018
AK	SPILLS	Spills Database	Department of Environmental Conservation	10/16/2018	10/18/2018	10/24/2018
AK	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	07/21/2010	01/03/2013	02/08/2013
AK	SWF/LF	Solid Waste Facilities	Department of Environmental Conservation	09/06/2018	09/25/2018	09/27/2018
AK	SWRCY	Recycling Facilities	Department of Environmental Conservation	12/29/2014	12/30/2014	02/02/2015
AK	UIC	UIC Information	Oil & Gas Conservation Commission	08/07/2018	08/10/2018	08/22/2018
AK	UST	Underground Storage Tank Database	Department of Environmental Conservation	08/09/2018	08/10/2018	08/22/2018
AK	VCP	Voluntary Cleanup Program sites	Department of Environmental Conservation	08/24/2018	08/28/2018	09/27/2018
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/10/2018	09/11/2018	09/14/2018
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	06/30/2018	07/17/2018	10/05/2018
US	CORRACTS	Corrective Action Report	EPA	03/01/2018	03/28/2018	06/22/2018
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/31/2012	08/07/2012	09/18/2012
US	Delisted NPL	National Priority List Deletions	EPA	07/17/2018	08/09/2018	09/07/2018
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	09/02/2018	09/05/2018	09/14/2018
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	06/18/2018	06/27/2018	09/14/2018
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	11/07/2016	01/05/2017	04/07/2017
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017
US	FINDS	Facility Index System/Facility Registry System	EPA	08/07/2018	09/05/2018	10/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/31/2015	07/08/2015	10/13/2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	08/22/2018	08/22/2018	10/05/2018
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/26/2018	03/27/2018	06/08/2018
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/10/2018	05/18/2018	07/20/2018
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/13/2018	05/18/2018	07/20/2018
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/08/2018	05/18/2018	07/20/2018
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/12/2018	05/18/2018	07/20/2018
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/01/2018	05/18/2018	07/20/2018
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	04/24/2018	05/18/2018	07/20/2018
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	04/25/2018	05/18/2018	07/20/2018
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/10/2018	05/18/2018	07/20/2018
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	07/17/2018	08/09/2018	10/05/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	07/17/2018	08/09/2018	10/05/2018
US	LUCIS	Land Use Control Information System	Department of the Navy	05/14/2018	05/18/2018	07/20/2018
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/30/2016	09/08/2016	10/21/2016
US	NPL	National Priority List	EPA	07/17/2018	08/09/2018	09/07/2018
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	06/01/2017	06/09/2017	10/13/2017
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2013	10/17/2014	10/20/2014
US	Proposed NPL	Proposed National Priority List Sites	EPA	07/17/2018	08/09/2018	09/07/2018
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/02/2018	07/05/2018	10/05/2018
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/01/2018	03/28/2018	06/22/2018
US	RMP	Risk Management Plans	Environmental Protection Agency	08/01/2018	08/22/2018	10/05/2018

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	ROD	Records Of Decision	EPA	07/17/2018	08/09/2018	10/05/2018
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	07/17/2018	08/09/2018	09/07/2018
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	07/17/2018	08/09/2018	09/07/2018
US	SSTS	Section 7 Tracking Systems	EPA	12/31/2009	12/10/2010	02/25/2011
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/18/2018	06/20/2018	09/14/2018
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	05/18/2018	06/20/2018	09/14/2018
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	05/31/2018	06/27/2018	10/05/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	05/18/2018	06/20/2018	09/14/2018
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	07/31/2018	08/28/2018	09/14/2018
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	08/01/2018	08/29/2018	10/05/2018
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	09/30/2017	06/19/2018	09/14/2018
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	07/01/2018	08/01/2018	08/31/2018
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
AK	Daycare Centers	Sensitive Receptor: Child Care Facilities Database	Department of Education & Early Development			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
AK	State Wetlands	Wetland Classification and Mapping	Alaska Natural Heritage Program			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		PennWell Corporation			
US	Electric Power Transmission Line Data		PennWell Corporation			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BRYANT ARMY AIRFIELD
47430 WESTBROOK AVE
JBER, AK 99505

TARGET PROPERTY COORDINATES

Latitude (North):	61.264716 - 61° 15' 52.98''
Longitude (West):	149.668109 - 149° 40' 5.19''
Universal Tranverse Mercator:	Zone 6
UTM X (Meters):	356917.7
UTM Y (Meters):	6794991.5
Elevation:	341 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property:	N/A
Source:	USGS 7.5 min quad index

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

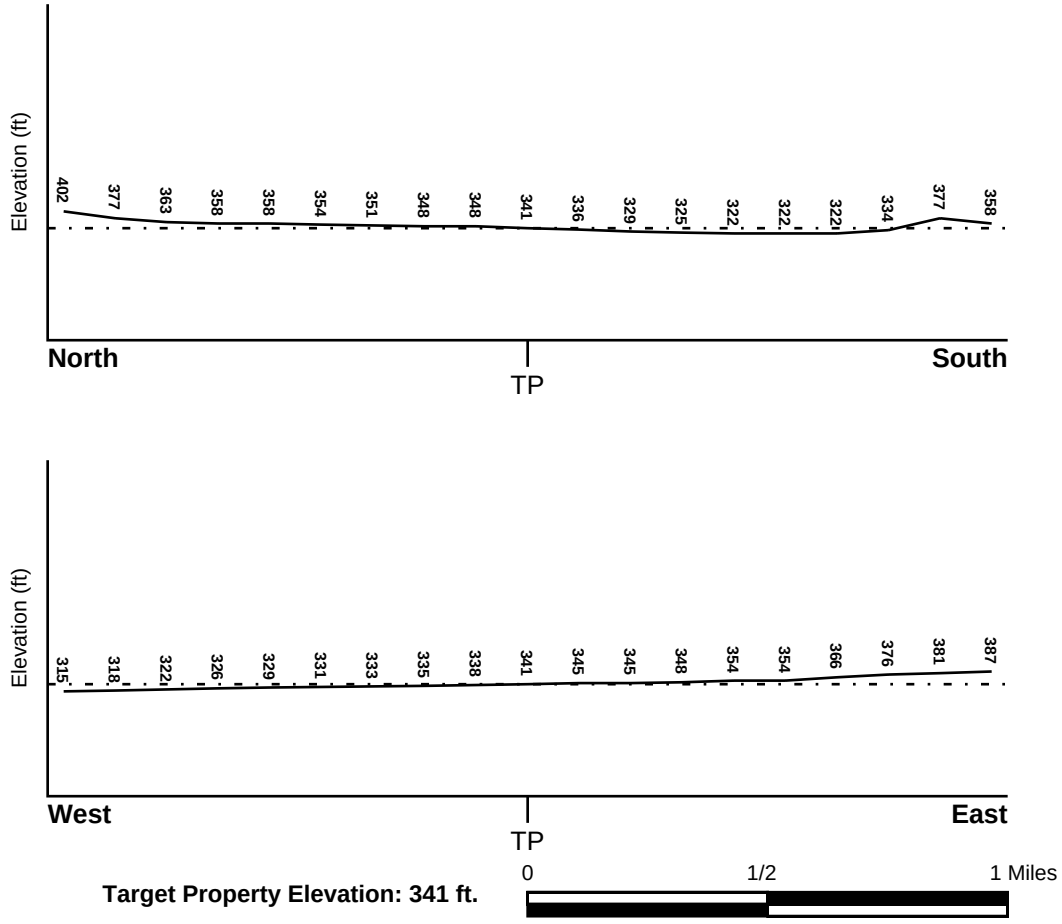
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
0200050375D	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
Not Reported	N

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

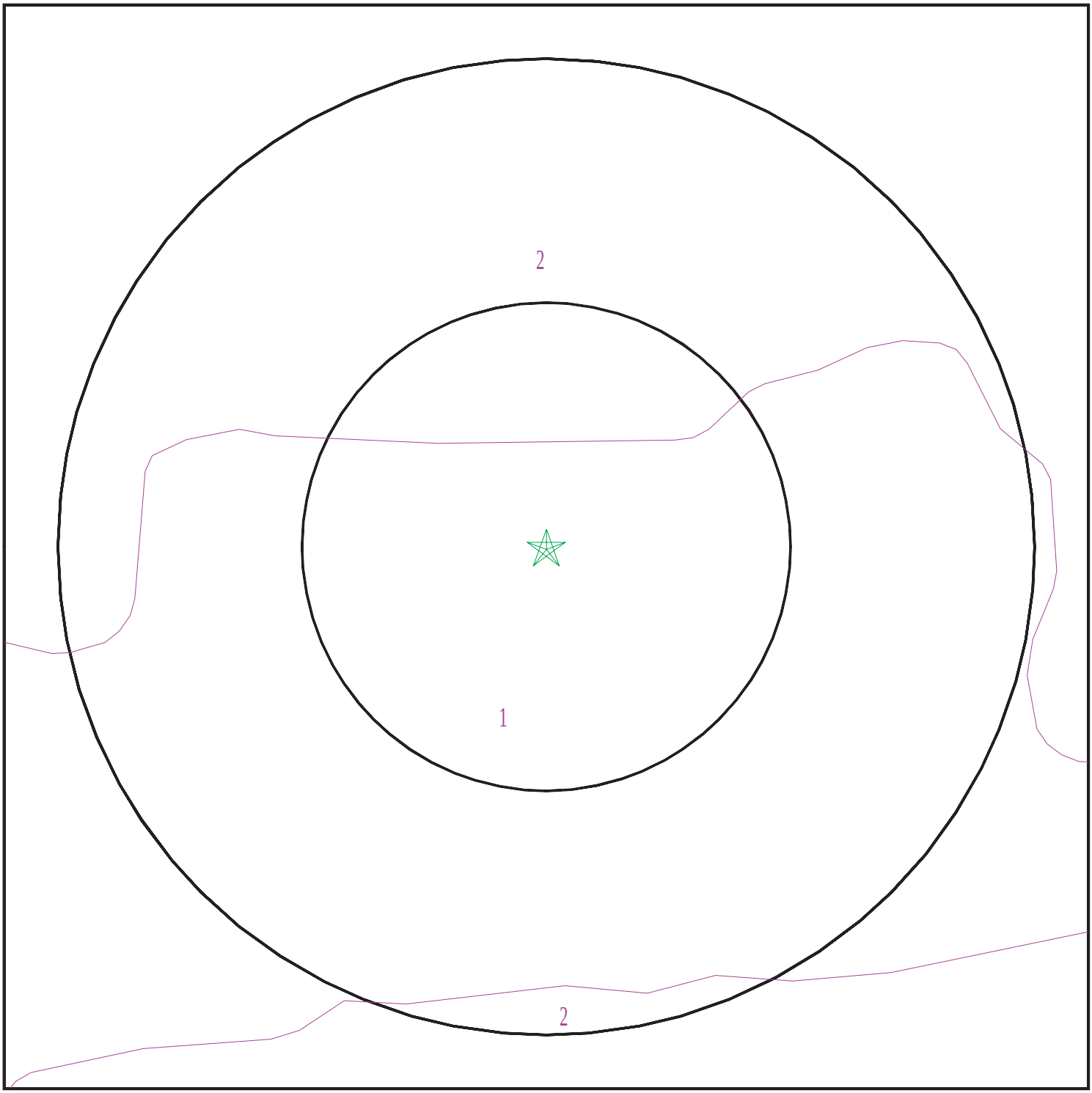
Era: -
System: -
Series: -
Code: N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5471178.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:23 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Cryorthents

Soil Surface Texture: very gravelly sandy loam

Hydrologic Group: Not reported

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	very gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42.34 Min: 4	Max: 7 Min: 5.7

Soil Map ID: 2

Soil Component Name: Kashwitna

Soil Surface Texture: moderately decomposed plant material

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	3 inches	moderately decomposed plant material	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
2	3 inches	5 inches	silt loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
3	5 inches	16 inches	silt loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
4	16 inches	18 inches	gravelly sandy loam	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6
5	18 inches	59 inches	very gravelly sand	A-8	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141.14 Min: 42.34	Max: 6.5 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile

FEDERAL USGS WELL INFORMATION

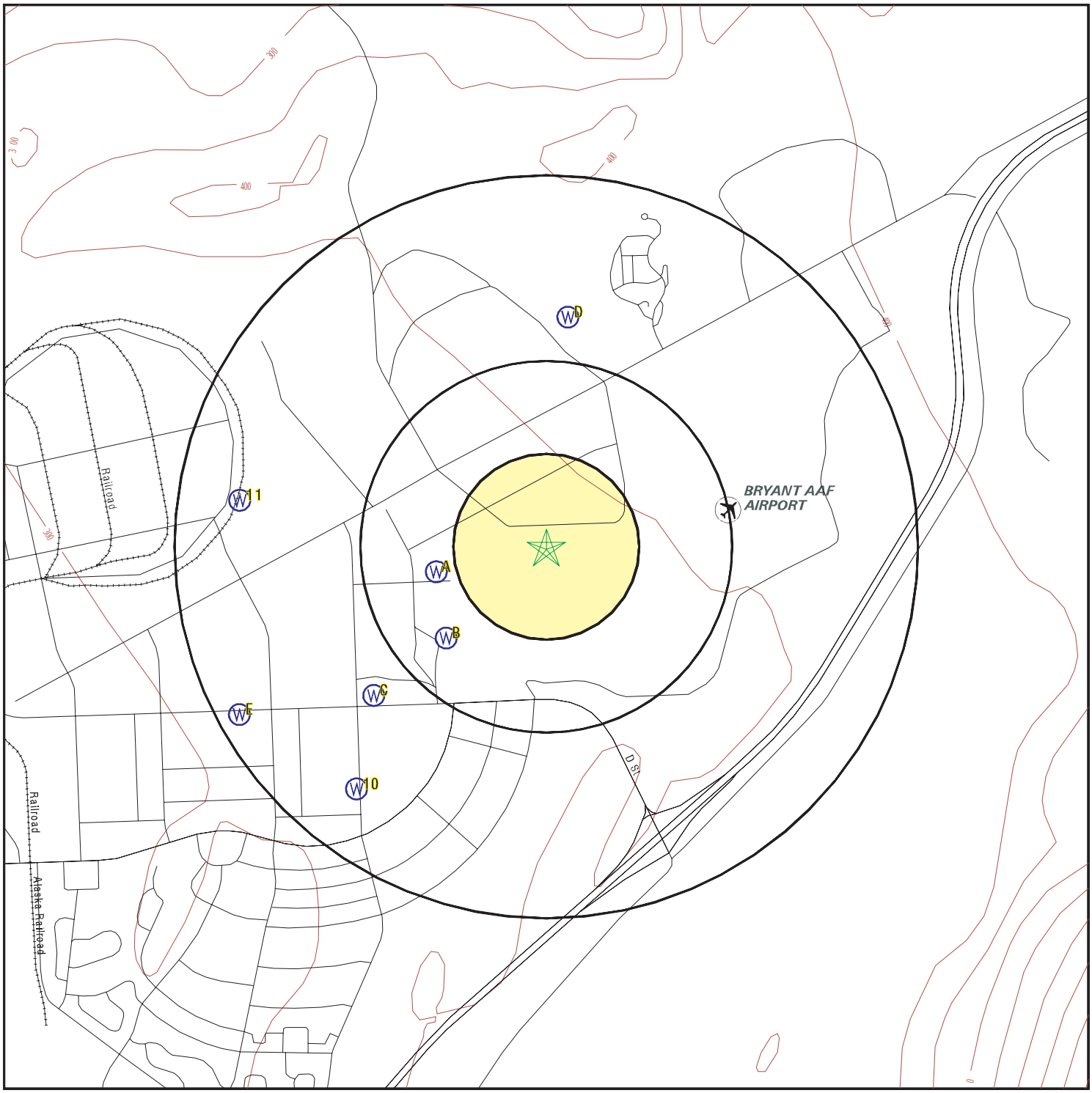
MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000020957	1/4 - 1/2 Mile WSW
A2	USGS40000020958	1/4 - 1/2 Mile WSW
B3	USGS40000020952	1/4 - 1/2 Mile SW
B4	USGS40000020951	1/4 - 1/2 Mile SW
B5	USGS40000020955	1/4 - 1/2 Mile SW
C6	USGS40000020939	1/2 - 1 Mile SW
C7	USGS40000020940	1/2 - 1 Mile SW
D8	USGS40000020993	1/2 - 1 Mile North
D9	USGS40000020992	1/2 - 1 Mile North
10	USGS40000020904	1/2 - 1 Mile SW
11	USGS40000020970	1/2 - 1 Mile West
E12	USGS40000020929	1/2 - 1 Mile WSW
E13	USGS40000020930	1/2 - 1 Mile WSW
E14	USGS40000020931	1/2 - 1 Mile WSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

PHYSICAL SETTING SOURCE MAP - 5471178.2s



County Boundary
Major Roads
Contour Lines
Airports
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
Oil, gas or related wells

SITE NAME:	Bryant Army Airfield	CLIENT:	AECOM
ADDRESS:	47430 Westbrook Ave Jber AK 99505	CONTACT:	Brittany Kirchmann
LAT/LONG:	61.264716 / 149.668109	INQUIRY #:	5471178.2s
		DATE:	October 31, 2018 2:23 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
A1 **WSW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020957**
A2 **WSW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020958**
B3 **SW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020952**
B4 **SW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020951**
B5 **SW** **1/4 - 1/2 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020955**
C6 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020939**
C7 **SW** **1/2 - 1 Mile** **Lower**	Click here for full text details	**FED USGS**	**USGS40000020940**
D8 **North** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000020993**
D9 **North** **1/2 - 1 Mile** **Higher**	Click here for full text details	**FED USGS**	**USGS40000020992**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	EDR ID Number
10 SW 1/2 - 1 Mile Lower	Click here for full text details	**FED USGS**	**USGS40000020904**
11 West 1/2 - 1 Mile Lower	Click here for full text details	**FED USGS**	**USGS40000020970**
E12 WSW 1/2 - 1 Mile Lower	Click here for full text details	**FED USGS**	**USGS40000020929**
E13 WSW 1/2 - 1 Mile Lower	Click here for full text details	**FED USGS**	**USGS40000020930**
E14 WSW 1/2 - 1 Mile Lower	Click here for full text details	**FED USGS**	**USGS40000020931**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for ANCHORAGE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for ANCHORAGE COUNTY, AK

Number of sites tested: 128

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.830 pCi/L	98%	2%	0%
Living Area - 2nd Floor	0.300 pCi/L	100%	0%	0%
Basement	1.295 pCi/L	96%	4%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Classification and Mapping
Source: Alaska Natural Heritage Program
Telephone: 907-235-2218

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

OTHER STATE DATABASE INFORMATION

Oil and Gas Well Database
Source: Department of Administration, Oil & Gas Conservation Commission.
Oil and gas well locations in the state.

RADON

State Database: AK Radon
Source: University of Alaska Fairbanks
Telephone: 907-474-7201
Radon Information

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

CULTURAL RESOURCE SURVEY OF CAMP DENALI, JOINT BASE ELMENDORF-RICHARDSON (JBER), ALASKA

CONTRACT NO. CT 160000641

March, 2017

Prepared For:
Alaska Army National Guard
JBER, AK

Prepared By:
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RESTRICTED DATA NOTICE

The locations of cultural resources given in this report are provided to facilitate environmental and engineering planning efforts only. Under the provisions of the Archaeological Resources Protection Act (ARPA) and the National Historic Preservation Act (NHPA), site location information is restricted in distribution; public disclosure of such information is exempt from requests under federal and state freedom of information laws. This report is not a public document. It is intended for release only to the Alaska Department of Military and Veterans Affairs (DMVA), the Alaska Army National Guard (AK-ARNG), the United States Army (USA), United States Air Force (USAF), the Alaska State Historic Preservation Office (SHPO), and other appropriate consulting parties. Recipients of this information are requested to maintain the confidentiality of this report and all information contained herein.

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APPROVAL PAGE

This cultural resources survey report has been prepared for the Alaska Army National Guard (AK-ARNG) by Northern Land Use Research Alaska, LLC (NLURA) in response to the AK-ARNG's responsibilities under Section 110 of the NHPA of 1966, as amended. The work described in this report was completed in accordance with AK-ARNG Contract CT 160000641 and under ARPA Permit authorized by Cultural Resource Manager/Native Liaison Jon Scudder on 4/4/2016.

_____

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ACRONYMS AND ABBREVIATIONS

AHRS	Alaska Heritage Resources Survey
AK-AFNG	Alaska Air Force National Guard
AK-ARNG	Alaska Army National Guard
AKNG	Alaska National Guard
ALCAN	Alaska-Canadian Highway
ALCOM	Alaska Command
ANILCA	Alaska National Interest Lands Conservation Act
APE	Area of Potential Effect
APC	Armored Personnel Carrier
ARC	Alaska Road Commission
ARPA	Archaeological Resources Protection Act
ATG	Alaska Territorial Guard
BAAF	Bryant Army Airfield
B.P.	Radiocarbon Years Before present
CC	Camp Carroll
CD	Camp Denali
cm	Centimeters
DEW Line	Distant Early Warning Line
DMVA	Department of Military and Veterans Affairs (State of Alaska)
DOE	Determination of eligibility
EAFB	Elmendorf Air Force Base
ENC	Eklutna Native Corporation
FR	Fort Richardson
FRNC	Fort Richardson National Cemetery
FRPC	Fort Richardson Post Cemetery
FSRCs	Federal Scout Readiness Centers
FTP	Fire Training Pit
IBS	Integrated Business Suite
ICBM	Intercontinental Ballistic Missile
ICRMP	Integrated Cultural Resources Management Plan
JBER	Joint Base Elmendorf-Richardson
KW	Kilowatt
m	Meter
MAD	Mutually Assured Destruction
MG	Major General
MUTT	Military Unit Tactical Truck
NCO	Non-commissioned Officer
NE	Not eligible for listing on the NRHP
NG	National Guard
NHPA	National Historic Preservation Act
NLUR	Northern Land Use Research
NLURA	Northern Land Use Research Alaska, LLC
NPS	National Park Service

NRHP	National Register of Historic Places
OD	Olive Drab
OHA	Office of History and Archaeology
OMS	Organizational Maintenance Shops
OTAG	Office of the Adjutant General
PBR	Pabst Blue Ribbon
RAC	Russian American Company
sf	Square Feet
SFC	Sergeant First Class
SHPO	State Historic Preservation Officer
SOW	Scope of work
USA	United States Army
USAF	United States Air Force
USARAL	United States Army Alaska
USGS	United States Geological Survey
USPFO	United States Property and Fiscal Office
USSR	Union of Soviet Socialist Republics
VA	Veterans Administration
WAC	Women's Army Corps
WWI	World War One
WWII	World War Two

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1.0 Introduction

The Alaska Army National Guard (AK-ARNG), as administered by the Alaska Department of Military and Veterans Affairs (DMVA), is proposing to address requirements stipulated in Section 110 of the National Historic Preservation Act of 1966, as amended (NHPA), for lands and buildings associated with Camp Denali (CD), which is part of Joint Base Elmendorf-Richardson (JBER) northeast of Anchorage, Alaska.

Section 110 of the NHPA directs federal agencies to develop a program to inventory and evaluate historic properties in accordance with National Register of Historic Places (NRHP) eligibility criteria. Army Regulation 200-1 Chapter 6-4(b)(2) reiterates that this activity is pertinent to Department of Defense agencies, including the AK-ARNG. The process is designed to provide the AK-ARNG with information sufficient to plan appropriately for future Section 106 actions.

Section 110 of the NHPA sets out the broad historic preservation responsibilities of federal agencies. It is intended to ensure that historic preservation is fully integrated into the ongoing programs of all federal agencies. This intent was first put forth in the preamble to the NHPA upon its initial adoption in 1966. When the NHPA was amended in 1980, section 110 was added to expand and make more explicit the statute's statement of federal agency responsibility for identifying, evaluating, and protecting historic properties and avoiding unnecessary damage to them. Section 110 also charges each federal agency with the affirmative responsibility for considering projects and programs that further the purposes of the NHPA, and it declares that the costs of preservation activities are eligible project costs in all undertakings conducted or assisted by a federal agency. The United States Army (USA) complies with its Section 110 responsibilities through the guidance provided in Army Regulation 200-1 Environmental Protection and Enhancement.

When a specific federal undertaking may affect a historic property, the provisions of Section 106 of NHPA and its implementing regulations codified in 36 CFR 800 (as amended 2004) would apply. These regulations provide a process through which the potential of an undertaking[1] to affect "historic properties" (a regulatory term used to define both prehistoric and historic sites, buildings, structures, and objects) is considered. Historic properties are the districts, sites, buildings, structures, and objects that are listed on, or have been determined eligible for listing on the NRHP. NRHP eligibility is a key management concept, as NRHP eligible sites may require the development of mitigation measures and possibly further archaeological/architectural recordation work prior to starting an undertaking. The federal agency and the Alaska State Historic Preservation officer (SHPO) make determinations of eligibility (DOEs) for listing on the NRHP.

The scope of work (SOW) includes three related but different activities designed to address Section 110 issues at CD:

[1] Generally, an undertaking is any federally funded, licensed, permitted, or assisted action.

1) A Level I (Reconnaissance) archaeological survey of undisturbed and portions of CD not previously surveyed.

2) A Level II (Evaluation) archaeological survey, of selected sites identified by the Level I survey of CD.

3) Oral history interviews to gather information about historic activities on CD and to support DOEs for those sites selected for Phase II surveys.

A Level I or "Reconnaissance" survey, as defined by the Alaska Office of History and Archaeology (OHA) in *Historic Preservation Series No. 11* (revised 2003) and the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716) is designed to identify and describe cultural resources.

A Level II or "Evaluation" survey, as defined by OHA in *Historic Preservation Series No. 11* (revised 2003) and the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716) is designed to identify and describe cultural resources and gather the information required to prepare DOE recommendations. A Level II survey will not result in any site treatment, mitigation or management plans.

The AK-ARNG contracted with Northern Land Use Research Alaska, LLC (NLURA) to undertake activities specified in the SOW.

The 2016 CD survey was conducted with the permission of the land owner (JBER) under Archaeological Resources Protection Act (ARPA) permit authorized by Cultural Resource Manager/Native Liaison Jon Scudder on April 4, 2016. This report satisfies the reporting requirements of this permit.

1.1 Project Location and Setting

The 2016 CD Survey Area is located along the eastern Knik Arm and Upper Cook Inlet, immediately north of Anchorage. It is encompassed by the Cook Inlet ecoregion, which covers approximately 28,000 square miles, including the eastern third of the Kenai Peninsula, a narrow strip of land along the Cook Inlet's west side, and the Susitna floodplain to the north. All rivers and streams within the Cook Inlet ecoregion flow into the Cook Inlet, including the Susitna, Matanuska, Yentna and Eagle Rivers as well as Deep Creek, Ship Creek and many others (Baichtal and Carlson 2010; USDA 2004).

The Survey Area for this Project is roughly the boundary of CD (Figure 1), which is one of three subdivisions of the AK-ARNG tenant lands (along with Camp Carroll (CC) and Bryant Army Airfield (BAAF)) within JBER. CD is located approximately 7 air miles from downtown Anchorage and 3.5 miles north northeast of the main post, or cantonment of Fort Richardson (FR). CD is bounded on the north by the Davis Highway, on the south and east by the Glenn Highway, and on the west by BAAF. The original boundaries of CD consisted of two parcels totaling approximately 269 acres. The first was an exclusive use area of 137.89 acres and a joint use area of 131.34 acres (Figure 2) (Grefsrud 1993).

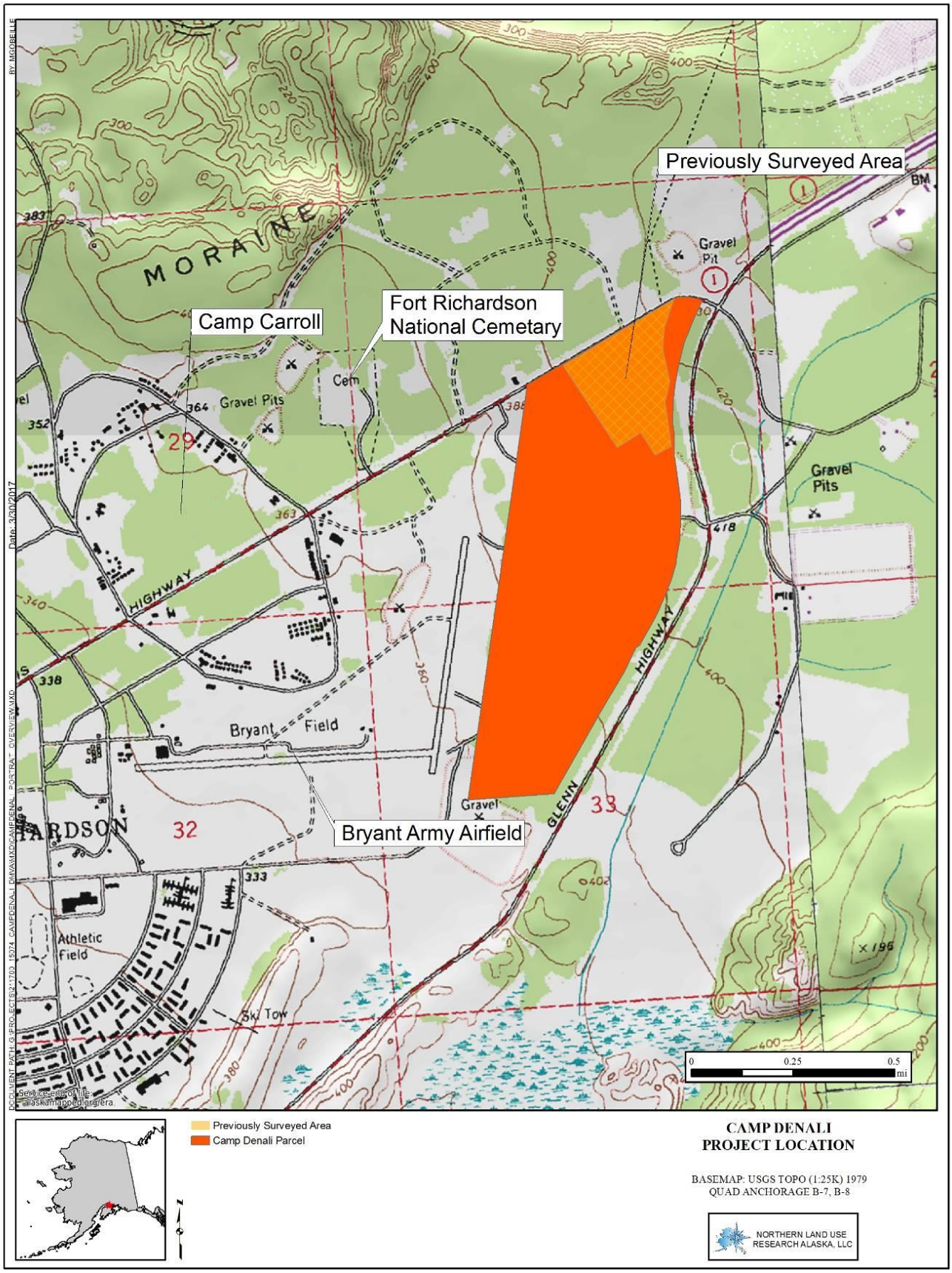

Figure 1. 2016 Camp Denali Study Area.

The CD Survey Area is located on the southwest quarter of Section 28 and the northeast quarter of Section 33, Township 14 North, Range 2 West, Seward Meridian (ST014R002W28/33). It is depicted on United States Geological Survey (USGS) 1:63,360 scale quadrangles Anchorage B7 and B8 (Figure 1).

A portion of CD was surveyed in 2013 (Blanchard et al. 2013). Per the SOW, this section of CD was not resurveyed in 2016, and the reader is directed to the previous survey report for information on cultural resources in this area.

The area is sometimes referred to as the "Anchorage Bowl" surrounded by the Chugach Mountains to the east, the Alaskan Range to the west, and the Kenai Mountains to the south. JBER, in which CD is located, is entirely within the Cook Inlet-Susitna lowland physiographic province (Wahrhaftig 1965). This area experiences a relatively mild climate as it is somewhat protected from the Gulf of Alaska storms by the elongated Cook Inlet, and buffered from cold air masses from the surrounding mountains. Average temperatures in Anchorage range from 8 to 21 degrees Fahrenheit in January and from 51 to 65 degrees Fahrenheit in July, with an annual average precipitation of 15.9 inches and an average annual snowfall of 69 inches (ADCRA 2017)

The Cook Inlet ecoregion was heavily glaciated during the Pleistocene and the effects of glaciation, including moraines, eskers, kettle lakes, drumlin fields and outwash plains remain in the vicinity of Palmer and throughout the ecoregion. South of Palmer there are extensive tidal flats that were raised above sea-level by tectonic uplift or isostatic rebound (Anderson et al. 2010; Connor 1988). Overlaying much of the glacial landscape is a thick mantle of loess and volcanic ash deposited since the end of the Pleistocene (Baichtal and Carlson 2010).

The last major glaciation, known as the Naptowne glaciation, began around 25,000 years ago, and ended around 9,500 years ago. Geologic evidence indicates that the upper Cook Inlet area was glaciated during the Pleistocene Epoch, with the end of deglaciation occurring approximately 9,000 years ago (Reger et al. 1995). As a result, many of the geomorphic features in the region including the numerous erratics, bedrock outcrops, and granitic knobs were shaped or created by glaciers advancing and retreating across the land. However, the majority of the coastal region is relatively flat, and is comprised of numerous small ponds and lakes connected by streams and rivers that empty into the inlet.

JBER is located within the Elmendorf Moraine, a glacially deposited landform consisting of a series of long hummocky ridges oriented in an east to west direction. General topography of the area consists of hills and kettles, with a complexity of aggregated knobs and ridges that are interspersed with ponds and kettle lakes. Average elevations within the Elmendorf Moraine exceed 200 feet, reaching heights of nearly 340 feet within kettles and moraine margins. Knik Arm interrupts the moraine topography to the west of JBER, dropping as much as 204 feet to sea level with average bluff elevations in excess of 100 feet. Previous archaeological assessment of moraine features scattered across JBER (Dilley 1996; McMahan and Holmes 1996; Shaw 2000; Steele 1980) indicate that such glacial features represent locations possessing a relatively high probability for discovering both historic and prehistoric archaeological sites but a large portion of these features, especially within Elmendorf Air Force Base (EAFB), have been damaged by construction activities.

In general terms, the vegetation in the Anchorage Bowl represents a transitional zone between hemlock and Sitka spruce coastal forests and the interior boreal forests. Flora in the CD Survey Area is typified by northern boreal forest species including mixed stands of white spruce and birch. Low growing black spruce, willows, and alder are found in areas with poorly drained soil. Typical understory vegetation includes various grasses, alder, devil's club, ferns, red elderberry, highbush cranberry, and wild rose. Tussock formation is also encountered in more poorly-drained areas. Sphagnum moss and various lichens are also common in denser stands of black spruce. Alluvial fans and floodplains are favored by Sitka spruce, black cottonwood, balsam poplar and paper birch (Gallant et al. 1995).

Important animal species within the Cook Inlet ecoregion include black and brown bear, moose, caribou, beaver, hare, wolf, coyote, and fox. Spruce grouse are common in the forest, bald eagles reside along the waterways and large numbers of birds, including swans, geese, ducks and sand-hill cranes pass through on their seasonal migrations. Salmon and whitefish are found in the Cook Inlet (Baichtal and Carlson 2010; USDA 2004).

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2.0 Methods

The primary objectives of the CD cultural resource survey are to comply with legal and regulatory mandates. The principal federal mandates are Sections 106 and 110 of the NHPA (16 USC 470, as amended) and implementing regulations of 36 CFR 800 (as amended). Methods involved standard archaeological procedures for a project of this nature, including background literature review, interviews with persons having special knowledge of the Survey Area, and field survey.

2.1 Pre-Field Research

Pre-field research for this Project included a background study, which examined aerial photographs, maps, and literature relating to the history and archaeology of the region and the Survey Area. Published and unpublished sources in the extensive files and library of NLURA formed the primary sources of information. These included previous archaeological survey reports as well as general references on the prehistory and history of the Upper Cook Inlet region. The Alaska Heritage Resources Survey (AHRS) files, maintained at the Alaska Department of Natural Resources OHA, were consulted for information about previously identified sites within one mile of the Survey Area.

The specific goal of the pre-field research was to identify areas with a high potential to contain historic properties and identify cultural resource site types that might be encountered during the archaeological survey of the Survey Area.

2.2 Level I Survey

As noted in Section 1 called for a phased approach, starting with a Level I survey of the CD Survey Area. Fieldwork was supervised by NLURA staff meeting the Secretary of the Interior's Professional Qualification Standards (48 FR 44738) for history and archaeology.

NLURA employed standard archaeological field methods for projects of this nature. Fieldwork products were written field notes and/or photo logs. Sites, features, and artifacts identified during the Level I survey of CD were recorded with two GPSmap76Cx units, photographed with Ricoh WG-4GPS cameras and described in the survey notes and/or photo logs.

2.3 Level II Survey

The SOW called for NLURA to consult with Thomas R. Wolforth after completing the Level I survey to select sites and/or features that would be subjected to additional Level II survey. In keeping with this stipulation, Blanchard and Wolforth discussed the cultural resources identified during the 2016 Level I survey of CD and concluded that the sites, features, and artifacts identified during the survey (see below for details) were consistent with those found, and subsequently determined not eligible for listing on the NRHP during the survey of the United States Property and Fiscal Office (USPFO) facilities, CC and BAAF (Blanchard 2014; Blanchard et al. 2013; Guilfoyle and Stern 2012).

After this consultation, Wolforth concluded that none of the sites, features or artifacts identified during the Level I survey required additional survey to complete a DOE recommendation. As such, he instructed Blanchard not to complete a Level II Survey of the CD Survey Area.

For the remainder of this report, the 2016 Level I survey is referred to as the 2016 survey of CD.

2.4 Oral History

The SOW called for oral histories to gather information needed to develop DOEs for the areas selected for Level II survey. Because no areas were selected for additional research, the oral history focused on Alaska National Guard (AKNG) activities within the 2016 CD Study Area.

Several potential informants were identified by Wolforth. These included Major Michael Haller (retired), who served in the United States Air Force (USAF) between 1971 and 1975, then joined the AK-ARNG 134 Public Affairs Office Detachment as a Sargent between 1975 and 1976. He left the Guard in 1976. He returned to the AKNG as a Lieutenant in 1986 where he served as the AK-ARNG Public Affairs Officer until he retired as a major on January 1, 2007. During his time with the AK-ARNG, Major Haller served as an unofficial historian for the guard and actively collected and curated objects and records connected to the AK-ARNG's history.

The second oral history subject identified by Wolforth was Sergeant First Class (SFC) Christopher J. Fillman, S-4 Non-commissioned Officer (NCO) for the First Battalion, 297th Infantry Regiment (Scout), AK-ARNG. SFC Fillman has an interest in the history of the AK-ARNG and knowledge of current guard activities within the 2016 CD Study Area.

Major Haller provided information on the history of the AKNG, information on the construction of the modern CD Armory facilities, and information on activities undertaken by the AKNG within the boundaries of the 2016 CD survey area. SFC Fillman provided information on the history of the guard and the AK-ARNG's use of the 2016 CD Study Area for training. Information collected during these interviews is cited as appropriate in this report.

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3.0 Cultural Environment

This section provides a synopsis of key historical themes and timeframes encompassing the Survey Area. A number of reports provide information on the prehistoric and protohistoric context of the Upper Cook Inlet and JBER. The reader is referred to Fall et al. (2003) for information on JBER's ethnographic and protohistoric background and Daugherty and Saleeby (1998); Hollinger (2001); and Shaw (2000) for information on JBER's history, particularly the homestead era and military development. Much of the information provided below has been presented in previous Northern Land Use Research, Inc. (NLUR) and NHG Alaska reports on research conducted on JBER, CC, BAAF, and CD (Blanchard 2012, 2014, 2016; Blanchard et al. 2013; Guilfoyle and Stern 2012; Hall 2016; Neely and Proue 2008; Neely et al. 2011; Nonaka 1999; Stern 2010).

3.1 Cook Inlet Prehistory

Few archaeological sites of great time depth are known in the Cook Inlet region. Initial archaeological research in the region dates to the 1930s, when Frederica de Laguna conducted extensive surveys of both Cook Inlet and Prince William Sound (de Laguna 1975 [1934]). De Laguna's survey identified numerous prehistoric sites along the coast, and she conducted limited testing at eight locations throughout the region (Reger 1981). In the 1960s, archaeologists Don Dumond and Albert Spaulding conducted research along the Knik Arm, testing five archaeological sites (Dumond and Mace 1968). Douglas Reger began investigating the Upper Cook Inlet region in 1975, eventually developing a cultural chronology for the area based on excavations at Beluga Point (Reger 1998).

The Beluga Point Site, which has been radiocarbon dated to 4,155±160 years before present [B.P.][2] is the oldest known site in the Upper Cook Inlet. The site is located on the north shore of Turnagain Arm, approximately 20 miles southeast of Anchorage, and contains three separate cultural components. The first, and earliest, component contains core and blade technology artifacts, including microblades, blade-like flakes, and bifaces. Although radiocarbon dating was not possible, Reger attributes the Component 1 artifacts to the Denali Complex (10,000-8,000 B.P.), based on microblade technology. The second component, from which the 4,155±160 date was derived, has been attributed to the Ocean Bay/Takli cultures, primarily found on Kodiak Island and the Alaska Peninsula (Clark 1984; Reger 1981). The uppermost component at Beluga Point contains artifacts that resemble both the Kachemak and Koniag traditions, and is dated between 790-650 B.P. (ca. A.D. 1160-1300).

Based on the limited archaeological evidence available, the Cook Inlet region appears to have been originally populated by Pacific Eskimo peoples, who were subsequently replaced by the Athabascan speaking Dena'ina as they migrated south into the area (de Laguna 1975 [1934]),

[2] Radiocarbon (14C) dates reported here are expressed as "radiocarbon years before present" or simply, "B.P.". Due to a variety of factors that cause fluctuations in amount of radiocarbon at any given time, radiocarbon dates -- especially those from the late Pleistocene epoch -- may differ from actual calendrical (cal AD/BC) equivalents by hundreds or even several thousand years. Calibrated BP (cal BP) ages and calendrical equivalents may be calculated using a calibration program, such as CALIB 5.0 program (Stuiver et al. 2005; see also Reimer et al. 2004).

probably no earlier than A.D. 1650 (Dumond 1968). On the basis of linguistic evidence, Kari (1995) suggests that the Upper Inlet Dena'ina were the first to migrate into the Cook Inlet region, arriving from the western slope of the Alaskan Range approximately 1,500 years ago. Later, the speakers of the Lower Inlet dialect gradually migrated eastward, occupying the northern Alaska Peninsula and the Kenai Peninsula. A greater period of habitation for the Upper Inlet Dena'ina is supported by similarities between the Upper Inlet dialect and Ahtna, the Athabascan language spoken in the Copper River region to the east. These similarities indicate a long period of interaction and association between the two groups. Kari and Fall (2003) point out there is not yet enough archaeological evidence to support when, or from where, the Dena'ina arrived in Upper Cook Inlet.

3.2 Cook Inlet Ethnohistory

The Cook Inlet region is the traditional territory of the Dena'ina Athabascans (previously referred to as Tanaina). James and Priscilla Kari (Kari 1975; Kari and Fall 2003; Kari 1995) have identified four distinct dialects of the Dena'ina language that correspond to different geographical areas. A primary dialectical boundary exists that delineates the Upper Inlet Dena'ina from the Lower Inlet Dena'ina, occurring across the Inlet in the general area of Turnagain Arm. The Lower Inlet Dena'ina dialect is then further subdivided into three separate dialects: Outer Inlet Dena'ina, spoken in the villages of Kenai, Seldovia and Kustatan; Inland Dena'ina, spoken in Lime Village and Nondalton; and Iliamna Dena'ina, spoken in Pedro Bay and Old Iliamna.

Townsend (1981) distinguishes three separate societies of the Dena'ina (which roughly correspond to Kari's linguistic data) based on societal differences such as marriage patterns, subsistence strategies, the degree of interaction between groups, and other sociocultural elements. The Kenai Society is represented by the Outer Inlet dialect, and occupies the Kenai Peninsula and eastern Cook Inlet. The Susitna Society speaks the Upper Inlet Dialect and is present in the CD Study Area of this report, and the Interior Society speaks both the Inland and Iliamna dialects and occupies western Cook Inlet. Before contact, all of these societies occupied semi-permanent winter villages, normally comprised of between one and ten semi-subterranean, multi-family log houses. Customarily, these houses had a main communal living area with a central fireplace and sleeping platforms located along the walls, and smaller attached rooms used as sleeping compartments or sweat baths (Osgood 1937 [1976]; Townsend 1981).

During the summer, individual families would move to fish camps to procure fish, game, and vegetable resources for use throughout the year. Before contact, structures at the fish camp consisted of above-ground log buildings (covered with sod), meat and fish drying racks, cache pits, and smoke houses. After contact, most Dena'ina families adopted canvas wall tents as their primary living structure at fish camp. Travel to and from fish camp was usually accomplished using canoes, both on rivers and lakes, as well as along the seacoast. During the winter, the Dena'ina used snowshoes to travel on foot over an extensive network of trails throughout the Cook Inlet region. Dog traction apparently was not utilized until after Russian contact, although dogs were used as hunting and pack animals prior to contact (Townsend 1981).

The Dena'ina are organized into matrilineal clans, which cross-cut both societal and linguistic boundaries. Members of a clan in a particular village have relatives in other villages based on

clan membership. Dena'ina societies were also ranked, meaning that there was a division of power within the village based on accumulated wealth. A *Qeshqa*, translated as "rich man" or "leader" functioned as the headman or chief of each village. *Qeshqa* were responsible for the redistribution of subsistence resources, the care of orphans and the sick, and the retention of traditional values. However, residents of the village were not required to support them, and could leave and establish their own village if a *Qeshqa* became too domineering (Townsend 1981). Today, many villages in the Cook Inlet Region still have traditional chiefs, respected elders who preserve and transmit Dena'ina culture to the younger generations.

Historians have documented Dena'ina and Ahtna historic land use in the eastern Knik Arm and Upper Cook Inlet area that includes place names (see Table 1) (Kari and Fall 2003; Potter et al. 2000). These studies have not identified any traditional place names within CD. Immediately to the south runs Ship Creek, listed as a traditional Dena'ina name, *Dgheyaytnu,* or in Ahtna, *Dghayitna*. The name means "*where stickleback run.*" Shem Pete provides information on traditional use of this waterway describing how people collected stickleback in spring (Kari and Fall 2003:332; see also Stephan 1996).

A pond along upper Ship Creek (on the military Moose Run Golf Course) is labeled as *Dishno Pond* in the 1962 USGS map. Although there is no recorded place name meaning, it may be an Athabascan-origin place name. To the east, a place name is listed as *Dgheyay Tl'u* (meaning "*Stickleback Headwaters*") and is discussed as a caribou place (Kari and Fall 2003:332). Collectively these place names provide some indication of Alaska Native movement across and use of lands between the foothills and the waterways that run into eastern Knik Arm, areas encompassing the JBER lands.

Table 1. Dena'ina place names in the Survey Area of eastern Knik Arm and Upper Cook Inlet.

Place Name	*General Description and Location*	*Reference*
Dgheyaytnu	Ship Creek, eastern Knik Arm. The name means "Where Stickleback Run." Written as *Dghayitna* in Ahtna.	Kari and Fall 2003: 332
Dishno Pond	Upper Ship Creek.	Kari and Fall 2003: 332
Dgheyay Tl'u	"*Stickleback Headwaters*" and possible caribou hunting place.	Kari and Fall 2003: 332
Qatuk'e'usht	The Dena'ina name for the Anchorage area meaning "*Something Drifts Up To It.*"	Kari and Fall 2003: 332

3.3 Cook Inlet History

The first recorded Euro-American contact with the Dena'ina of Cook Inlet occurred in 1778, the year that James Cook sailed into the area in search of a Northwest Passage (Fall 1981; Kari and Fall 1987; Townsend 1981). However, Cook reported that the inhabitants already possessed items of European manufacture and assumed that they were indirectly trading with the Russians, who had established trading posts on Kodiak Island and the Alaska Peninsula. Soon after, the Russians extended their direct influence into Cook Inlet, establishing forts at English Bay (the Aleksandrovsk fort), near present-day Kenai (Nikolaevski Fort), and at Iliamna and Tyonek (Fall 1981). In 1794, Captain George Vancouver explored the Cook Inlet region reporting that many of the Alaska Natives who approached his ship were familiar with the Russian language and appeared to be on friendly terms with the Russian traders (Vancouver 1798 [1984]). However,

this was apparently not always the case as both the Tyonek and Iliamna outposts were destroyed by the Dena'ina in 1797.

In 1799, the Tsar of Russia granted the Russian American Company (RAC) exclusive possession of the established trading posts in Alaska. From this time forward, the Dena'ina mainly served as middlemen between the Russians and interior Alaskan groups, such as the Ahtna (Fall 1981). The Dena'ina population was estimated at 3,000 for the year 1805 (Osgood 1937 [1976]), a number that was greatly reduced by a smallpox epidemic between 1836 and1840 (Townsend 1981). Intensive missionary efforts by the Russian Orthodox Church began shortly after the epidemic, but the Upper Cook Inlet region was not converted until the 1870s due to its great distance from established Russian settlements. In 1891, the St. Nicholas Russian Orthodox Church was built in Tyonek on the western shore of Upper Cook Inlet. The short-lived Russian settlement of Ninilchik was established in 1858 and served as a retirement community for approximately 40 RAC employees and their families into the 1880s (Arndt 1996).

Russia sold Alaska to the United States in 1867, and the Alaska Commercial Company took over the RAC trading posts (Fall 1987). Canneries became prevalent throughout the region during the 1880s (Townsend 1981) which, coupled with the high prices of fur during the 1890s, resulted in a depletion of local resources and an increased reliance on a cash economy by the Dena'ina. Gold prospecting began in the Susitna River drainage and the upper inlet in the late nineteenth century, resulting in the establishment of the Willow Creek and Turnagain Arm mining districts.

3.4 Homestead Era, 1914-1930s

Much of the Anchorage Bowl was available for homesteading throughout the late nineteenth and first half of the twentieth centuries. Federal land withdrawals for the Alaska Railroad, the Anchorage townsite and military reserves gradually decreased the amount of land available to homesteaders. Construction of FR during World War Two (WWII) led to the demise of homesteads on the lands that became FR and later, EAFB. Existing homesteads within the new military reservation were condemned by the federal government, and purchased from the owners at fair market values. Hollinger (2001) documented the location, history, land acquisition and disposal of homesteads within FR, Alaska. Daugherty and Saleeby (1998) documented the history of homestead lands on EAFB. Carberry and Lane (1986) discuss homesteading throughout the Anchorage Bowl. The reader is referred to those publications for a more detailed account of local homesteads. Key trends and dates derived from these works are noted below:

- Early homesteading in the region began as early as 1903 and was centered on the small supply center of Knik, located across Cook Inlet and north of JBER. The discovery of gold in the Willow area followed by coal in the early twentieth century attracted Euro-American homesteaders to the region. By 1914, as many as 130 homestead patents had been issued in the Matanuska Valley in the vicinity of Knik, Wasilla, and Palmer.

- The choice of Anchorage in 1915 as the supply center and main construction camp for the Alaska Railroad prompted a population boom along Ship Creek. The rectangular survey completed along the railbelt facilitated homesteading in the region by laying out the township, range, and sections used to file for homestead patents. The growing

population of Anchorage created a market for agricultural products grown on homesteads.

- Eleven individuals filed for homesteads between 1914 and 1919, on what eventually became EAFB land. During the 1920s, another 11 individuals or families filed for homesteads on what would become EAFB. Most of the homesteads were west of CD, CC, and BAAF, either along the coast or in the hill country of the Elmendorf Moraine. During the 1930s, 18 more homestead patents were awarded - again oriented toward the coast and immediate hills east of the coast. No homestead applications were filed after 1939 when the land was withdrawn from the public domain to serve as a military reservation. No homesteads were recorded within CD.

3.5 The Anchorage-Matanuska Road (Davis Highway / Glenn Highway)

Efforts to build a road between Anchorage and the Matanuska Valley began in the late 1920s. The Alaska Road Commission (ARC) initially resisted requests to build a road because the Alaska Railroad already connected Anchorage and the Matanuska Valley, and they had a policy of not building roads that paralleled the railroad. Additionally, in the opinion of the ARC, the road was not needed and could not be justified when other communities had no road or rail connections at all (Naske 1986). ARC resistance to the Anchorage-Matanuska Road continued into the 1930s.

Supporters of a road between Anchorage and the Matanuska Valley pointed out that the road would only run parallel to the Alaska Railroad for 23 miles and connect Anchorage with the 118 miles of gravel road in and around the communities of Wasilla and Palmer. Proponents also pointed out that the Alaska Railroad ran only weekly service between Anchorage and the Matanuska Valley, severely limiting farmers' ability to sell their produce in the Anchorage market. Interest in the road was so high in Anchorage that some residents began to construct it themselves. In 1933, the ARC received funds from the Public Works Administration to construct a road between Anchorage and the Matanuska Valley. In the late fall and winter of 1933, the ARC graded 12 miles of the existing road, constructed bridges over Eagle River, Peters Creek, and the Matanuska River and extended the road to Palmer (Naske 1986).

In 1941, as part of the military buildup in Alaska, work began on the Glenn Highway connecting Anchorage to Valdez via the Richardson Highway. The new highway provided an additional overland route to supply Anchorage, FR, and Elmendorf Field (Bauer 1987). Construction began at both ends and appears to have utilized the existing Anchorage-Matanuska Road, which a 1943 map (Figure 5) calls the Palmer Highway and is now called the Davis Highway.

The initial specifications for the Glenn Highway were modest and the roadway was just 20 feet wide. By 1945, the Glenn Highway had been connected to the Alaska-Canadian Highway (ALCAN) via the Tok Cutoff, and for the first time in history, Anchorage was road accessible from the lower 48 states. At war's end, the Glenn Highway and the other new Alaska roads were opened for public use. During the post-war years, the Glenn Highway was a major access route into the Alaskan interior and, until 1971 when the Parks Highway was completed, the only road connection between Anchorage and Fairbanks (via the Richardson Highway) (Bauer 1987).

An examination of historic aerial photographs indicates that the route of the Glenn Highway was moved outside the confines of FR between 1950 and 1957. This may have reflected Cold War concerns over base security, but no documentation on the move was located during the background research. In 1964, the Glenn Highway Route was a two-lane road. By 1984, the Glenn Highway was a divided highway (Blanchard et al. 2013)

3.6 JBER Base Development

3.6.1 WWII Era (1930s to 1945)

Alaska's strategic importance as a defense post was recognized before WWII. Alaska's Congressional delegate, Anthony J. Dimond, requested funds for the construction of military installations in Alaska as early as 1934 (Nielsen 1988). This request was based on the fact that the shortest distance from Japan to the United States was along the Aleutian Archipelago. As the conflict grew in Europe and the Pacific during the mid-1930s, the lack of military personnel and bases in Alaska became an issue of concern. Congress was slow in responding, but by 1939, Congress began allocating lands and funds for military reservations in Alaska. As part of this effort, 43,490 acres of land were withdrawn from the public domain by Presidential Order on April 22, 1939 for Elmendorf Field and FR. The land selected near Anchorage, north of Ship Creek provided access to the Cook Inlet, the Anchorage Harbor and the Alaska Railroad. It also had the level topography required for an airfield and the climate was comparatively moderate for Alaska (Cook et al. 1999).

FR was founded by Executive Order 8102, 29 April 1939 (Waddell 2003). In May of 1940, the War Department budget provided over $12,000,000 for construction of an airfield in Anchorage (Cook et al. 1999; Fagan 1944). Under the direction of Lt. Colonel E.M. George, groundbreaking began in early June (Shaw 2000). Laborers concentrated on land clearing, grading, and the construction of temporary headquarters and supply storage buildings. The first troops arrived at FR on June 27, 1940 (Nielson 1988). By late June, nearly 800 soldiers, including an engineering company and various infantry and artillery units, were stationed at the base and involved in the construction effort. By the end of August, 1,250 workers were employed in the effort and the number grew to over 2,000 by the end of October 1940 (Cloe 1986 in Cook et al. 1999). The new installation was technically a USA Post, named FR, with an associated airfield. The Elmendorf Field name was officially recognized in November 1940 in honor of Captain Hugh M. Elmendorf who was killed in an air accident in Ohio in 1933 (USA 1940 in Shaw (2000)).

Construction at the new base was designated as either temporary or permanent and the overall construction plan was divided into three priorities (Fagen 1944 in Cook et al. 1999). Temporary buildings were constructed of wood or other material meant to be used for 15 years. Permanent buildings and structures were constructed of steel, concrete, stone, or brick meant to be used for 100 years or more. The overall plan was:

> To provide for 2 concrete runways (N/S 5,000' long, E/W 7,500' long) and aprons, one temporary and 3 permanent hangars, Air Corps gasoline facilities consisting of 600,000-gallon tactical storage and fueling system, a 1,500,000 gallon operations reserve storage system, concrete igloos for both Air Corps and ground troop bomb and ammunition

> storage, and other essential technical facilities. Also included in construction were administration units and housing for a garrison of approximately 7,000 men and a 294-bed hospital. The major utilities include a water-borne sewage system, outfall sewer and mains, a 7,000,000 gallon per day gravity water system with reservoir and chlorinator, a 6,000-kW central heating and power plant and bombproof radio transmitter building (Bush, 1944:26-27).

By mid-1944, more than $50,000,000 had been spent in constructing FR and Elmendorf Field (Shaw 2000).

During period of construction, the original plan of development was expanded to accommodate additional troops, provide fuel reserves and build additional storage facilities, hangars, runways and aviation support structures. The buildings and structures were clustered in functionally related patterns and purposes, such as the flightline, fuel and water systems, residential units, and recreational facilities. The historic context report prepared by the National Park Service (NPS) (Cook et al. 1999) provides specific construction development descriptions for each of these categories.

In December 1941, construction was authorized to provide additional housing and facilities for approximately 250 officers and 7,500 enlisted men, a 417-bed hospital and additional warehouses. This expansion was dispersed in an area extending approximately six miles east and four miles north of the main Post area along the Palmer Highway (Davis Highway) (Bush 1944). This construction included the first development of what would become CD. A 1943 dated USA map (Figure 5 and Figure 6) shows this construction and is the earliest known representation of roads and structures in the vicinity of the CD Study Area.

3.6.2 Cold War to Present (1946 – 2016)

After WWII, in the early days of the cold War, the USA ground component of FR atrophied, as defense funding focused primarily on air power and air defense (Siedler et al. 2012). In 1947, the USAF became an independent branch of the U.S. military and Elmendorf Field was transferred to the USAF and designated EAFB. As a result, the USA established a new base on a 33,000-acre military reservation, five miles from the original post (Waddell 2003).

Beginning in the 1950s, Alaska underwent a major period of military development. By 1954, FR's boundaries had expanded to include terrain to the north of Eagle River, growing to 67,296 acres. During the Korean War (1950 to 1953), a large number of USA troops traveled through FR on their way to the Korea (Siedler et al. 2012). During the Cold War, EAFB played an important role of the national air defense system (Nielsen 1988).

The "new" FR was laid out on a grid following Richardson Drive and was largely built of permanent buildings made of concrete. These included barracks, warehouses, family housing, underground utilities, service clubs, schools, a theater, and field house. Most of the family housing was on the south side of the post, the administration buildings were in the center, and the industrial buildings were located in the north (Mighetto and Homstad 1997). During the 1950s, new housing was a major area of development. In 1951 alone, the number of family housing units on FR grew from 24 to nearly 1,200. A $6 million project in 1961 expanded Richardson's

quarters yet again. This reflected the USA's realization that happy families made happy troops. Construction on the base was interrupted by the Good Friday Earthquake of 1964. Warehouses and offices were severely damaged, along with the Skyline Service Club. One man was killed and damage was later assessed at $17 million (Siedler et al. 2012).

The effort to improve the quality of base housing continued into the 1970s. During this period, there was a move away from open barracks toward barracks with smaller rooms holding fewer soldiers. This was in large part the result of the end of the draft. To attract volunteers, the USA felt it was important to improve housing conditions for troops (Mighetto and Homstad 1997). By 2012, FR's cantonment area covered 5,760 developed acres and had a golf course and a ski hill. The remainders of FR's 61,000 acres were maneuver areas (U.S. Army Garrison Alaska 2007).

During the 1970s, the USA in Alaska (USARAL) became a one-brigade force with command at FR. The USARAL and Alaska Command (ALCOM) were disbanded during this period. During the 1980s troop numbers at FR rose and by 1990 ALCOM was reestablished (Siedler et al. 2012).

The 2005 Base Relocation and Closure Report to President George W. Bush recommended the combination of FR and EAFB. This resulted in the establishment of JBER in 2009 (United States Air Force 2014).

3.6.3 Ground Defenses, 1940 to the Cold War

With the start of WWII, there was a fear of ground invasion on Alaska soil. The vulnerability of Alaska was driven home by the Japanese invasion of the Alaskan islands of Attu and Kiska in June of 1942. As a result, soldiers at FR and Elmendorf Airfield trained and created ground defenses in order to repel a ground attack. A 1944 report, written after the peak invasion fears states that the terrain surrounding FR and Elmendorf Field was studied to determine likely approach angles for enemy troops (Shaw 2000). To counter such an attack, pillboxes were erected and troops excavated slit trenches and foxholes. Pillboxes are small covered emplacements for machineguns or other crew served weapons. They typically have slits that allow the weapon to cover a selected field of fire. Slit trenches and foxholes are less formal defensive structures, which are excavated in the earth. They vary in complexity from expedient one person holes to complex trench systems. Pill boxes, foxholes and slit trenches are parts of multi component defensive systems which vary in size depending on the size of the force involved and the size of the area to be defended. The 1944 report about defenses at FR and Elmendorf Field noted that:

> "After a while, when the troops got into the spirit of the thing, foxholes became so numerous that it was hazardous to walk in the unfamiliar areas during the time of enforced blackout. One could follow the lighted cigarette of a soldier ahead until it disappeared, with its owner, into a foxhole or slit trench" (Shaw 2000:19).

Building a ground defense network and providing infantry training to the troops became mutually beneficial objectives. According to Shaw, over time, base commanders recognized that a ground attack on FR and Elmendorf Field was unlikely. By late 1944, training and digging

foxholes was busy work carried out when troops were not occupied with other tasks (Shaw 2000).

In 1947, the USAF was created as a separate entity from the USA, at which time FR and EAFB became separate installations. The buildings of the original FR were almost all transferred to the USAF and nearly $500,000,000 was spent constructing a new FR, east of EAFB. As the new FR became active, the ground defense function of EAFB was transferred to the USA. By 1951, EAFB ground defenses involved perimeter-type defense, foxholes with clear fields of fire, obstacles, camouflage and signal networks (Shaw 2000).

No specific information has been found on the ground defenses constructed on the new FR. A defensive line, consisting of foxholes and bunkers has been located along the FR cantonment boundary (Blanchard et al. 2013), near modern CD, but it is unclear how large this perimeter defense was or when it was constructed. Foxholes were also identified during the Level I and Level II surveys of BAAF and CC (Blanchard 2014; Guilfoyle and Stern 2012).

3.6.4 Fort Richardson National Cemetery

Burial grounds have been a standard feature of U.S. military posts throughout the nation's history. After the Civil War, the USA began to create large national cemeteries as final resting places for Union dead, but many American military installations continued to maintain post cemeteries (Steere 1953). In 1868, Army posts were formally charged with the operation and maintenance of post cemeteries (U.S. Department of War 1871).

As part of the 1939-1940 construction of FR and Elmendorf Field, the USA set aside 39 acres for a post cemetery. The site was outside and relatively distant from the original cantonment but was located on the major transportation route between Anchorage, FR and Palmer, Alaska, which made it easy to access from multiple locations. FR was the only permanent military installation in the Anchorage area to have a post cemetery. The FR Post Cemetery (FRPC) was initially intended to be a temporary interment facility, used to hold the remains of any soldier who died in Alaska, regardless of nationality until the next-of-kin was located or until the soldier's government asked for the return of the soldier's remains (Salo and Perunko 2011). The first burial of a service member at the FRPC occurred on January 10, 1942 (The Society 1987). Interestingly, the 1943 map covering the area (Figure 5) does not show the FRPC.

In early June, 1942, the Japanese Imperial Army invaded the Aleutian Islands of Attu and Kiska and bombed the U.S. Naval base at Dutch Harbor, Alaska. In May of 1943, U.S. and Canadian forces invaded and recaptured Attu. Kiska was abandoned by the Japanese prior to its reoccupation by U.S. and Canadian forces in August of 1943. The Aleutian campaign, particularly the battle of Attu resulted in heavy American and Japanese casualties. During the aftermath, the USA recovered and buried American, Allied and enemy soldiers at the FRPC. American military personnel continued to be buried in the FRPC throughout WWII. The American burials were located in a two acre, wood-fenced plot consisting of four sections. The Japanese and Canadian burials were located to the east of the American burials, outside the wood fence. The Allied section of the FRPC was also used to bury Soviet personnel who died while stationed in Alaska as part of the lend lease program that shipped American built aircraft to the Soviet Union during WWII (National Cemetery Administration n.d.).

The most prominent soldier buried at the FRPC during WWII was Major Kermit Roosevelt of the Alaska Defense Command. Major Roosevelt, the son of President Theodore Roosevelt had served in both the British and American armies during both World War One (WWI) and WWII. He committed suicide while stationed at FR in June of 1943 (Salo and Perunko 2011).

After WWII ended in 1945, the USA made plans to disinter the remains of soldiers buried in the FRPC and rebury them in cemeteries in the continental U.S. In 1947, Mrs. Belle Roosevelt, widow of Major Roosevelt wrote Army Chief of Staff General Dwight D, Eisenhower a letter in which she stated that she wanted her husband to remain buried in the FRPC. In response, Eisenhower ordered that the men not be disinterred and the FRPC was made a permanent military cemetery (Salo and Perunko 2011).

After the WWII, Congress passed laws giving next-of-kin the right to decide if they wanted their relatives to remain interred in a permanent military cemetery overseas, in a private cemetery overseas, in a national cemetery in the U.S. or in a private cemetery in the U.S. For those who selected interment at a U.S. cemetery in the Alaskan Theater, final interment of remains was done at either at the FRPC or the Sitka National Cemetery (Salo and Perunko 2011).

In 1949, Mrs. Roosevelt wrote General George C. Marshal for permission to erect a monument to Major Roosevelt at FR. Marshal envisioned a stone gateway and fence that would be extended to surround the entire cemetery. In 1951, Mrs. Roosevelt funded the construction of two stone entrance posts in honor of her husband, one of which included a dedication on a granite tablet (Salo and Perunko 2011).

The last Allied burial at the cemetery occurred after a British Army doctor was killed in an air crash in 1953. The same year, the Japanese government requested that the Japanese dead buried at the FRPC be disinterred for Shinto and Buddhist cremation ceremonies. In keeping with this request, in July of 1953, eighteen identified and two-hundred and seventeen unidentified Japanese soldiers were exhumed, cremated and reburied. The ceremonies were supervised by Japanese diplomats (Salo and Perunko 2011).

In July of 1964, a group of eighteen Japanese citizens, including one of only twenty-seven Japanese soldiers to survive the Battle of Attu, conducted religious ceremonies and erected a wooden monument at the Japanese burial plot of the FRPC. This monument was replaced in 1981 and 2002, and will continue to be replaced as needed in keeping with Japanese custom (Salo and Perunko 2011).

During the 1960s and 1970s, soldiers killed in the Vietnam War were interred at the FRPC. In 1972, the Alaska State Legislature passed a resolution asking that the FRPC be made a National Cemetery. At the time, the only National Cemetery in Alaska was in Sitka, which was not conveniently located for the approximately 70 percent of Alaskan veterans who lived in the vicinity of Anchorage (Salo and Perunko 2011).

Several bureaucratic and legal issues complicated the proposed redesignation. The most significant stemmed from Section 1425(b)(2) of the Alaska National Interest Lands Conservation Act (ANILCA), PL96-487. In order to designate the FRPC a National Cemetery it would have to be declared excess to the needs of the USA then transferred to the Veterans Administration

(VA). However, ANILCA stated that if the land was declared excess to the needs of the USA it would be conveyed to the Eklutna Native Corporation (ENC). In 1982 and 1983, the USA entered into negotiations with the ENC to allow the transfer of 39.01 acres of land from the USA to the VA for use as a National Cemetery. On May 28, 1984, the VA took control of the newly designated Fort Richardson National Cemetery (FRNC). As part of the transfer, the USA agreed to provide support to the VA for the operation of the cemetery (Salo and Perunko 2011).

At the time of the establishment of the FRNC, there were only 2,000 grave sites, all but 700 of which were either occupied or reserved. Since 1984, unused land has been developed to accommodate additional burials as well as administrative and service buildings. Long range plans anticipate further expansion of burial sections to the west, within the cemetery boundary (Salo and Perunko 2011). As of January 2017, more than 6,000 military men and women as well as their eligible spouses and dependents have been buried in FRNC.

According to the OHA Integrated Business Suite (IBS), the FRNC was listed on the NRHP as an historic district on March 2, 2012 under Criterion A. The period of significance is 1942 to the present. The District has eleven contributing elements including six buildings, one site, one structure, and three objects. The buildings include the Administration building (58-512) (ANC-03711), two maintenance buildings (58-514 and 58-516) (ANC-03712 and ANC-03713), a storage building (58-510) (ANC-03714), a committal shelter (58-518) (ANC-03715), and a vault toilet (58-520) (ANC-03716). The site consists of the cemetery plots (ANC-03710). The structure (ANC-03717) consists of the entrance posts with plaques, which date from 1951 and 1984. The three objects are the monument to the Japanese soldiers interned in the cemetery (ANC-03718), the U.S. flagpole and Prisoner of War/Missing in Action flagpole (ANC-03719) and a plaque of the Gettysburg Address (ANC-03720).

3.6.5 History of the Alaska National Guard

3.6.5.1 WWI to WWII

The territory of Alaska made repeated efforts to establish a National Guard (NG) prior to WWII. These efforts were particularly enthusiastic during WWI, when a number of Militia and Home Guard units were established in Alaskan communities. Although the U.S. Government went so far as to supply rifles to these units in 1918, it did not establish the NG in the Territory of Alaska (Richardson 1974; Salisbury 1992).

3.6.5.2 The Alaska National Guard during WWII

In 1940, with the threat of war looming, the U.S. Congress authorized the establishment of the NG in Alaska. Company A of the 297th Infantry was established in Juneau was the first element of the AK-ARNG to be established. Company B was subsequently established in Ketchikan, Company C in Fairbanks and Company D in Anchorage. The unit was rounded out by a headquarters detachment and a medical detachment. An Air Corps arm of the AK-ARNG, the 129th Observation Squadron was planned but never established (Richardson 1974; Salisbury 1992).

When first established, the 297th Infantry trained separately in small groups, with no weapons. Typical drills lasted about three hours, Guardsmen were paid “a couple of dollars” for their

efforts and there was no annual training period (Salisbury 1992:43). In September 1941, the 297th Infantry was inducted into federal service. Companies A and B were sent to Chilkoot Barracks, in Haines, Alaska. Companies C and D were sent to FR in Anchorage. In 1942, Companies A and B joined the other companies at FR (Richardson 1974; Salisbury 1992).

Following the attack on Pearl Harbor, Hawaii on December 7, 1941, soldiering for the men of the 297th Infantry became more purposeful as they took on new responsibilities and faced new threats. During the early days of WWII, the men of the 297th were tasked with arresting Japanese nationals and Japanese Americans living in Alaska and sending them to detention camps. Several members of the AK-ARNG were second generation Japanese Americans. Some of these Japanese American Guardsmen participated in the internment of Alaskans of Japanese descent before being transferred to other units. During WWII, Japanese American Alaska Guardsmen served in a number of USA units, including the 442nd Regimental Combat Team, which was almost entirely made up of Japanese Americans (Richardson 1974; Salisbury 1992).

After Pearl Harbor, many of the prewar members of the 297th Infantry were transferred to other units and draftees from outside Alaska made up an increasingly large percentage of the unit. Some of these men lacked the skills to operate in Alaska, others adapted well and many stayed in Alaska after WWII (Salisbury 1992).

During WWII, the men of the 297th Infantry provided labor and support for military operations throughout Alaska. For example, they worked on the ALCAN Highway, extended the dock in Haines, guided mapping and surveying parties and guarded lots of things, including the Alaska Railroad, Lend Lease aircraft, the Canadian Oil Pipeline and even seals in the Pribilof Islands. They also unloaded ships, built military bases and runways, fished, ran boats, tested equipment, trained soldiers, performed rescue missions and carried out countless other duties in support of the Alaskan War effort (Salisbury 1992).

On January 26, 1944, the 297th Infantry Battalion was redesignated the 208th Infantry Battalion. Towards the end of 1944, the 208th was consolidated in Anchorage and transferred to the continental United States. The 208th was inactivated at Camp Shelby, Mississippi on May 16, 1945 and the men were either discharged or transferred to other units (Richardson 1974; Salisbury 1992). When the 208th was disbanded, the Territory of Alaska no longer had a NG. But the AK-ARNG was not the only Alaskan military organization during WWII.

3.6.5.3 The Alaska Territorial Guard in WWII

With the start of WWII, there was a need to patrol the remote Alaskan coast for signs of Japanese and Russian reconnaissance or incursion. As early as 1940, there had been reports of Japanese mapping along the Alaskan coast and islands and there were reports of Russian development on Big Diomede (at this point Russia had a nonaggression pact with Germany). Although the threat was recognized, it was not feasible for the USA to protect or observe the entire Alaskan coastline. To solve this problem, on December 31, 1941, Congress passed a military code for the Territory of Alaska that authorized the formation of an unpaid and unorganized militia "during such time as the AKNG, or any part thereof, is in active federal service" (Salisbury 1992:57). This unit would become the Alaska Territorial Guard (ATG).

From the beginning, the ATG was organized along two lines. Some units were established in cities and towns and were largely manned by Euro-Americans. Other units were established along the coast of the Bering Sea, Chukchi Sea and Arctic Ocean and were almost exclusively manned by Alaska Natives. Command of the community based ATG was given to Captain (later Major) Carl Scheibner, who established ATG units in almost every Alaskan community south and east of the 158th parallel. Some of these ATG units numbered in the hundreds and met regularly to carry out drills and conduct training. The seasonal nature of work in Alaska often interfered with regular ATG training and some units did not survive for long. Other units were active throughout WWII (Salisbury 1992).

Command of the Alaska Native ATG units (known as the Tundra Army) was given to Major Marvin "Muktuk" Marston. Inclusion of Alaska Natives in the ATG was controversial from the start. In 1941, Alaska Natives did not yet have the full rights of American citizens and there was concern in some circles that organizing them into an armed military organization would lead them to demand full citizenship. As a result, some non-Natives began to view the ATG as a threat and worked hard to discredit it with the Army. Despite these efforts, the Tundra Army was established and approximately 3,000 Alaska Natives from 65 villages served in the ATG during WWII. Although the ATG was nominally all male, some women served in the Tundra Army (Richardson 1974; Salisbury 1992).

Throughout the War, the Tundra Army patrolled the Alaskan coast and carried out a number of missions, including the rescue of downed airmen. They also caught the public eye and became the face of the ATG to most people (Richardson 1974; Salisbury 1992). As a result, the predominantly Euro-American, community based ATG units have slipped into historical obscurity.

The success of the Tundra Army led some, like ATG Quartermaster Major Otto Geist to plan a role for Alaska Native scouts in a post WWII AK-ARNG. Geist's desire to keep Alaska Natives in the Alaska Guard reflected their unique skills and abilities, but he also saw a beneficial effect of ATG membership on Alaska Natives and their communities. Just as some non-Natives had feared, membership in the Tundra Army had changed the status quo for many Alaska Natives (Salisbury 1992).

With the end of WWII, funding declined and most of the ATG units disbanded. However, some units remained, fighting fires, conducting flood relief and carrying out search and rescue missions. The ATG was not formally disbanded until March of 1947 (Richardson 1974; Salisbury 1992).

3.6.5.4 Post WWII Alaska National Guard

After WWII, there was federal pressure to reconstitute the AK-ARNG, but also considerable disagreement on what form it should take. The USA wanted a standard, Army NG based in Alaska's urban centers. Governor Gruening fought for a different model, based on the ATG, with regular guard units in the larger population centers and Scout units, in bush communities. Gruening's model was approved in 1948, but there was opposition in the Territorial Legislature over the cost, which delayed the reestablishment of the AKNG until 1949 (Richardson 1974; Salisbury 1992).

Many men who had served in the ATG Tundra Army promptly joined the reconstituted AK-ARNG and small armories were established using surplus buildings in many bush communities. Guard units were also established in Alaska's major cities. Many of the officers and NCOs of the AK-ARNG were WWII veterans. By 1951, the troop numbers in the AK-ARNG topped 1,300 soldiers, the highest per capita in the nation. In 1952, Alaska also established an Alaska Air Force National Guard (AK-AFNG) unit (Salisbury 1992).

During the late 1940s and early 1950s, AK-ARNG soldiers received military training and became increasingly professional. Some NCOs and enlisted men were sent for training on military bases outside Alaska. Members of the Scout units participated in regular local drills, training and exercises and traveled to FR for larger exercises annually (Richardson 1974; Salisbury 1992).

3.6.5.5 The AK-ARNG in the Cold War

With the end of WWII, the uneasy alliance which had arisen between the Soviet Russia and the United States unraveled. It was not long before the two superpowers were engaged in a new type of conflict, called the "Cold War," which shaped international relations and military strategy for the next forty-five years. At the center of the conflict was a battle of ideologies between competing economic and political systems, with each side gripped by a fierce paranoia of the other's true intentions and military capabilities. During the Cold War, the Union of Soviet Socialist Republics (USSR) and its allies promoted and supported the spread of socialism throughout the world while the United States and its allies promoted and supported the spread of capitalism and pro-western governments.

New technologies including nuclear weapons, jet aircraft and intercontinental ballistic missiles (ICBMs) played a defining role in the Cold War. To avoid a direct conflict and the possibility of a nuclear annihilation, the U.S. and USSR prosecuted a series of proxy wars, though plans were always in place for a full-scale military confrontation. In preparation for such a confrontation, both sides invested heavily in military-industrial complexes, weapons technology and elaborate defense systems.

In 1949, the U.S. and its allies in Europe formed the North Atlantic Treaty Organization. The USSR responded by forming the Warsaw Pact in 1955. Member nations of both organizations agreed to treat hostility towards any single member as an act of aggression against the entire group (Denfield 1994).

During the Eisenhower administration (1953-1961), both U.S. and Russian nuclear capabilities developed and U.S. defense policy was based on the threat of mutually assured destruction (MAD). Under this policy, a Russian attack on the U.S. or any of its allies would result in an all-out nuclear response. As a result, the U.S. focused more on the development of nuclear weapons and delivery systems than maintaining costly ground forces. In order to make the MAD policy viable, it was vital that the U.S. have early warning of a Russian nuclear attack. In 1954, the U.S. began construction of the Distant Early Warning Line (DEW Line), which was a radar system that extended across the northern and western rim of North America. Completed in 1957, the DEW Line proved useless against ICBMs and submarine launched missile attacks. Between 1955 and 1958, the White Alice communication system was constructed to provide

communication to the DEW Line stations (Denfeld et al. 1994). Due to its proximity to Russia, Alaska was of great strategic importance during the Cold War and there were a number of interactions between Soviet and U.S. military forces (Richardson 1974; Salisbury 1992).

In late 1957, Governor Stepovich named Major Thomas P. Carroll as the Adjutant General of the AKNG. Under his command, the AK-ARNG expanded and carried out a vigorous program of armory construction. Between 1959 and 1960, forty-eight Federal Scout Readiness Centers (FSRCs) were built in villages in remote Alaska. FSRCs provided a place for the AK-ARNG personnel to train and maintain military readiness. FSRCs also gave a sense of military presence in rural Alaska, and improved village life as they acted as community centers (Richardson 1974; Salisbury 1992). In 2013, the SHPO expressed the opinion that the FSRCs should be treated as eligible for listing on the NRHP under Criterion A, at the local and State level, for the role they played as organizational centers for Alaska Native and local peoples serving in the Scout Battalions of the AK-ARNG (OHA IBS 2017).

During the early 1960s, the U.S. became more aware of the possibility of an over-the-Pole attack. To prepare for this threat, the USA conducted a number of exercises in Alaska. In 1961, the Scout units of the AK-ARNG were invited to participate in the Willow Freeze exercise and proved so skilled and adept at fighting in harsh winter conditions that they became a fixture of Alaskan military exercises (Salisbury 1992).

Under the Kennedy and Johnson administrations (1960-1968), U.S. policy towards the USSR evolved to provide a system of military responses that included options other than total nuclear annihilation. This "flexible response" was designed to utilize more elements of the nation's military in the event of Soviet aggression towards the U.S. or its allies. Flexible Response was prompted in part by the Cuban Missile Crisis in October, 1962. While it lasted only 12 days, the crisis demonstrated the need for a wider range of military responses to Soviet actions. This shift in doctrine, led to a diminution in direct U.S.-Soviet hostilities, though proxy confrontations continued to escalate, particularly in Southeast Asia (Waddell 2003). In response to this change in doctrine, during the 1960s, Congress appropriated large amounts of money for the ready reserves and the NG to ensure that they could supply trained soldiers in the event of a direct confrontation with the Soviet Union (Salisbury 1992).

During the 1970s, the U.S. developed an uneasy truce with the USSR known as "détente" under which the two countries coexisted in relative peace, and attempted to address rising concerns over the stockpiling of nuclear arms and weapons. However, as the 1970's drew to a close, "détente" collapsed and tensions between the two countries increased.

During the 1970s, the AK-ARNG participated in regular training exercises designed to test equipment and accumulate knowledge on Arctic warfare. By the early 1980s, these exercises had grown to include several branches of the military as well as elements of the Canadian armed forces. The effectiveness of the AK-ARNG grew with each exercise and they were given more significant tasks (Richardson 1974; Salisbury 1992).

The 1970s saw another significant change in the AK-ARNG, the inclusion of women. Because the Militia Act of 1792 and the National Defense Act of 1916 used the word "males," the NG

had been almost exclusively male. In 1942, the USA established the Women's Army Corps (WAC) but they served in separate, all female units, which the NG did not want to establish (Morden 1990). Women served as nurses in the Medical Corps during and after WWII. The first woman nurse in the NG joined the Air NG in 1956; between then and 1968, the only women in NG units were nurses. That year, a new law authorized prior-service enlisted women to join NG units, but recruitment numbers were small. In 1971, enlistment in NG units was opened to non-prior-service women. After 1971, the number of women serving in NG units rose dramatically nationwide. During the 1970s, women joined the AK-ARNG.

Between 1974 and 1977, the Trans-Alaska Pipeline was built to transport oil between Prudhoe Bay and Valdez. Once it was completed, defending the pipeline from attack became a major goal of all U.S. military forces in Alaska (Salisbury 1992).

When Ronald Regan became president in 1981, military spending in the U.S. increased dramatically. The U.S. public generally supported the military tactics of the administration, who utilized quick and inexpensive interventions in foreign conflicts such as the Lebanese Civil War, the invasion of Grenada, the bombings of Libya, and Nicaragua. Meanwhile the Soviets found themselves deeply involved in costly foreign campaigns, most notably Afghanistan. As a result, the USSR underwent a series of economic and political upheavals, which led to the collapse of the Soviet state in 1991.

During the 1980s and early 1990s, Alaska saw a thawing in U.S.-Soviet relations and relaxation of border restrictions between the two countries, which provided the Governor of Alaska and the AK-ARNG with an opportunity to interact with their Soviet neighbors across the Bering Strait. Alaska Native groups had lobbied both governments to visit family members living in the other country. During the 1980s, friendship flights between Alaskans and Siberians reunited families that had been separated for nearly 40 years (Salisbury 1992).

A major sign of thawing relations in the Bering Sea occurred in 1988, when two boats of walrus hunters from Savoonga, Alaska, became lost in a heavy fog. The hunters lashed their boats together and drifted and hunted on ice floes to stay alive. Searchers thought that the hunters may have drifted to the Siberian side of the Bering Sea, and the AK-ARNG carried out a joint search with Soviet search and rescue. The Soviet and U.S. searchers did not locate the lost hunters and the Soviets called off their search. Before the search was called off, the Soviets allowed the Alaska Air Guard to fly a final six-hour flight up and down the Siberian coast to make a last sweep. It was the first time since WWII that a U.S. military aircraft was given permission to fly in Russian airspace. After nearly three weeks, the walrus hunters made it to the southeastern tip of Saint Lawrence Island where they were found and flown back to Savoonga by helicopter (Salisbury 1992).

In 1989, the AK-ARNG FSRC on Little Diomede Island hosted an event that threatened to shake the relative harmony of the region. Two Soviet journalism students defected to the U.S. during a peace ceremony on the frozen pack ice between the U.S. island of Little Diomede and the Russian island of Big Diomede. The two students had forged orders from their university in Moscow to attend the ceremony, and once near Little Diomede, they asked an AK-ARNG member for political asylum. When the students didn't return to the helicopter, the Soviet

delegation conducted a brief search, but eventually gave up and passed the incident off to a miscount and returned to the USSR (Salisbury 1992).

Since 1949, the AK-ARNG has provided valuable services for the State of Alaska. The men and women of the AK-ARNG, along with the Alaska Air Guard have participated in search and rescue operations throughout the state, saving many downed civilian and military pilots. They have provided emergency response to floods, fires and other disasters throughout the state. One of the best-known instances of this is the AKNG's efforts following the 1964 Good Friday earthquake, the most powerful earthquake ever recorded in North America (Richardson 1974; Salisbury 1992).

3.6.6 The Current Alaska Army National Guard

The AK-ARNG continued to serve the State of Alaska after the collapse of the Soviet Union. Elements of the AK-ARNG have been deployed to the Middle East during the First Gulf War and the Global War on Terror. AK-ARNG troops have also trained the Mongolian Army. Many of the Guardsmen still come from bush communities (DMVA 2011, 2012, 2013, 2014, 2015). The AK-ARNG is currently headquartered at CD and operates CC and BAAF.
In most states, NG units hold their annual training in the summer. In contrast, the training season for the AKNG runs from October to May. This schedule allows guardsmen, many of whom are from rural communities to participate in substance activities such as whaling, fishing, and hunting during the summer and fall (Haller 2016).

3.6.6.1 Camp Denali

After WWII, the AK-ARNG training facility on FR was named CD. It was located on the south side of the Davis Highway, in the area that is not BAAF. In 1956, CD was relocated to the north side of the Davis Highway. In 1967, the facility was renamed "Camp Carroll" in honor of Major General (MG) Thomas P. Carroll (Adjutant General of the AKNG), who was killed in 1964 when in the crash of an AK Air Guard C130. CD/CC was a major training facility for the AK-ARNG during and after the Cold War. While the WWII era facilities were, at least in the early post war years adequate, by 1963 they were falling apart. However, funds to make improvements were not readily forthcoming (Richardson 1974).

In 1964, the AK-ARNG held a successful annual training at CD. At 5:27 p.m. on the last day of the camp, on Good Friday, March 27, Alaska was hit by the strongest recorded earthquake in American History. When the shaking stopped, Army Guardsmen were deployed from CD, along with active duty military forces were deployed to Anchorage to keep people out of the damaged areas and participated in rescue efforts. In the following weeks, Alaska Army Guardsmen were deployed to a number of other Alaskan communities to provide aid. During this period, Alaska Air Guard planes transported personnel and supplies to communities throughout the state. In the months that followed, Alaska Army and Air Guard units provided aid to earthquake and tsunami damaged communities throughout the state. During this effort, on April 27, 1964, MG Carroll and three Air Guardsmen were killed in the crash of an AK-AFNG C130. (Elmore 1964; Richardson 1974; Salisbury 1992).

Work began to rehabilitate CD in April 1965 and the facility was transferred from the U.S. Army Alaska to NG. During this rehabilitation, sixteen Quonset huts were moved from the old site of CD, on the south side of the Davis Highway to provide a battalion headquarters. A long-range construction project to improve the facilities at CD began in 1966, and, as previously noted the facility was renamed CC in 1967 (Richardson 1974).

In addition to CC, the AK-ARNG operated several armories in the City of Anchorage. The Jewel Lake Armory was built in 1960, but it was 15 miles away from the training areas on FR. The Jewel Lake Armory housed the 5th Battalion of the 297th Infantry, but it was designed for only 200 people. The Mountain View Armory was built in 1954 as a USPFO warehouse and office. While only 4 miles from FR, the property was considered inadequate and too small to support expansion or replacement of the facility. The Mountain View Armory housed the 207th Infantry Group (Scout) and the Headquarters Detachment of the State Area Command. The Office of the Adjutant General (OTAG), the Headquarters State Area Command and the OTAG staff were mostly housed in state leased commercial space in Anchorage. The AK-ARNG operated two Organizational Maintenance Shops (OMS), one at the Jewel Lake Armory and one at CC. Neither of these facilities was considered adequate. In addition, having the guard units and equipment dispersed across Anchorage caused logistical issues for unit training (Directorate of Facility Engineering 1993).

Beginning in the 1970s, the AKNG sought to consolidate the Anchorage area armories and command functions into a single facility. According to Major Haller, the move to consolidate was based on the cost of maintaining the older facilities and the need to update the Guard's training facilities, in part to deal with a new generation of weapons and communications technology. In addition, a single guard facility would improve the AKNG's ability to quickly deploy in the event of a military or civilian emergency (Haller 2016).

The first master plan, completed in 1973 examined a location on Tudor Road, in Anchorage, but this option was abandoned in 1976, when the AKNG acquired a lease for a property on FR(Directorate of Facility Engineering 1993). As noted in Section 1.1, the lease area was made up of two parcels, an exclusive use area of 137.89 acres and a joint use area of 131.34 acres (Figure 2)[3] (Grefsrud 1993).

The parcels were leased by the Department of the Army to the AKNG under two outgrants in 1976 (Directorate of Facility Engineering 1993). Although the AKNG applied for an indefinite lease for the property, the original outgrants and a subsequent 1991 lease were short term, pending completion and concurrence of environmental assessment for the transfer of the property. The US Army Corps of Engineers issued a separate license for 2.5 acres within the exclusive use area for construction of an AKNG Armory, but the building was never constructed. During the Spring of 1993, a survey was conducted to determine the position of the Anchorage Armory Complex on CD (Figure 11) (Grefsrud 1993).

[3] There is some variation in the published size of CD. The acreage used in this report is from the Site Survey of Camp Denali included in Grefsrud (1993) (Figure 2).

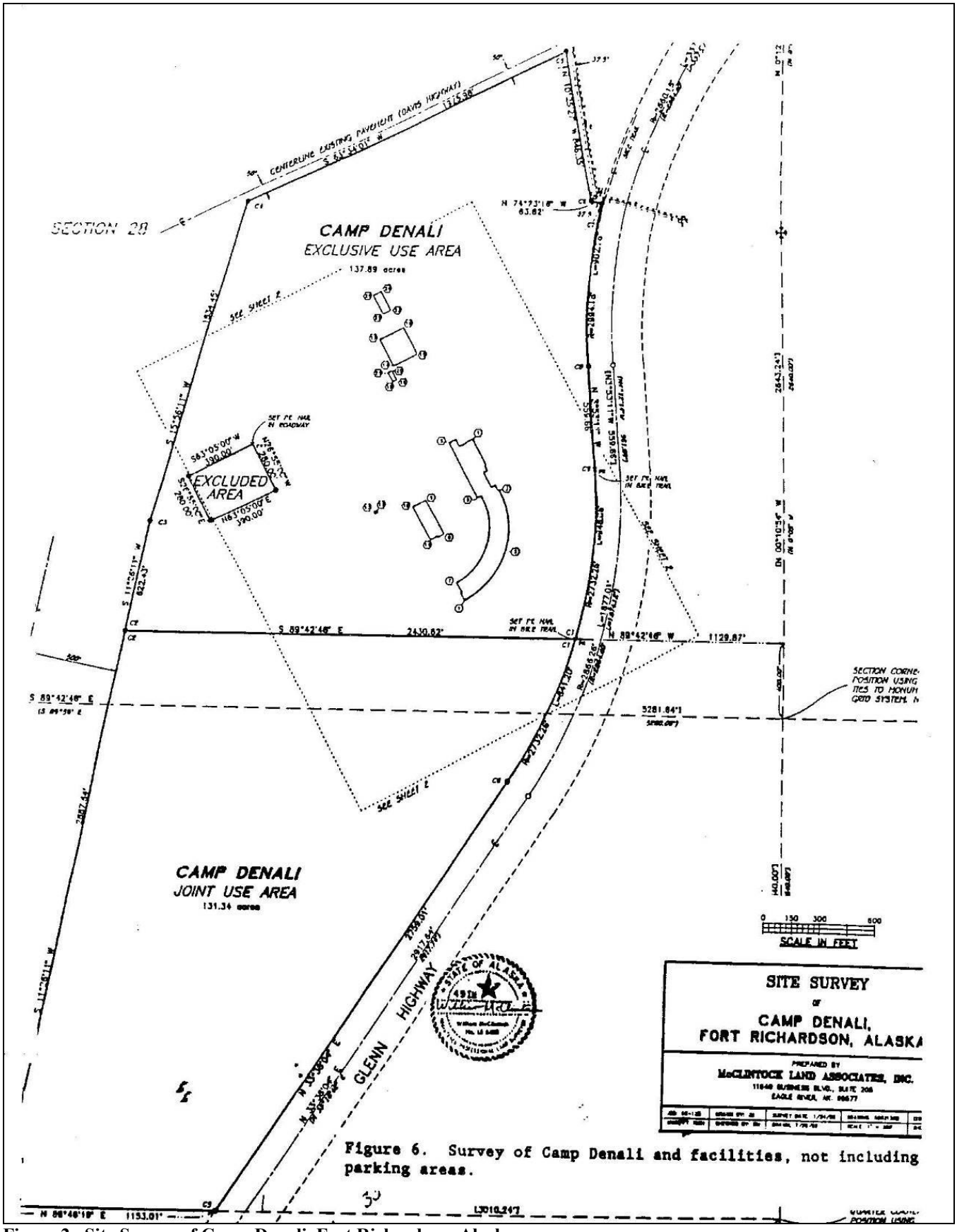

Figure 6. Survey of Camp Denali and facilities, not including parking areas.

Figure 2. Site Survey of Camp Denali, Fort Richardson, Alaska.

The exclusive use area included in CD had been used by the USA since WWII. As part of the wartime expansion of FR, a 417-bed hospital (at different times called the Additional Hospital Facilities and the 183rd General Hospital) was constructed on the south side of the Davis Highway (then called the Palmer Highway), within the exclusive use area. When completed, the hospital included approximately 51 buildings, a small road system, a water-borne sewage system, an outfall sewer and mains, and a 6,000 kilowatt (KW) central heating and power plant (Figure 5 and Figure 6) (Grefsrud 1993).

It is unclear exactly when the hospital buildings were torn down. They appear in a 1950 aerial photograph (Figure 9), but appear to have been torn down in a 1965 aerial image (Figure 10). A preliminary assessment screening of the hospital site conducted in 1993 found scattered building debris (including concrete, wood and metal pipe fragments) as well as concrete foundations and walls related to the demolition of the hospital (Coy 1993). Survey of the area in 2016 (this report) found no traces of these structural remains. The roads associated with the hospital are still in use, providing access to the modern AKNG buildings within CD.

A survey conducted in 2013, prior the construction of new USPFO facilities (Blanchard et al. 2013), identified a shooting range, a line of cantonment defenses and several other unidentified features visible in the 1950 aerial image of the exclusive use area (Figure 9). These features were subsequently determined not eligible for listing on the NRHP (Bittner 2013).

The joint use area included within CD was considered part of Training Area 16, which was used for training by USA troops and the AK-ARNG. The training activities carried out within Training Area 16 include, but are not limited to bivouacking, use of snow machines, all-terrain vehicles, and tracked vehicles. A network of trails exists within the area to facilitate vehicle use (Grefsrud 1993). According to Major Haller, during the 1970s, 1980s, and 1990s, CD was used for land navigation and small unit "force of force" training exercises. For larger training exercises, Guard units utilize training areas on CC and other training areas on JBER (Haller 2016). According to Sergeant Fillman, the area within the CD Survey Area boundary is no longer used for formal training, though small unit, informal training may occur.

A 1950 aerial image of FR (Figure 9) shows a system of straight trails cut into the vegetation within the boundary of the CD Survey Area. This pattern extends across a large portion of FR, including the area of BAAF. According to Major Haller, these trails would have been laid out by engineers as a grid to guide possible expansion during the Cold War. An examination of subsequent development, as seen in historic aerial photographs indicates that post WWII development did not follow this grid pattern, at least in the area of CC, BAAF, and CD. However, according to Major Haller, the trail network provided access to the wooded areas in and around CD during training activities (Haller 2016).

An old fire training pit (FTP) is located within the exclusive use area, shown as an exclusion area in Figure 2. An environmental screening of the FTP conducted in 1992 indicated that the soil was contaminated with organic and inorganic compounds including lead, dioxin, benzene, toluene and xylene (Grefsrud 1993). A 1993 preliminary assessment concluded that the cleanup of FTP could be a "major problem" (Coy 1993:2).

The AK-ARNG began construction of the first buildings of the Modern CD in 1979 (Table 2 and Figure 3). The first modern AKNG structures built at CD were associated with the USPFO warehouse facility (Buildings 49140, 49142, 49144, and 49200). These provided 8,580 square feet (sf) of office space, 14,300 sf of warehouse space, 5,108 sf of supply buildings, 1,330 sf of storage space and 500 sf of trailer space. Some of these structures were located within the footprint of the WWII Additional Hospital Facilities (see below for details) (Directorate of Facility Engineering 1993). Between 1979 and 2016, the USPFO facility was expanded by the construction of additional storage buildings.

Construction of the new Anchorage Armory (Building 49000) began in the spring of 1990 and the grand opening was held on August 3, 1991 (Engineering Environmental Management 2007; Salisbury 1992). The new Armory cost more than $27 million dollars and was designed to accommodate all Anchorage area AK-ARNG units. When completed the building provided storage for 14 AKNG units, housed the OTAG, Headquarters for the AK-AFNG, the Veterans Division, and the State Emergency Services (Salisbury 1992). When completed, the Armory was a two-story building (with a basement) with 207,000 sf of useable space (it was subsequently enlarged by an addition on its southern end). Its amenities included a drill hall, administrative areas, an emergency operations center, a rifle range, an exercise room, a medical area, a security area, supply, storage and kitchen areas for the units and individual guardsmen and a 38,875-sf parking lot (Directorate of Facility Engineering 1993; Salisbury 1992). On the west side of the building, there a number of loading docks, which enable rapid loading of vehicles in the case of deployment (Haller 2016).

The new Anchorage Armory building did not include barracks space for guardsmen. According to Major Haller, guardsmen were originally housed in barracks at CC. After these facilities were taken over by the Alaska Military Youth Academy, guardsmen coming to CD for training were housed in barracks on FR or EAFB (Haller 2016).

In 1993, the CD Armory served 1,300 AKNG members from 15 units. The 1977 Master Plan had called for the construction of a separate building to house the OTAG. This plan was abandoned to save money and the OTAG was assigned 30,000 sf on the second floor of the new Armory building (Directorate of Facility Engineering 1993).

In 1993, the Alaska Division of Emergency Services applied for a permit to establish a receiver and transmitter antenna array within the joint use area (Directorate of Facility Engineering 1993). This array is visible in aerial images between 1995 (Figure 11) and 2009, but was subsequently removed. The array was not present during the 2016 survey and is not visible in a 2015 aerial image (Figure 12).

Around 2002, the AKNG constructed the Combined Support Maintenance Shop (Building 49150), which contained all the features required to meet their maintenance and mobilization missions for the units housed at the Armory. This included an 18,152-sf building with 14 work bays as well as administrative, supply and special use space to maintain more than 500 vehicles assigned to these AKNG units (Directorate of Facility Engineering 1993). Three controlled humidity vehicle storage buildings (totaling 60,000 sf) (Buildings 49201, 49203, and 49205)

were built at CD in 2005 and 2006 to house the majority of the AK-ARNG vehicles (DMVA 2005).

The National Guard Memorial Park is located on the north side of the CD Armory, near the intersection of Army Guard Road and Ruff Road (Figure 3). This park is visible in a 1995 aerial photograph (Figure 11). At the time of the survey, the park had a covered picnic area and static displays of AKNG aircraft and vehicles.

Table 2. Permanent structures located within the 2016 Camp Denali Survey Area.

Building Number	***Name or Description***	***Construction Date****
49000	Camp Denali Armory	1990
49040	OMS	1990
49050	Fuel Vehicle Storage Shed	1998
49140	USPFO Warehouse	1979
49142	USPFO Cold Storage	1988
49144	USPFO Vehicle Storage Shed	1982
49150	Combined Support Maintenance Shop	2002
49196	USPFO Storage Building	Ca. 2015-2016
49198	USPFO Storage Building	Ca. 2014-2015
49200	AK Division of Emergency Services	1994
49201	Control Humidity Warehouse	2005
49202	AK State Defense Force	1998
49203	Control Humidity Warehouse	Ca. 2006
49204	Armory Unit Storage	Ca. 2005
49205	Control Humidity Warehouse	1990
49206	Armory Unit Storage	1999
49208	Organizational Storage	2006
49209	Unit Warm Storage	2008
49210	Combined Support Maintenance Shop Utes Storage	1998

*Based on a list of building names and construction dates provided by Wolforth and available historical information and historical photographs. It is unclear if the dates provided by Wolforth are for when construction started on the building or when it was completed. Dates with "ca." in front of them are approximate, and are based on the available aerial images.

Figure 3. Structures on Camp Denali at the time of the 2016 survey. Note that building 49196 has been drawn in on this image (which was taken in 2015). In addition to the numbered buildings, there are several temporary structures (weather ports) visible in this photograph which have not been assigned building numbers by the AKNG.

3.6.6.2 Camp Carroll

The original roads and facilities of CC were constructed as part of the WWII expansion of FR but the facility was leased by the AK-ARNG after 1949. The facilities originally consisted of Quonset huts and WWII-era semi-permanent buildings. As noted above, CC was called CD between 1956 and 1967, when it was renamed CC (Blythe 1998; Salisbury 1992).

Beginning 1971, a number of new buildings were constructed on CC. These buildings provided housing and facilities for a NG Battalion as well as a medical facility. These buildings were used by the AK-ARNG to support training activities into the mid 1990s. The headquarters for the AK-ARNG was moved to the newly constructed CD facility in 1991 (Blanchard 2014).

Between the mid 1990s and 2001, the buildings from the 1971 era expansion on CC were transferred to the Alaska Youth Acadamy for use as barracks and classrooms. As a result, the AK-ARNG had limited support facilities and no barracks on CC during the aftrermath of the September 11, 2001 attack on the World Trade Center. CC itself has not played a major role in training operations of the AK-ARNG during the Global War On Terror. As of March 2014, the AK-ARNG has only 28 beds available to Guardsmen on CC and the Guard conducts no large scale training exercises within the boundaries of CC, though it is still used for smaller scale training such as land navigation (Blanchard 2014).

As late as 1998, CC contained the greatest concentration of surviving WWII-era buildings on FR. At that time, eighteen of the 22 surviving WWII properties were Quonset huts, which were in use as administration buildings, enlisted barracks, officer's quarters, storage facilities and a unit chapel. The remaining WWII properties were semi-permanent wood-frame buildings, including the General's Quarters (Building 57427) and two administration buildings (Buildings 57024 and 57040) (Blythe 1998). Nine of the CC Quonset huts were evaluated in 2011 (Neely et al. 2011), determined ineligible for listing on the NRHP by the SHPO due to a lack of integrity and demolished.

3.6.6.3 Bryant Army Airfield

BAAF was established in 1957. Although originally conceived as a fixed-wing airfield, the facility has supported helicopter operations (Guilfoyle and Stern 2012). The development of BAAF coincided with the growth of Army aviation during the Cold War, especially the use of helicopters (Blythe 1998; Horne Engineering and Environmental Services 1996). Blythe (1998:31-32) provides a summary of the main construction phases for BAAF:

> BAAF consists of 12 properties located in the northeastern section of the cantonment. Development of the airfield spanned approximately three decades from 1958 to the end of the Cold War. Most properties are of permanent construction. Initial development of BAAF coincided with the revitalization of Army aviation during the late-1950s and 1960s. In 1958 Hangar 1 (Building #47430) was constructed along an existing east-west asphalt landing strip in the northeastern section of the cantonment. The 21,370 square-foot hangar was constructed of steel with metal siding. Shop additions were built in 1960 followed by renovations of the roof and hangar doors in 1973. Other construction at the

airfield in 1958 included an oil skimmer facility (Building #47434), storage building (Building #47435), and fire pump station (Building #47436).

In 1960, a flight operations center (Building #47432) was constructed west of the hangar along Westbrook Avenue. A three-story flight control tower (Building #4800) was built in 1961 near the eastern end of the landing strip. In 1963 another hangar, Hangar 3 (Building #47433), was built north of Hangar 1. Hangar 3 was also of steel construction with metal siding but was significantly smaller than Hangar 1, containing only 7,036 square-feet of floor space.

A third hangar, Hangar 2 (Building #47431), was built in 1968 north of Hangar 1 and the landing strip. This large, 36,091 square-foot hangar was constructed of steel with metal siding. The hangar roof was replaced in 1986. A Petroleum–Oil–Lubricants facility (Building #47438) was constructed just north of the flight operations building in 1966. Further development at the airfield did not occur until 1975 when the airfield's largest hangar was built. Hangar 4 (Building #47427) was constructed east of Hangar 2 on the northeastern portion of the airfield. The 42,902 square-foot hangar was of steel and concrete block construction with metal siding. Building #47428, a vehicle storage facility, was also constructed just east of the hangar. Hangar 4 was built to support the aviation mission of the AK-ARNG, and its construction coincided with facilities improvements at CC. During the 1970s and 1980s the hangar was used by the National Guard.

In 1981, a Fire and Rescue Station (Building #48010) was constructed just off the landing strip near the Flight Control Tower. This 4,601 square-foot concrete building was the last airfield facility built during the Cold War.

In 2012, fifteen buildings on BAAF were evaluated and recommended not eligible for listing on the NRHP (Sneddon and Miller 2012). The SHPO subsequently concurred with this reccomendation.

3.7 Established Contexts for Potential Historic Sites Within Camp Denali

The information gathered during the background research indicates that the CD Study Area is located inside the JBER military reservation, which has undergone military development since at least 1941. With the exception of the Anchorage Palmer Highway (Davis Highway, Glenn Highway) no significant nonmilitary development is known to have occurred within the CD Study Area. Two historic contexts exist for military sites located on EAFB and/or FR.

3.7.1 WWII Historic Context

The NPS has established a historic context for WWII buildings and structures on EAFB (Cook et al. 1999). No such context has been completed for WWII sites on FR, but since the CD Study Area was part of the WWII installation this context is still relevant. There are some historic sites on modern JBER that date back to WWII, including buildings on CC. The NPS WWII context for EAFB focuses primarily on well-preserved permanent buildings and structures definitely

known to date to WWII. The surviving WWII buildings on CC have been examined and determined ineligible for listing on the NRHP due to a lack of integrity (Neely et al. 2011).

The EAFB WWII Context (Cook et al. 1999) does include a limited discussion of defenses, specifically ammunition storage structures and pillboxes, but does not address the types of ground defenses (foxholes and depressions) recorded during the 2016 survey of CD (see below). Foxholes and bunkers located during the Level II survey of AK-ARNG on CD associated with the construction of a new USPFO facility (Blanchard et al. 2013) were subsequently determined by the SHPO to be ineligible for listing on the NRHP (Bittner 2013).

3.7.2 Cold War Historic Contexts

3.7.2.1 1998 Cold War Context

A 1998 Cold War historic context for FR defined Cold War resources as "those resources relating directly to the Cold War itself, not just to the Cold War period. Only resources directly associated with the Cold War, not just constructed during the Cold War period are to be considered" (Blythe 1998:20). Structures constructed during or prior to WWII are not eligible for listing on the NRHP under the Cold War historic context unless they achieved significance during the Cold War period, defined by Blythe as 1946 to 1989.

Since many Cold War cultural resources were under 50 years of age in 1998, Blythe's (1998) analysis of Cold War cultural resources in Alaska outlines a framework developed by the USA for determining the exceptional significance needed for a property to be eligible under NRHP Criteria Consideration G. Although cultural resources up to 1964 are currently eligible without exceptional significance, these guidelines outline themes and conditions under which Cold War properties in Alaska would be eligible for listing on the NRHP. In addition, the USA guidelines state that the AK-ARNG will consider the USA Cold War context and themes when determining the eligibility of CC, BAAF and CD for listing on the NRHP (Blythe 1998).

Under the 1998 criteria for Cold War eligibility (Blythe 1998), for an Army Cold War property to be eligible for listing on the NRHP under the Cold War historic context, a property must be exceptional. To be exceptional, a property must pass all of the following five tests.

> **Test 1:** Exceptional properties must display (through physical design of historical association) elements unique to the Army's role in the Cold War as opposed to previous conflicts and do so in an exceptional manner. To be exceptional, an Army property must embody one or more of the following five themes that reflect the Army's response to the Soviet threat.
>
> > *Survival:* Properties that demonstrate the theme of survival should show the unprecedented measures that the United States took to survive a full-scale war. This would include properties associated with plans and contingencies for survival of strategic command, control and communications.

Technology: Properties that demonstrate the theme of technology in an exceptional manner will show the race between the superpowers to achieve technological superiority. Such properties will display the investment made by the Army in research, development, testing, production, stockpiling and deployment of exotic weapons systems in response to Soviet development.

Militarization of Space: Properties that embody the militarization of outer space will embody the quest for offensive or defensive advantages and strategic security.

Extraordinary Measures: Properties that embody this theme in an exceptional manner will demonstrate the imperative to explore new means of warfare. Potential examples include unusual or exotic methods of warfare such as the development of energy related weapons, the use of human medical experimentation and the implementation of psychological operations.

Secrecy: Properties that demonstrate this theme in an exceptional manner will show extraordinarily high levels of secrecy not normally tolerated in an open society. This theme is exemplified by properties that were once considered secret, but whose exposure is no longer considered a threat since the end of the Cold War.

Test 2: To be considered exceptional, properties must contain information deemed absolutely vital to understanding United States-Soviet relations as defined in at least one of the five themes listed above.

Test 3: In comparison with similar properties and placed in historic context, an exceptional property must display the highest level of importance. Significance is inversely proportional with time. That is, to be considered exceptional, a property of more recent origin must have a much higher level of significance that a similar property of older origin.

Test 4: Exceptional properties must have national or global significance (Note: An exception may be made in Alaska for properties having regional significance… [see below]).

Test 5: An Army property illustrating one or more themes in Test 1 can be described by Cold War evaluators using superlative adjectives synonymous with exceptional (Blythe 1998:20-21).

In addition to passing all five of the tests established by the Army for Cold War eligibility, the resource must qualify under one of the following categories:

One-of-a-Kind Property: This is a property that is the only known example of its kind and whose features singularly embody a Cold War theme. However, singularity alone does not impart exceptional importance.

Individual Properties: An individual property is one whose features singularly embody a Cold War theme. Although it need not be unique, it must have integrity and cannot be part of a multiple property group.

Multiple Properties: A multiple property refers to a property type extant at multiple locations within the United States or the world and whose features exemplify an important Cold War theme.

Historic Districts: A Cold War historic district is one composed principally of structures less than 50 years of age [in 1998] that are integral to an understanding of the Cold War (Blythe 1998:21-22).

As stated in Test 4, there is an exception for Cold War properties in Alaska that allows them to be considered for regional rather than national or global significance. This exception is due to the State of Alaska's unique contribution to America's Cold War experience. As such, USA properties in Alaska, including AK-ARNG properties will be considered eligible for the NRHP if they possess integrity and provide information vital to the understanding of at least one of Alaska's five Cold War themes as defined by the Alaska SHPO: detection and monitoring; communication; interception and response, defense; and, research (Blythe 1998; Sackett et al. 1997).

According to Blythe (1998), BAAF did not meet the standards for significance under the Army Cold War historic context and was not eligible for listing on the NRHP under Criteria Consideration G.

In 1998, CC was the AK-ARNG's largest and most significant Cold War facility and Blythe (1998) concluded that it was significant on a regional (Alaska) level under the SHPO regional Cold War theme of defense. However, the facilities on CC were administrative and troop support buildings that did not pass Test 1 established by the USA for Cold War historic properties. As such, CC was not eligible for listing on the NRHP for its association with the Cold War under Criteria Consideration G (Blythe 1998). Two subsequent studies (Neely et al. 2011; Stern 2010) have concluded that 18 historic buildings on CC were not eligible for listing on the NRHP either individually or as a part of a historic district. Almost all of these buildings were subsequently demolished.

3.7.2.2 2008 Cold War Context

A Cold War historic context for FR (Waddell 2003) established themes and property types for determining the eligibility of Cold War historic sites on FR. The identified themes include defense, interception and response, and communication. Three property types were identified for Cold War real property utilized between 1951 and 1991:

1) Properties developed solely as a result of the Cold War and therefore directly related to the Cold War.

2) Properties that would have been developed even if the Cold War had not occurred; and

3) Properties that may be eligible for listing on the NRHP.

To be classified as eligible for listing on the NRHP under the Cold War context, a property had to satisfy the following criteria:

1) They were specifically constructed or used prior to 1991 to:
    a. Meet a perceived Soviet military threat,
    b. Project force designed to influence Soviet policy, and
    c. Affect global opinion of the relationship between the superpowers,

2) Through their architectural or engineering design, clearly reflect one of the primary Cold War themes.

3) Are directly related to the United States-Soviet relationship through association with the life of a person during the Cold War.

Waddell (2003) states that properties on FR not eligible for listing on the NRHP under the Cold War context may still be eligible for listing within the context of standard Army development or another historic context.

3.8 Previous Archaeological Research in the Vicinity of the CD Study Area

The broader Cook Inlet Region has been the subject of numerous prehistoric cultural resource investigations; however, only a handful of studies have been conducted on JBER (former FR and EAFB) land. The early research and archaeological work that provides the framework of prehistoric archeology in the Cook Inlet area began in the early 1930s (de Laguna 1975 [1934]). Later studies include Dumond and Mace's (1968) research, where they suggested that the first occupation of the region by Dena'ina was sometime between A.D. 1650 and 1780. The Beluga Point Site south of Anchorage was excavated in the early 1980s (Reger 1981) and has continued to inform interpretation of mid- to late-Holocene prehistory of the region. North of JBER, significant investigations include Reger (1980, 1983), Bacon et al. (1983) and Dixon et al. (1985), Seager-Boss (2005), Stone (2011), Wygal (2009), and Wygal and Goebel (2012), all of which contributed to the understanding of the Susitna River area prehistory.

Ethnographic studies (Kari 1978, 1988; Kari and Fall 2003; Kari and Kari 1982; Kari 1983, 1995) have provided valuable information on traditional Dena'ina land use and place names in the region. An overview of the archaeology of FR, east and adjacent to EAFB was under taken by the U.S. Army Corps of Engineers in 1980 (Steele 1980).

A number of Section 106 and 110 projects have been undertaken in and around the CD Study Area. Table 3 is a list of cultural resources studies known to have been under taken on the history and archaeology of the U.S. Military and other historic activities on JBER.

The background research indicates that the potential for prehistoric sites within the CD Study Area is low, because the site is too far from the Cook Inlet/Turnagain Arm, is not near an

Table 3. Previous historic and cultural resource research conducted on sites within one mile of the CD Study Area

Date	*Project*	*Results*	*Reference*
1944	Narrative Report on Alaska Construction	Brief history with maps of Army construction activities at bases throughout Alaska, including FR.	(Bush 1944)
1986	Historic preservation plan for U.S. Army installations and satellites in Alaska	Examined 6 sites on FR. They all were eventually determined to be ineligible for listing on the NRHP.	(Reynolds 1986)
1996	OHA's cultural resource survey of high-potential areas on EAFB	Nine historic sites, consisting mainly of cabin ruins and likely dating to the homestead-era, were discovered during the survey. Scant evidence of prehistoric and early historic activity was discovered during this survey. The report estimated that nearly 35-40% of the entire land area within EAFB had been disturbed and that sites were conceivably destroyed during ongoing development of the base. It further postulated that shore erosion and aeolian siltation may have either destroyed or buried coastal-oriented sites.	(McMahan and Holmes 1996)
1997	List of Historic Facilities on EAFB	Inventory of known WWII buildings and structures (and five Cold War era buildings) on EAFB.	(Cook et al. 1997)
1998	NPS Homestead Study of EAFB	The report provides maps that delineate homestead parcels on EAFB between 1914 and 1929.	(Daugherty and Saleeby 1998)
1998	Cold War resources inventory United States Army Alaska (USARAL): FR, Fort Wainwright, Fort Greely	Inventory of Cold War resources at FR, Fort Wainwright, and Fort Greely, Alaska.	(Blythe 1998)
1999	Historic context for WW II buildings on EAFB	Established a historic context and themes; identified WW II buildings and structures on EAFB.	(Cook et al. 1999)
2000	Paleontological and cultural resource investigation for the port intermodal expansion project	Shaw (2000) carried out an assessment for the ARR realignment through EAFB. Useful for the purposes of this report, it provides a summary of some of the key strategies associated with EAFB ground defenses, and develops a typology. An associated cultural resource report of the EAFB gravel sources used for the port intermodal expansion project took place in 2006.	(Shaw 2000; Stephen R. Braund & Associates 2006)
2000	Historic properties and paleontological survey for the realignment of the Alaska Railroad Corporation tracks across EAFB	Recorded and evaluated 17 sites, all determined not eligible for listing on the NRHP.	(Shaw 2000).

Date	*Project*	*Results*	*Reference*
2002	Integrated Cultural Resource Management Plan (ICRMP) and associated Environmental Assessment for Alaska	ICRMP for the AKNG.	(ICRC 2002)
2002	The Early Electrification of Anchorage	History and inventory of the Eklutna Power Plant and transmission lines.	(Hollinger 2002)
2003	Cold War historical context of FR (1951-1991)	Established a historic context and themes; identified Cold War buildings and structures on FR.	(Waddell 2003)
2003	The "Dena'ina Team" investigations and research on traditional land use at EAFB	No sites were identified in the Area of Potential Effect (APE).	(Fall et al. 2003)
2004	Cultural resources survey of the Naval Reserve Center FR, Alaska	Cultural resources survey of the Naval Reserve Center FR, Alaska.	(HHM 2004)
2007	Historic American Building Survey of the Old Hospital Complex, FR, Alaska	HABS documentation of the Old Hospital Complex, FR, Alaska. This is not the hospital located next to the Project Area of Potential Effect (APE).	(CH2MHill 2007)
2007	ICRMP and associated Environmental Assessment for the AK-ARNG (2007-2011)	Updated ICRMP for the AK-ARNG.	(Engineering Environmental Management 2007)
2008	Cultural resource survey of EAFB Gravel Pit Expansion Project	Cultural resource survey of EAFB resulted in a recommendation of No Historic Properties Effected.	(Neely and Proue 2008)
2009	Building inventory FR, Alaska	Inventory and evaluation of 23 buildings on FR, Alaska.	(U.S. Army 2009)
2010	Study of privatization of housing on JBER	Resulted in a recommendation of No Historic Properties Effected.	(U.S. Army 2010)
2010	NRHP Determination of BAAF Air Traffic Control Tower	The AK-ARNG proposed to rehabilitate the Bryant Air Traffic Control Tower constructed in 1961 but vacant since 1996. NLUR completed the documentation and evaluation of the building and recommended the building as not eligible. The SHPO concurred and delivered a finding of No Historic Properties Affected for this undertaking.	(Gomez 2010)
2010	NRHP eligibility Evaluation for Nine Buildings at CC, Alaska AK-ARNG	Resulted in a recommendation of No Historic Properties Effected.	(Stern 2010)
2011	Historic Architectural Inventory and Evaluation of Nine Quonset Huts at CC, Alaska	Resulted in a recommendation of No Historic Properties Effected.	(Neely et al. 2011)
2012	Doyon Utilities Raptor Transmission Line Phase I archaeological survey report	Identified four standing buildings, seven structures, and nine features. Eleven new AHRS site numbers were assigned to standing structures and structural remains. No DOE completed.	(Blanchard 2012)
2012	Recreational vehicle parking area archaeological study	Two new sites located, resulted in a finding of No Adverse Effect.	(Callina 2012)

Date	*Project*	*Results*	*Reference*
2012	A Phase I Cultural Resources Assessment of BAAF	Level I Survey and Architectural Assessment of BAAF.	(Guilfoyle and Stern 2012)
2012	Historical Properties Determinations for BAAF	Evaluation of 15 buildings on BAAF. All recommended ineligible for listing on the NRHP.	(Sneddon and Miller 2012)
2012	Cultural Resources Survey Proposed USPFO Facility JBER Anchorage, Alaska	Identified structural remains and excavated defensive positions (foxholes and bunkers). All were recommended as ineligible for listing on the NRHP.	(Blanchard et al. 2013)
2013	Class I and Class II cultural resources survey of CC and BAAF	Identified structural remains and excavated defensive positions (foxholes and bunkers). All were recommended as ineligible for listing on the NRHP.	(Blanchard 2014)
2015	Class II survey of the FR Internment Camp	Pedestrian survey and subsurface testing within the boundaries of the WWII FR Internment Camp. Site recommended not eligible for listing on the NRHP.	(Blanchard 2016)
2016	Survey of a Transmission line on FR	Pedestrian survey of a transmission line on FR. No Historic Properties identified.	(Hall 2016)

Sources: NLURA research library, OHA files.

(1) Exact dates are listed for projects when known.
(2) Project Names are summarized from report titles, or authors' descriptions.
(3) Results are summarized from available reports.
(4) The primary source of information only is listed. Subsequent reports may provide additional information. These are listed in the References Cited section.

anadromous stream, the mixed spruce-birch forest habitat has a generally low biomass and there are no previously identified prehistoric sites within the CD Study Area.

The background research indicates that the potential for historic sites, features and artifacts within the CD Study Area is high. Historical records, maps and aerial photographs indicate that historic activity in the CD Study Area began during the early 1940s.

3.9 Known Cultural Resources in the vicinity of the APE

There are 30 AHRS sites within half a mile of the CD Study Area (Figure 4 and Table 4). Four of these sites are located within the area previously surveyed in 2013 (Blanchard et al. 2013). As noted above, this area is not included in the 2016 CD Survey Area. The remaining 26 sites are located within a mile of the CD Study Area. The FRNC (ANC-00013) is listed on the NRHP, but is outside the CD Study Area. Building 59000 (ANC-01096), the NIKE Theater Maintenance Shop, and Building 59001 (ANC-01097), a Sentry Station have been determined eligible for listing on the NRHP. The Glenn Highway (ANC-04068) is an interstate highway and is exempt from Section 106 review. The remaining 26 AHRS sites have been determined ineligible for listing on the NRHP.

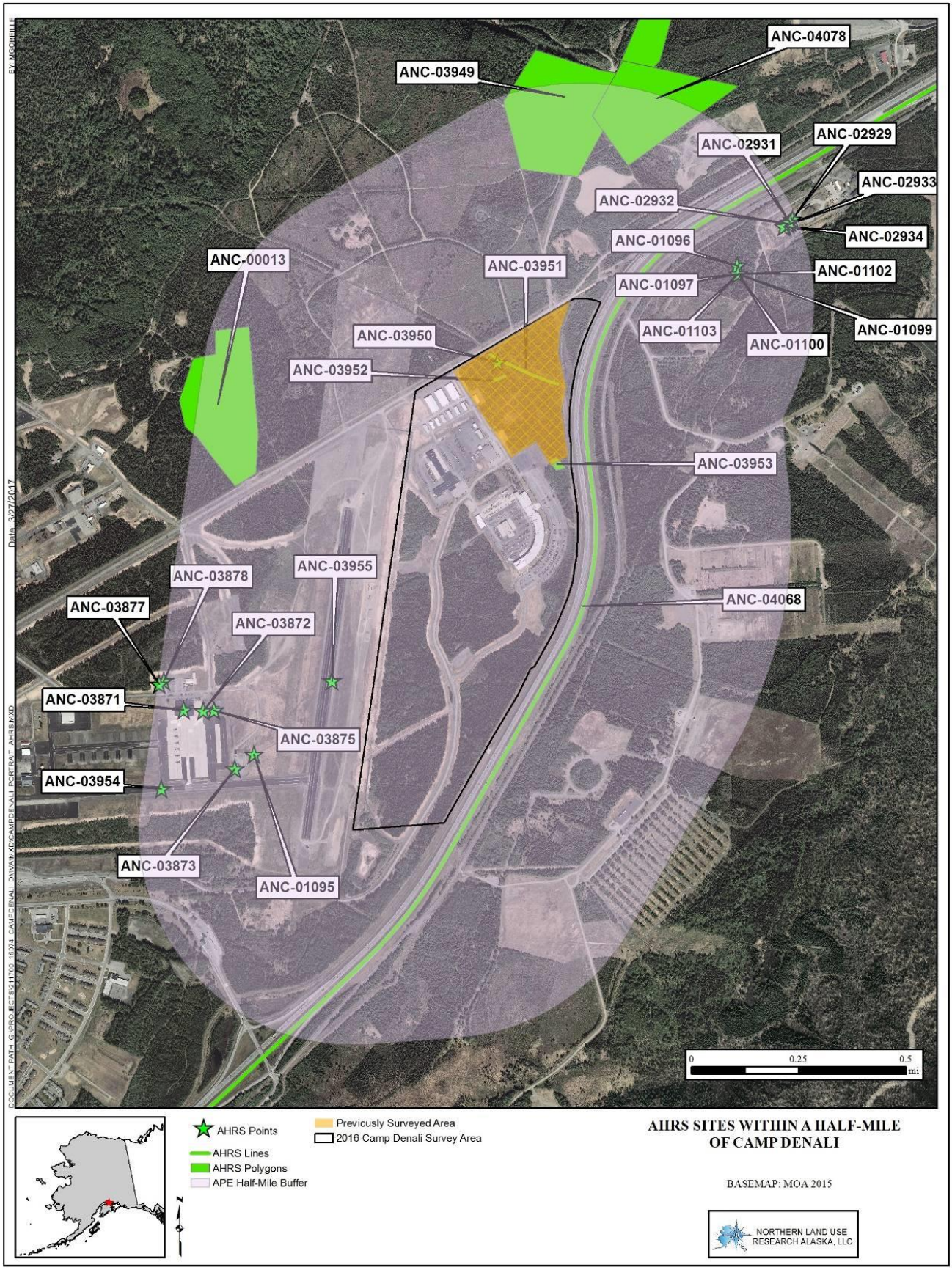

Figure 4. AHRS sites within half a mile of the Camp Denali Survey Area.

Table 4. AHRS Sites in and within half a mile of the Camp Denali Survey Area.

AHRS Number	*Site Name and Description*	*Distance from CD Survey Area*	*NHRP Eligibility Status*
ANC-00013	FRNC	560 meters (m)	Listed on the NRHP
ANC-01095	Building 4800, Flight Control Tower	406m	Determined Not Eligible for listing on NRHP (NE)
ANC-01096	Building 59000, NIKE Theater Maintenance shop	530m	Eligible for listing on the NRHP
ANC-01097	Building 59001, Sentry Station	525m	Eligible for listing on the NRHP
ANC-01098	Building 59003, Guided Missile Magazine Special Ordinance Igloo	525m	NE
ANC-01099	Building 59004, Guided Missile Magazine	525m	NE
ANC-01100	Building 59005, Guided Missile Magazine	525m	NE
ANC-01101	Building 59006, Guided Missile Magazine	525m	NE
ANC-01102	Building 59007, Guided Missile Magazine	525m	NE
ANC-01103	Building 59008, Guided Missile Magazine	525m	NE
ANC-02929	Building 59003, Range Storage Building	785m	NE
ANC-02931	Building 59005, Range Storage Building	770m	NE
ANC-02932	Building 59006, Range Storage Building	765m	NE
ANC-02933	Building 59007, Range Storage Building	750m	NE
ANC-02934	Building 59008, Range Storage Building	745m	NE
ANC-03871	Hangar 6	690m	NE
ANC-03872	Ground-Support Building	615m	NE
ANC-03873	Fire and Rescue Station	470m	NE
ANC-03875	Fuel Truck Storage Shed	575m	NE
ANC-03877	Aviation Storage Warehouse	790m	NE
ANC-03878	Controlled Humidity Warehouse	780m	NE
ANC-03949	Military Training Features	460m	NE
ANC-03950	Scatter of structural remains and associated artifacts	Inside APE	NE
ANC-03951	Low earthen berm	Inside APE	NE
ANC-03952	Excavated trench	Inside APE	NE
ANC-03953	Remains of a shooting range	Inside APE	NE
ANC-03954	BAAF Rotary-Wing Runway (Taxiway 5)	730m	NE
ANC-03955	BAAF Fixed-Wing Runway	150m	NE
ANC-04068	Glenn Highway (Interstate Highway)	65m	Exempt from Section 106 review
ANC-04078	Training Area Ground Defense Site Number 1	520m	NE

NE= Not eligible for listing on the NRHP.
Source, Alaska OHA Integrated Business Suite (IBS), 2013.

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4.0 Aerial Photograph Analysis

The earliest known construction activities carried out in the vicinity of CD were associated with the Davis Highway (at different times called the Anchorage-Matanuska Road, the Palmer Road, the Palmer Highway and possibly the Glenn Highway). The first known military development in the CD Survey Area occurred during the 1941 expansion of FR. This included several features identified during the 2013 survey (Blanchard et al. 2013) (which are not included in this report) and the WWII Additional Hospital Facilities. As visible in the following photographs, post 1979 construction activities by the AKNG have obliterated virtually all WWII era features within the CD Survey Area.

Two maps and a series of historic aerial photographs provide the best primary information on the evolution of CD. The maps are from a narrative report on Alaskan military construction between 1941 and 1944 (Bush 1944). The photographs were provided by AK-ARNG, or identified independently by NLURA. NLURA personnel examined these photographs to relate features in the historic aerial photos with features identified during the 2016 survey of the CD Survey Area. These images were used during the interviews conducted with Major Haller and SFC Fillman in an effort to gain information about visible features.

Figure 5 is a 1943 map showing WWII era construction in the vicinity of CD (Bush 1944). The only development located within the boundaries of the CD Survey area are "Additional Hospital Facilities," a detail of which are shown in Figure 6. The map shows 44 structures including an administration building, a recreation building, an infirmary, clinics, wards, quarters for the hospital staff, barracks, a mess, storehouses, heat and power plants, a garage, and water storage. The map shows something connecting many of the buildings, but is unclear on what it is.

Table 5. Historic aerial imagery used in this analysis

Aerial Photographs of the CD Study Area	
1947 (Figure 7)	Blurry, shows a portion of the CD Study Area
1948 (Figure 8)	Good quality image, shows a portion of the CD Study Area
1950 (Figure 9)	Good quality image, shows the entire CD Study Area
1965 (Figure 10)	Good quality image, shows a portion of the CD Study Area
1995 (Figure 11)	Good quality image, shows the entire CD Study Area
2015 (Figure 12)	Good quality image, shows all of CD Study Area

Table 5 lists the historical aerial imagery for the CD Study Area and provides information on its quality and coverage area. Even when of the highest quality, aerial photography does not provide a detailed record of historic activities that occur within them. Only those activities that result in significant visual disturbances to the tree canopy (such as the construction of roads, pads or buildings) can be seen in aerial photographs. Determining the function of such disturbances from aerial photography is difficult. In addition, there are significant temporal gaps in the photographic record of the CD Study Area. Despite these limitations, the aerial imagery provides a rough chronology of construction and demolition for a number of features identified during the pedestrian survey.

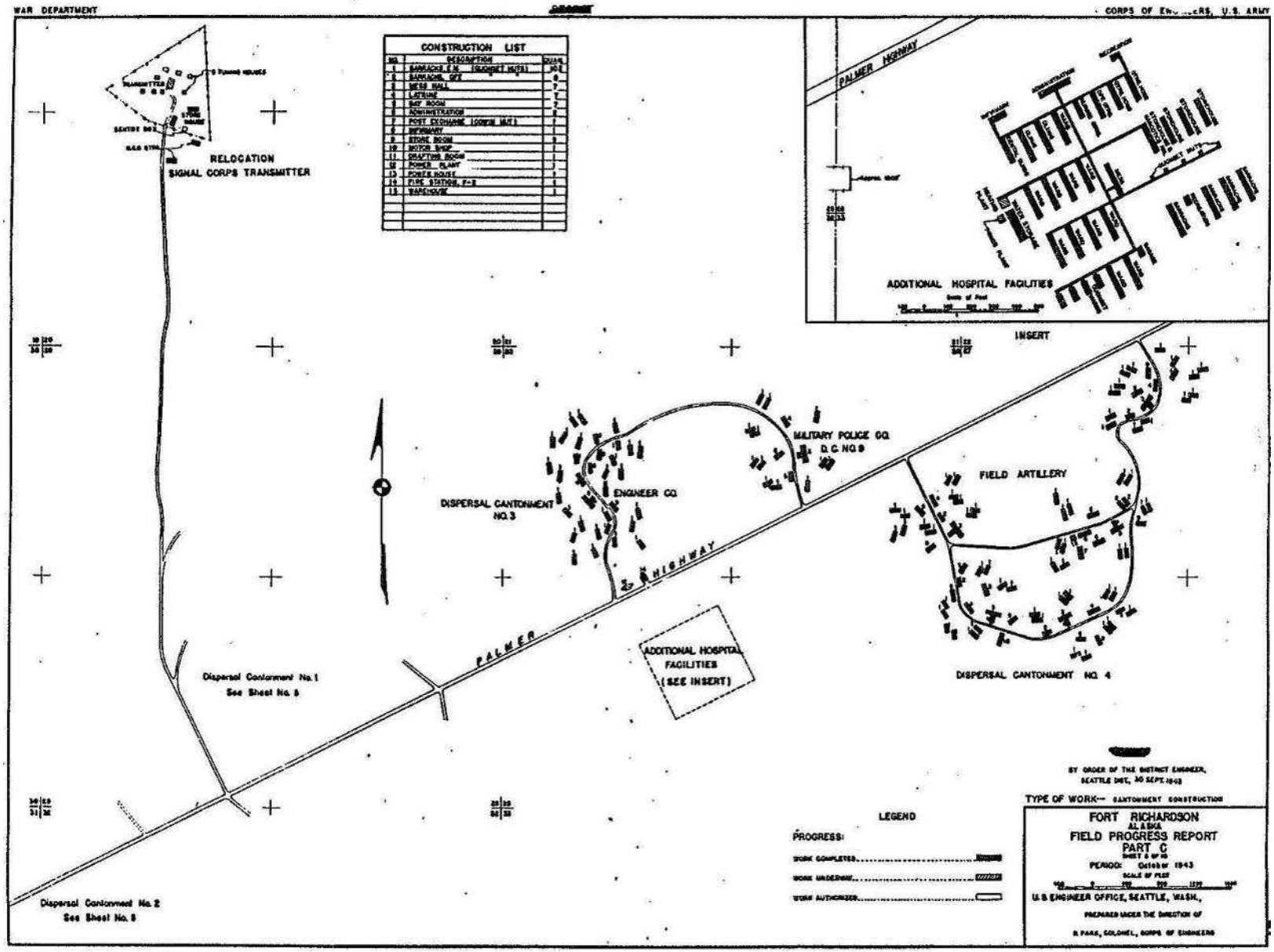

Figure 5. 1943 Map showing WWII era development in the vicinity of Camp Denali. The inset of buildings associated with the Additional Hospital Facilities is shown in Figure 6.

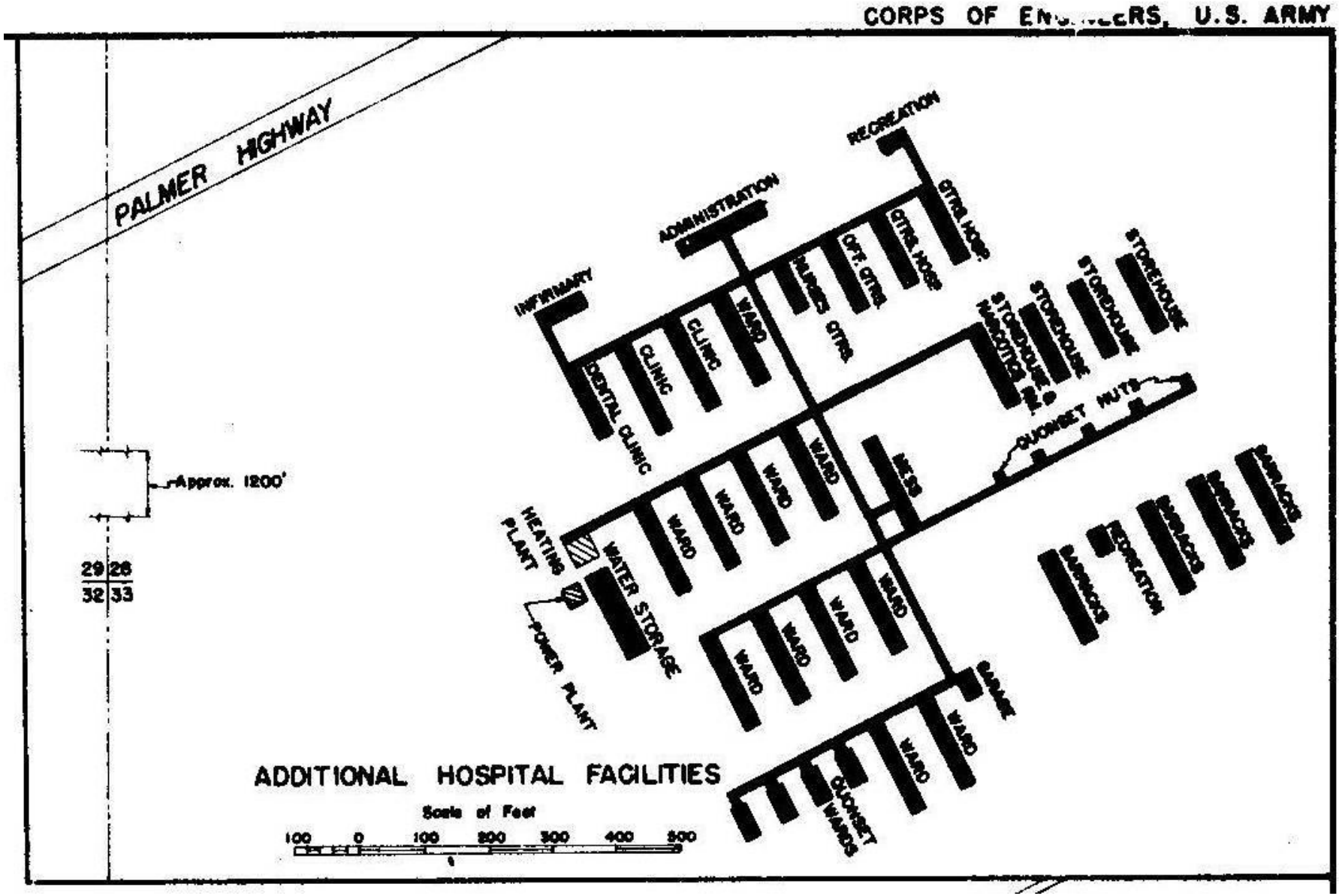

Figure 6. Detail of 1943 map shown in Figure 5, showing structures associated with the WWII Additional Hospital Facilities located within the exclusive use area, which is part of the CD Survey Area.

Figure 7. A blurry 1947 photograph showing most of the Additional Hospital Facilities located within the exclusive use area, which is part of the CD Survey Area.

The earliest available aerial photograph of the CD Study Area (Figure 7) was taken in 1947. It is slightly blurry, but shows the buildings of the WWII era Additional Hospital Facilities shown in Figure 5 and Figure 6. Unlike the 1943 map, the 1947 image shows a road system connecting the hospital to the Davis Highway (Palmer Highway), as well as several cleared areas in the vicinity of the hospital. Unfortunately, this image only shows a portion of the CD Study Area.

A clearer 1948 image (Figure 8), shows the hospital buildings visible in Figure 5, Figure 6, and Figure 7. The photograph shows something connecting the buildings, similar to that shown on the 1943 map (Figure 6). It is unclear what this is, but it throws a shadow, indicating that it may have been a hallway or covered walkway connecting the buildings. Such a structure would have allowed patients and staff to move between buildings under cover.

The 1948 photograph (Figure 8) also shows cleared areas around the hospital, including a small clearing (on the bottom right corner of the image) which has been assigned AHRS number ANC-03953. This feature is a shooting range and has been determined not eligible for listing on the NRHP (Blanchard et al. 2013).

Figure 8. 1948 aerial image showing the Additional Hospital and associated clearings located within the exclusive use area, which is part of the CD Survey Area. The clearing in the lower right corner is a shooting range (ANC-03953).

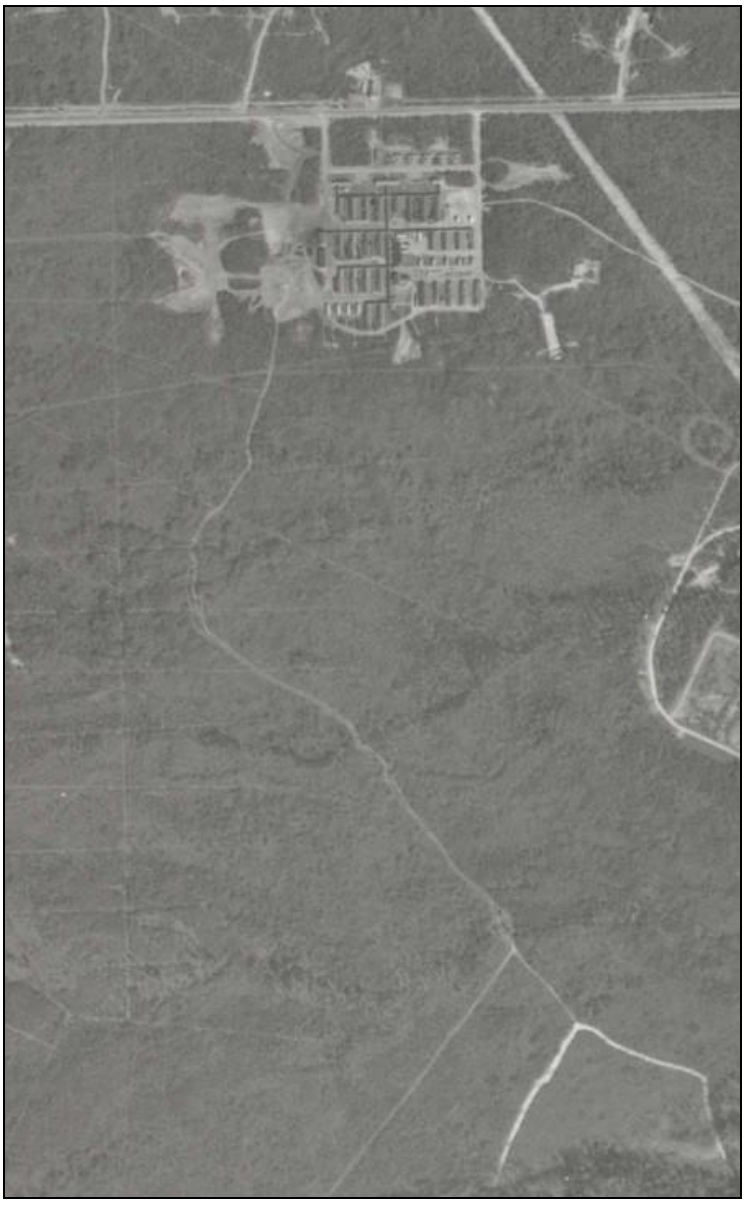

Figure 9. 1950 image of the CD Survey Area, showing the WWII era Additional Hospital Facilities located within the exclusive use area, which is part of the CD Survey Area. The image also shows a linear clearing pattern that extends across CD.

A 1950 aerial image of the area include modern CD (Figure 9), shows the WWII era Additional Hospital Facilities and associated clearings and trails. The range (ANC-03953) visible in Figure 8 is also visible. To the right of the hospital is a diagonal line, which is the post cantonment boundary. There is a trail extending from the left side of the Additional Hospital Facilities towards the bottom of the photograph. The northern portion of this trail roughly corresponds with the modern alignment of Ruff Road. The image also shows a larger grid pattern that has been cut into the vegetation. These lines are visible in subsequent photographs and were clearly visible during the 2016 field survey.

Figure 10. 1965 image showing the CD Survey Area. Note that the buildings associated with the WWII era Additional Hospital have been torn down. The modern alignment of the Glenn Highway is under construction and there are two large areas that appear to be gravel sources.

A 1965 aerial image (Figure 10) shows that the buildings of the WWII era Additional Hospital Facility have been demolished. The image shows the new alignment of the Glenn Highway (on the right), which has been rerouted to move it outside the boundaries of FR. The image also shows the airstrip of BAAF and what appears to be gravel pits, connected by roads to the Glenn Highway and the nascent BAAF runway. None of the modern buildings of CD are visible in this photograph, since they were not yet constructed.

Figure 11. 1995 image of Camp Denali, showing the modern CD buildings and roads and the Glenn Highway.

A 1995 photograph (Figure 11) shows the newly constructed CD Armory (Building 49000), with associated parking lot and maintenance facility (Building 49040), four of the buildings associated with the USPFO facility (Buildings 49140, 49142, 49144, and 49200), and a road (presumed to be the old alignment of Ruff Road) extending towards the south side of the BAAF runway. Two, roughly square clearings located close to the southern end of the Armory building are for communication antennas constructed ca. 1993. The image also shows that all of the WWII Additional Hospital Facilities are gone, and the area of the hospital (other than the USPFO buildings) has been largely overgrown. A portion of the National Guard Memorial park appears to have been constructed, and one of the tanks visible in the park in 2016 appears to be in place. None of the aircraft noted during the 2016 survey are visible in this photograph. See Figure 3 and Table 2 for information on the buildings present within the CD Survey Area during the 2016 survey.

Figure 12. 2015 aerial image of Camp Denali, showing the CD buildings and roads and the expanded USPFO facility in the area of the WWII Additional Hospital Facilities.

A 2015 photograph (Figure 12) shows the conditions almost identical to those that existed at CD during the 2016 survey. The image shows twelve new buildings including the Combined Support Maintenance Shop (Building 49150), Building 49050 (on the west side of the Armory building), and ten warehouses (Buildings 49198, 49201, 49202, 49203, 49204, 49205, 49206, 49208, 49209, and 49210). One warehouse (Building 49196) that was present in 2016 is not shown in this image. Building 49196 and 49198 are located within the area surveyed in 2013 (Blanchard et al. 2013). See Figure 3 and Table 2 for information on the buildings present within the CD Survey Area during the 2016 survey.

Another major change between 1995 and 2015 are the realignment of the southern end of Ruff Road and the construction of a new road connecting the southern end of the CD parking lot to Ruff Road. This road does not appear to have a name (no name is listed in the JBER Base Guide and no road signs were in place at the intersection at the time of the survey), but it is effectively an extension of Army Guard Road. As part of the realignment of Ruff Road, a section of the old road was converted into a paved trail. This involved removing one of the lanes of the original roadway. In addition, there has been an extension on the southern end of the CD building. At the time of the survey, this section of the building housed a detachment of the U.S. Coast Guard. The ca. 1993 communication antennas located near the southern end of the Armory (Building 4900), which are visible in Figure 11 have been removed and the addition to the building has encroached on one of the clearings.

Figure 13 shows the areas of disturbance visible in the historic images shown above and three additional photographs (taken in 2005, 2007, and 2009) that are not included in this report. This indicates that most of the sole use area, in the northern portion of CD has been cleared at some time after WWII. The majority of this disturbance has occurred as a result of the construction of the modern CD facilities, after 1993. This construction, particularly the construction of the modern USPFO and vehicle maintenance facilities, has obliterated the buildings associated with the WWII Additional Hospital Facility. The only evidence of the WWII Additional Hospital Facilities present during the 2016 survey (and visible in Figure 12) are elements of the WWII road system, which has been substantially altered. This included the section of Army Guard Road, directly south of the Davis Highway (which predates WWII) and the access roads for the USPFO warehouse buildings located on the west side of Army Guard Road.

As shown in Figure 13, the largest undisturbed area in the northern section of the sole use area was surveyed in 2013 (Blanchard et al. 2013). The southern portion of the sole use area and the entire joint use area, located in the southern portion of CD shows less disturbance. The most substantial development in this area are the original (post 1993) and modern alignments of Ruff Road, the unnamed road from the Armory parking lot to Ruff Road, and a system of linear clearings, first visible in a 1950 photograph (Figure 9). There are also two large cleared areas that appear to be gravel sources; one at the intersection of Ruff Road and the unnamed road and one in the southwest corner of the CD Survey Area. Both of these are visible in the 1995 photograph (Figure 11).

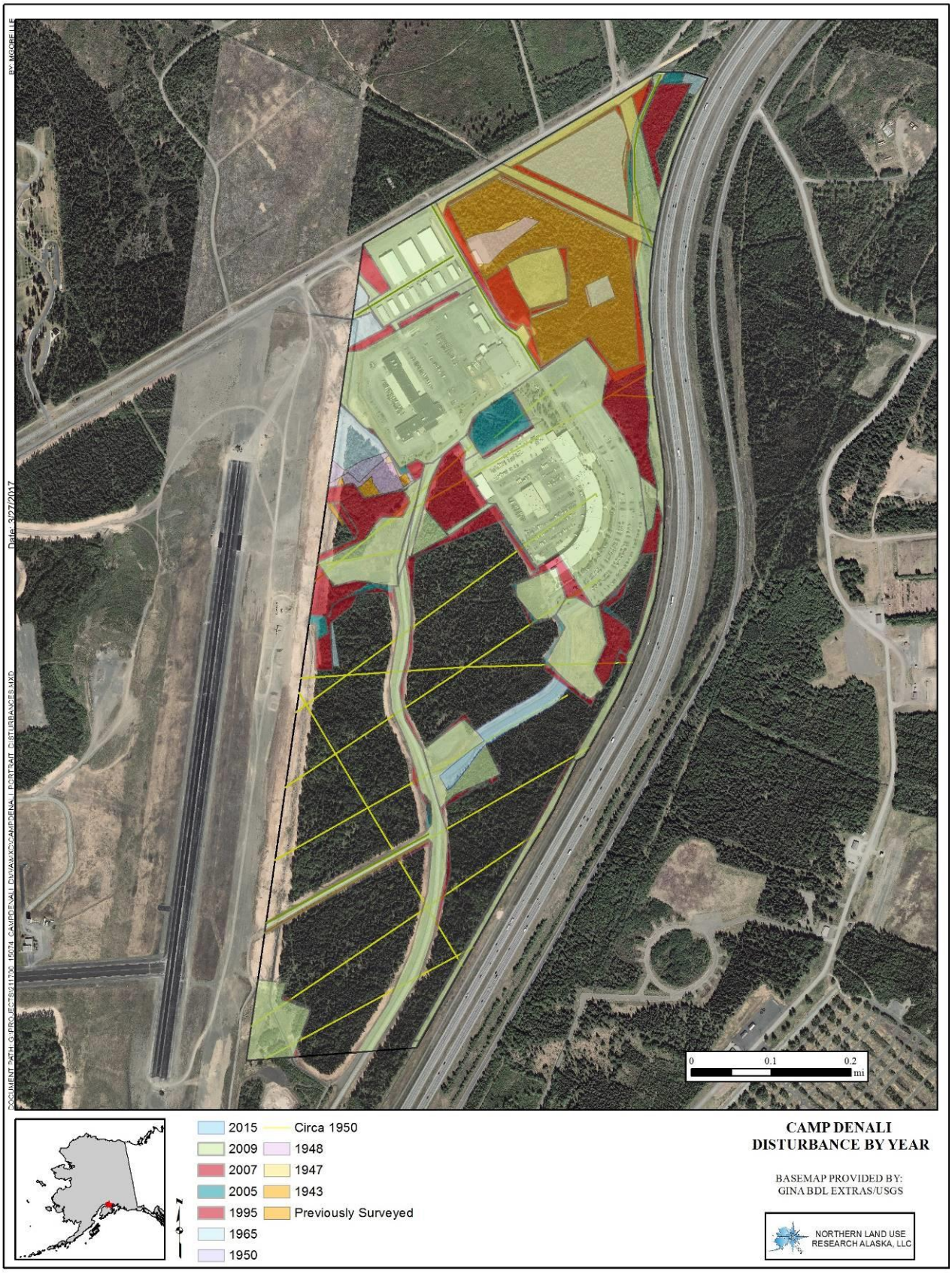

Figure 13. Disturbance and vegetation clearing within the CD Survey Area by year.

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5.0 2016 Survey Results

The 2016 survey of the CD Survey Area was carried out by NLURA Project Archaeologist Morgan Blanchard, Staff Archaeologist Michaela Phillips and GIS Technician Robert Clark on April 12, 13, and 14, 2016.

As noted in Section 2.2, a pedestrian survey was conducted of undeveloped lands within the CD Survey Area. The vegetation in the Survey Area was mixed taiga forest, dominated by an over-story of white spruce and birch. The damp or disturbed portions of the Survey Area, such as roads, previously cleared areas and trails are overgrown with alders or other deciduous trees. The understory of the Survey Area included grasses, wild rose, horsetail, high-bush cranberry, sphagnum moss, and occasional broad leaf shrubs. The ground cover significantly limited visibility of the soil surface during the survey. As a result, small artifacts located under the surface vegetation were under recorded. The topography of the Survey Area was generally flat. The weather on the three days of survey was overcast with occasional showers.

Blanchard returned to the CD Survey Area in March of 2017 to collect additional information about and take additional photographs of the vehicles on display with National Guard Memorial Park.

Figure 14. Cleared area and warehouses within the footprint of the WWII Additional Hospital Facilities. Building 49205 is on the left in the foreground, the white warehouses in the back ground are buildings 49208, 49209, and 49210 (from left to right). Building 49150 in visible behind 49210.

No historic structures or structural remains were located within the CD Survey Area in 2016. The survey conducted within the footprint of the WWII Additional Hospital Facilities found no trace of the structures associated with the hospital. The ground had been cleared and showed

evidence of disturbance with heavy equipment and warehouses have been built over the footprint of the hospital (Figure 14). There was limited evidence of the WWII era hospital road system, see Section 5.4 for details.

The 2016 survey located a number of areas devoid of vegetation. These areas corresponded with disturbance visible in the historical aerial imagery and synthesized in Figure 13. These large cleared areas were considered to be modern non-site features, associated with guard activities and were not assigned AHRS numbers. These cleared areas are visible in the figures presented below, but will receive no further analysis in this report.

The 2016 survey located a large amount of modern garbage, particularly along the boundary fence along the Glenn Highway. The majority of this garbage was light weight (primarily plastics) and appeared to have been blown over the fence from the Highway. This material was not recorded or mapped during the survey.

Figure 15. Sample of garbage recorded along the Glenn Highway fence in 2016.

In keeping with the Level I survey of BAAF and CC, the features and artifacts located during the 2016 survey of the CD Survey Area were divided into categories. For CD, these include mobile artifacts, excavated areas, trash scatters, features, and isolated artifacts, and roads/trails. The location and description of the features and artifacts located during the 2016 survey of the CD Survey Area is detailed in tables and on maps below.

5.1 Mobile Artifacts

The 2016 survey recorded a Lockheed T-33A Shooting Star, an M-41A3 Walker Bulldog tank, two M-113 Armored Personnel Carriers (APCs), a Sikorsky CH-54B Tarhe helicopter, and an

M-151 MUTT located within the National Guard Memorial Park (at the intersection of Army Guard Road and Ruff Road) (Table 6). None of these vehicles are visible in the 1995 aerial photograph of CD (Figure 11).

All of these vehicles were on static display, in some cases sitting on concrete pads or supported in stands to lift them off the ground. Some of the vehicles have interpretive panels. As such, this was considered to be an outdoor museum designed to curate and interpret vehicles associated with the AKNG. As such, none of these vehicles were assigned AHRS numbers.

Table 6. Mobile Artifacts on display in National Guard Memorial Park

Map Label	*Lat / Long**	*Description*	*Figure*
T-33A	61.27234 / -149.6397	T-33A Lockheed Shooting Star	Figure 16
M-41A3	61.2724 / -149.6398	M-41A3 Walker Bulldog	Figure 16
M-551	61.27219 / -149.6407	M-551 Sheridan	Figure 19
M-113 (1)	61.27166 / -149.6389	M-113 APC	Figure 20
M-113 (2)	61.27161 / -149.6422	M-113 APC	-
CH-54B	61.27189 / -149.6415	CH-54B Tarhe (Sky Crane)	Figure 21
M-151	61.2713 / -149.6419	M-151 MUTT	Figure 22

* NAD 83

Figure 16. Lockheed T-33A and M-41A3 on display in the National Guard Memorial Park.

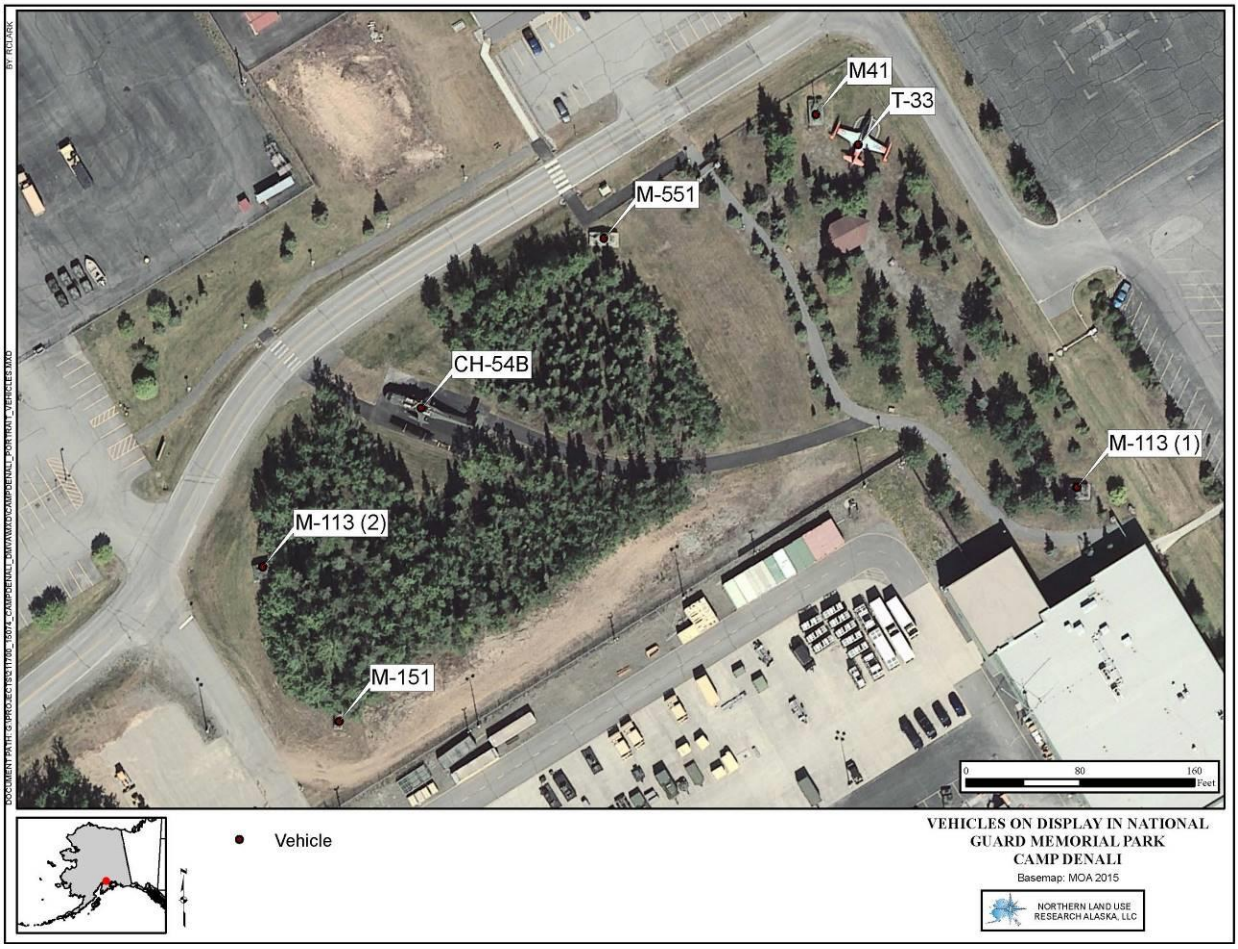

Figure 17. Map of Vehicles on display in National Guard Memorial Park.

Figure 18. Sample of interpretive panel for the vehicles at National Guard Memorial Park on CD.

5.1.1 Lockheed T-33A

The Lockheed T-33A was a derivation of the P-80, which was the first operational jet used by the U.S. The P-80 saw combat in Korea, but was replaced by more advanced fighters like the F-86. There were a number of developments of the P-80 and over time, the designation for the aircraft was changed from P (pursuit) to F (fighter) and it was renamed the F-80 (Alex 2016). The aircraft on display (tail number ANG 35403) (Figure 16) is a T-33A, which was the training variation of the P-80/F-80. The T-33 was a two-place jet designed to transition pilots from propeller driven aircraft to jets. To make room for a second seat, the T-33 was approximately three feet longer that the P-80/F-80. The T-33 made its first flight in 1948 and production continued until August 1959. During this time, 5,691 T-33s were built. In addition to training, T-33s were used to direct drones and for target towing. Many T-33s were sold to foreign countries under the Military Aid Program. Some of these aircraft have been upgraded and are still in use with foreign air forces (Skaarup 2001).

Serial number 35403 was assigned to the Alaska Air Command at EAFB. Ca. 2001, it was on display at Kulis Air National Guard Base (at Ted Stevens International Airport, painted in Anchorage), painted in the air defense markings of the 1970s (Skaarup 2001). According to Major Haller, 35403 was sent to CD after the closure of Kulis Air National Guard Base in 2011. The aircraft is not visible in a 2009 aerial photograph of CD, which is not included in this report. The aircraft is currently painted in AKNG markings and has the insignia of the 144th Fighter Intercept Squadron, AK-AFNG. This unit was designated the 144th Air Transportation Squadron in 1957. Now called the 144th Airlift Squadron, the unit is still part of the AK-AFNG and is stationed at JBER. The interpretive panel next to 35403 includes the dates "Oct 1953 – Jul 1957, which corresponds to the dates when the 144th Fighter Intercept Squadron flew T-33 aircraft.

5.1.2 M-41A3 Walker Bulldog

The M-41A3 Walker Bulldog began production in 1951 and completely replaced the older M-24 Chaffee light tank in the USA by 1953. The M-41 was a light tank and was designed to be air transportable. It saw service during the Korean War and Vietnam War. It was largely replaced in the USA inventory in the late 1960s, though some remained in service into the early 1990s (Hughes 2011). The vehicle on display is an M-41A3 (Figure 16), which indicates that it had been upgraded to a fuel injected Cummins diesel engine (MilitaryFactory.com 2016b). The M-41 saw service with the AK-ARNG (Salisbury 1992) but no information about the history of the M-41 on display was identified.

5.1.3 M-551 Sheridan

The M-551 Sheridan was an Armored Reconnaissance/Airborne Assault Vehicle that entered service with the USA in 1967 and was retired from active USA service in 1996, but were retained for training. A number were modified and used as opposition force vehicles at the National Training Center until 2003. 1,562 M-551s were constructed between 1966 and 1970 and they saw service in Vietnam, Desert Shield and Desert Storm and the invasion of Panama. The M-551 was designed to fire both a unique (for American tanks) caseless ammunition and the MGM-51 Shillelagh guided anti-tank missile. However, the MCM-51 was both expensive and fragile and was never deployed during the Vietnam War. The M-551 has an aluminum hull and a steel turret, which made it relatively vulnerable to mines and rocket propelled grenades. This

lead to high losses and casualty rates among M-551 crews during the Vietnam War (MilitaryFactory.com 2016a).

M-551s were used by the AK-NG, though the dates of service are unclear (Salisbury 1992). The M-551 on display has the name "Thunder Lizard" painted on it (Figure 19). The history and date of manufacture of this particular vehicle is unknown.

Figure 19. M-551 Sheridan "Thunder Lizard" on display in National Guard Memorial Park in March 2017.

5.1.4 M-113 APC

The M-113 APC came into service in 1961 and variants continue in service today. The M-113 saw service with the AK-ARNG. Because M-113s remain in service and are not rare, the two vehicles on display were considered to be modern and not assigned an AHRS number.

Figure 20. M-113 APC (1) on display in National Guard Memorial Park in March 2017. Note the small interpretive panel on a pole to the left of the vehicle.

5.1.5 CH-54B Tarhe

The CH-54 Tarhe (more popularly known as the Sky Crane) was developed as a heavy lift helicopter during the early 1960s. The CH-54B went into production in 1969 and the USA purchased 25 of them (Helis.com 2017). The aircraft had a maximum external payload of 12 tons. CH-54s saw extensive service during the Vietnam War and were retired from the USA inventory in 1991 (Military-today.com 2017). CH-54Bs saw service with AKNG and their unique capabilities made them extremely useful for a variety of tasks. For example, two AKNG CH-54B aircraft received wide publicity in 1988 when they participated in Operation Breakthrough, an effort to free three California Gray Whales trapped in the ice near Barrow, Alaska. During this effort, the helicopters tried to tow an icebreaking barge to clear a path for the whales to escape (Salisbury 1992). Although this effort was ultimately unsuccessful, the efforts of the helicopters and their crews were featured prominently in the 2012 motion picture "Big Miracle," which dramatized the event.

The CH-54B in display (Figure 21) is serial number 64-096 (registration number 70-18488) and has the name "Isabelle" stenciled on the nose. According to an online database of CH-54 aircraft in USA Aviation (Helis.com 2017), this aircraft was built in 1970 and was originally delivered to the USA. During a test in 1971, this aircraft lifted 20.4 tons. The aircraft was subsequently transferred to the AKNG.

Figure 21. CH-54B Tarhe helicopter "Isabelle" on display in the National Guard Memorial Park.

5.1.6 M-151 MUTT

According to an online history of the M-151(Tired-iron 2017), the M-151 Military Unit Tactical Truck (MUTT) began to replace the M-38 production in 1960 and variants continued in production until 1978. It saw extensive use by the military forces of the US, including service in the Vietnam War. The design went through several major developments because of its tendency to roll over. These developments were only marginally successful in solving the stability problem and the vehicle was replaced in the early 1980s by the High Mobility Multipurpose Wheeled Vehicle, popularly called the Humvee. The M-151 on display is painted with the markings of the Headquarters Company, 5th battalion of the 297th Battlefield Surveillance Brigade, AK-ARNG. Although the stability issues caused many M-151s to be destroyed, rather than sold after they were taken out of military service, they are commonly encountered in private hands. As a result, the M-151 was treated as modern and not assigned an AHRS number.

Figure 22. M-151 on display in the National Guard Memorial Park. Note that the vehicle is resting on pipes imbedded in the concrete pad.

5.2 Excavated Areas

Fifty-eight individual excavated areas were recorded during the 2016 Level I survey of CD (Table 7 and Figure 23). Forty-three of these were interpreted as foxholes, defined as oblong excavated features up to approximately 3 meters (m) in length and up to approximately 2 m in width. The foxholes recorded in CD were similar to foxholes recorded during the survey of CC and BAAF (Blanchard 2014; Guilfoyle and Stern 2012), and the CD USPFO (Blanchard et al. 2013).

The 2016 survey of the CD Survey Area found no large distinct foxhole assemblages, such as those recorded during the survey of BAAF (Blanchard 2014; Guilfoyle and Stern 2012). While some of the foxholes recorded were in association whith each other (for example F25 and F33), they were not part of an identifiable larger defensive line. Most of the identified foxholes were at least partially filled in and overgrown with ground cover. These were considered to be historic, and were interpreted as remnants of past USA or AKNG training. Four foxholes (F1, F2, F23, and F24) showed evidence of recent excavation and/or incorporated modern materials, including plastic, sandbags, and wood pallets. These were interpreted as evidence of modern training within the CD Survey Area.

Ten of the remaining depressions appeared to be fighting holes. These were larger than the depressions classified as foxholes. Some of these had features or a layout associated with prepared defensive positions. For example, D1 is "U" shaped, which is a layout associated with fighting holes intended to hold a crew served weapon (such as a machinegun) (War Department 1940).

One large excavated area (D16) was identified during the 2016 survey of the CD Survey Area. Similar large excavated areas recorded during the survey of CC and BAAF (Blanchard 2014; Guilfoyle and Stern 2012), the CD USPFO (Blanchard et al. 2013), on JBER during a Level I survey of the Raptor Transmission Line (Blanchard 2012) and during surveys associated with the relocation of the Alaska Railroad rail line on JBER (Shaw 2000) were interpreted as tank sheltering pits. D15 was not identifiable on the known historic aerial photographs.

The remaining depressions could not be identified as to function and there is no evidence to show that they were excavated for defensive purposes. However, it is likely that all of these features have been used for cover during training exercises.

None of the excavated areas recorded during the 2016 survey of the CD Survey Area were assigned AHRS numbers.

Table 7. Excavated areas located during the 2016 survey of Camp Denali.

Map Label	*Lat / Long**	*Description*
D1	61.263495 -149.646429	"U" shaped depression (fighting hole) approximately 2 m x 2 m, and 18 centimeters (cm) deep.
D2	61.262688 -149.650031	Rectangular depression 3.3 m x 7.3 m.
D3	61.270893 -149.64558	Rectangular depression approximately 3 m x 30 m, and approximately 2 m deep.
D4	61.27123 -149.646201	Approximately 4 m x 4 m depression (fighting hole), and 1.5 m deep.
D5	61.267446 -149.646158	Depression (fighting hole) approximately 2 m x 3m.
D6	61.265641 -149.648509	Depression (fighting hole) with associated sheet metal approximately 2 m x 2 m.
D7	61.264458 -149.64654	Depression (fighting hole) approximately 4 m x 4 m, and 1.5 m deep.
D8	61.265648 -149.647031	Depression (fighting hole) 3 m x 3 m, and 3 m deep.
D11	61.262236 -149.644708	Depression (fighting hole) 3 m x 2.2 m, and 85 cm deep.
D12	61.262674 -149.644475	Depression (fighting hole) 2.6 m x 1.7 m, and 75 cm deep.
D13	61.264058 -149.643163	Linear trench approximately 20 m long.
D14	61.263958 -149.6437	Depression (fighting hole) approximately 3 m x 3 m, and 50 cm deep.
D15	61.266043 -149.64216	Depression (fighting hole) approximately 4 m x 1.7 m, and 1 m deep. There is dimensional lumber in this depression.
D16	61.264874 -149.649242	Approximately 10 m x 10 m square, and 2 m deep depression with a push pile to the SW and trash in the bottom. Trash includes a 55-gallon drum, wood timbers, steel cable, cans, and an ammo can stenciled "250 Cal .30 Belted 4AP 1TR REP'K'D LOT 1-C-B 900856."
D17	61.269139 -149.643452 To 61.269159 -149.644131	Large depression, interpreted as a tank pit. Approximately 15 m wide, and 2-3 m deep. Trench is sloped at each end.

Map Label	*Lat / Long**	*Description*
F1	61.268848 -149.646715	Foxhole located on top of a push pile with modern plastic and sandbags. Approximately 2 m x 3 m. Appears to be modern.
F2	61.268365 -149.646077	Foxhole approximately 50 cm x 75 cm, and 40 cm deep.
F3	61.268417 -149.646038	Foxhole approximately 75 cm x 1 m, and 40 cm deep.
F4	61.26549 -149.649299	Foxhole approximately 1 m x 1.5 m, and 40 cm deep.
F5	61.261908 -149.644802	Foxhole 1.7 m x 1.2 m, and 50 cm deep. There appears to be an entrance trench on the NW side.
F6	61.264223 -149.641583	Foxhole approximately 1 m x 70 cm, and 40 cm deep.
F7	61.266366 -149.640184	Foxhole approximately 1 m x 2 m, and 50 cm deep.
F8	61.266449 -149.640278	Foxhole approximately 2 m x 1 m, and 30-40 cm deep. A barbed wire stake was adjacent to this hole.
F9	61.26642 -149.640201	Foxhole approximately 2 m x 1 m, and 30-40 cm deep.
F10	61.266371 -149.640129	Foxhole approximately 2 m x 1 m, and 30-40 cm deep.
F11	61.266207 -149.640679	Foxhole approximately 2 m x 1 m, and 30-40 cm deep.
F12	61.266261 -149.640639	Foxhole approximately 1 m x 1 m, and 30-40 cm deep.
F13	61.2662 -149.640782	Foxhole approximately 1.5 m x 1 m, and 30-40 cm deep.
F14	61.265986 -149.641235	Foxhole approximately 1.5 m x 1 m, and 30-40 cm deep.
F15	61.265032 -149.642399	Foxhole approximately 1.5 m x 1 m, and 50 cm deep.
F16	61.264422 -149.642925	Foxhole approximately 3 m x 1.5 m, and 50 cm deep.
F17	61.264363 -149.643599	Foxhole approximately 1.8 m x 2 m, and 50 m deep.
F18	61.263867 -149.643732	Foxhole approximately 2.5 m x 1.5 m, and 50 cm deep.
F19	61.264523 -149.643564	Foxhole approximately 1 m x 70 cm, and 40 cm deep.
F20	61.265895 -149.641794	Foxhole approximately 2 m x 2 m, and 1.5 m deep.
F21	61.269144 -149.641656	Foxhole approximately 1.5 m x 1.5 m, and 60 cm deep.
F22	61.264363 -149.643599	Foxhole approximately 1.8 m x 2 m, and 50 cm deep.
F23	61.270217 -149.644061	Collapsed foxhole located in a push pile. Partially covered with a modern pallet and plastic.
F24	61.266561 -149.641902	Collapsed foxhole located in a push pile. Partially covered with a modern pallet.
F25	61.266887 -149.640193	Cluster of three foxholes within a 10-m radius. All three are approximately 1 m x 1 m, and 50 cm deep.

Map Label	*Lat / Long**	*Description*
F26	61.265899 -149.646567	Foxhole 2 m x 1.25 m, and 95 cm deep.
F27	61.266064 -149.647069	Foxhole 1 m x 1.6 m, and 60 cm deep.
F28	61.265922 -149.648326	Foxhole 1.2 m x 3m, and 48 cm deep.
F29	61.265537 -149.647836	Foxhole 2 m x 1 m, and 70 cm deep.
F30	61.265407 -149.646648	Foxhole 1.7 x 70 cm, and 50 cm deep.
F31	61.264901 -149.641657	Foxhole 2.6 m x 1.5 m, and 50 cm deep.
F32	61.264885 -149.642032	Foxhole 2 m x 1.8 m, and 50 cm deep.
F33	Between 61.263508 -149.646809 and 61.263374 -149.647319	Line of 9 foxholes approximately 1.5 m long, 50 cm wide, and 30-40 cm deep.

* NAD 83

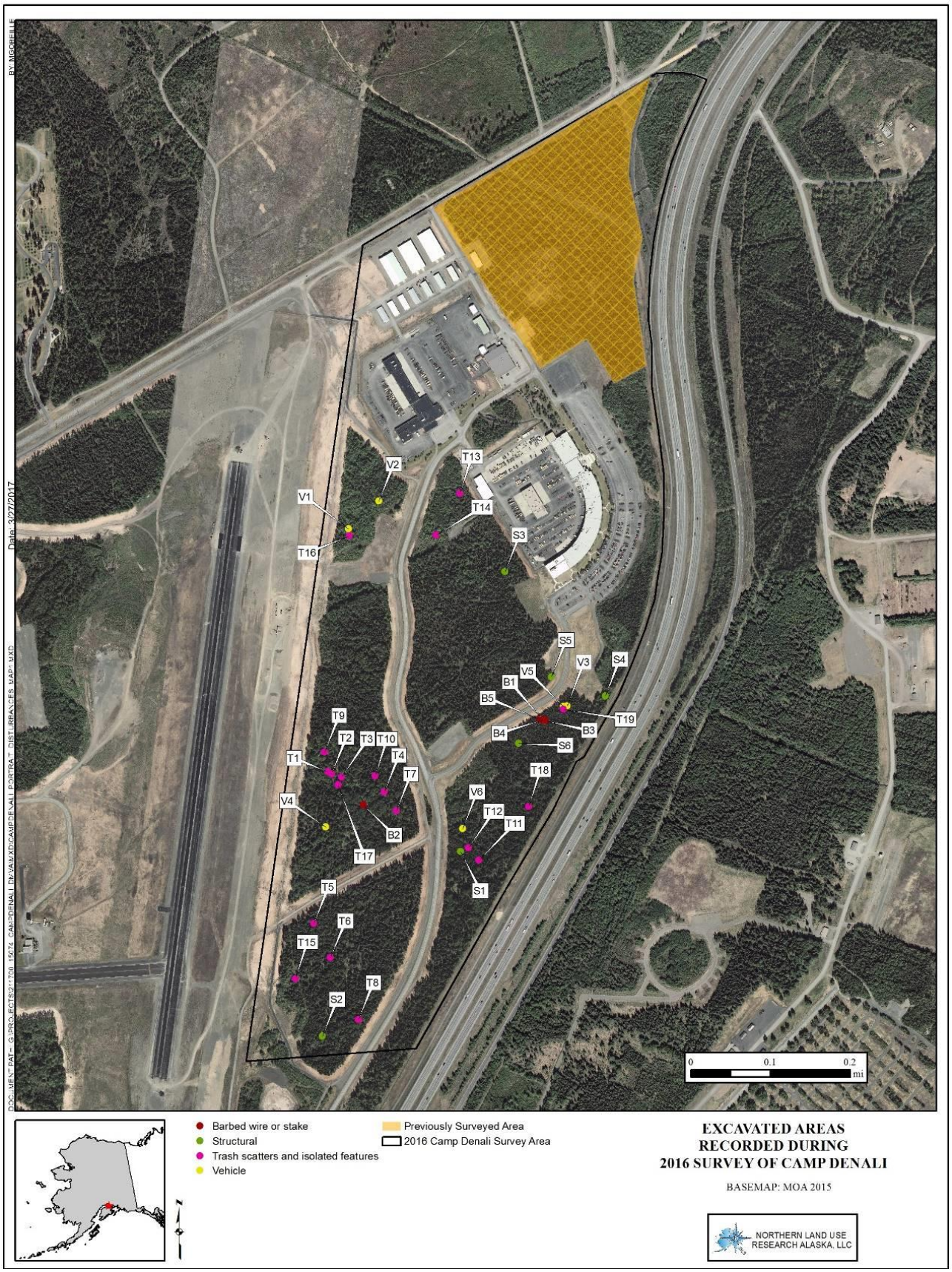

Figure 23. Excavated areas recorded during the 2016 survey of Camp Denali.

Figure 24. Sample over grown foxhole, one of the nine included in F27.

Figure 25. Sample depression, D7.

Figure 26. Foxhole utilizing modern materials, F18.

Figure 1. Looking roughly north across the "tank pit," D14. Michaela Phillips is visible on the opposite side of the trench for scale.

5.3 Trash Scatters and Isolated Features/Artifacts

Thirty-six trash scatters or isolated features/artifacts were recorded during the 2016 survey of CD (Table 8 and Figure 28). With the exception of six assembled features (referred to as structures in this report), all of these features/artifacts appeared to be the result of intentional disposal. All of the trash scatters and isolated artifacts are consistent with the materials found in previous surveys of the CC, BAAF (Blanchard 2014; Guilfoyle and Stern 2012), and the CD USPFO (Blanchard et al. 2013). According to Major Haller, in the past, dumping trash in the woods was a known method of disposal in the AKNG. Such disposal was not official policy and was less common in more recent years.

For the purposes of this report, the trash scatters and isolated artifacts were broken into four categories; trash, vehicle related artifacts, barbed wire related artifacts, and structures. None of the trash scatters and isolated features/artifacts recorded in the 2016 survey of CD were assigned AHRS numbers

Table 8. Trash scatters and isolated features/artifacts located during the 2016 survey of Camp Denali.

Map Label	*Lat / Long**	*Description*
T1	61.265704 -149.648495	1-gallon paint can with bullet holes.
T2	61.265661 -149.648373	Square can with a round friction top, with bullet holes.
T3	61.265589 -149.647997	55-gallon drum.
T4	61.265273 -149.64643	Steel flat top Pabst Blue Ribbon beer can.
T5	61.262992 -149.649408	Unknown artifact consisting of concentric iron rings, approximately 2.5 m across. Painted yellow.
T6	61.262356 -149.64886	Two disintegrating links for a .30 caliber belt fed machinegun. No maker's marks.
T7	61.264924 -149.64602	Deteriorating wooden crate made from 2x4s and plywood. This crate is approximately 21 inches (in) x 21 in, and 40 in long.
T8	61.261215 -149.647955	Trash scatter, including dimensional lumber, a 5-gallon can, a wood box, and a rope tied to a tree.
T9	61.26606 -149.648578	Approximately 8 m x 4 m trash scatter.
T10	61.265576 -149.646733	Three 55-gallon drums with pipes and valves connected to them. One drum is embossed "USS" in a circle (United States Steel) and "8-55."
T11	61.263937 -149.643032	Scatter of dimensional lumber that appear to be shelving units.
T12	61.264167 -149.643387	Lumber debris, possible shelving units.
T13	61.270552 -149.642833	Two 55-gallon drums.
T14	61.269832 -149.64384	Trash scatter containing concrete fragments and culvert pipes.
T15	61.262018 -149.650237	Pile of seven 2x4s.
T16	61.269918 -149.647103	Push pile with associated artifacts including a 55-gallon drum lid, wire and angle iron.

Map Label	*Lat / Long**	*Description*
T17	61.265455 -149.648136	Trash Scatter consisting of stove flumes, M-1941 stove parts, ammunition crates, electrical cable, a firefighting back pack stenciled “26 ORDINANCE CO”, and 55-gallon drums.
T18	61.264839 -149.641021	55-gallon drum embossed "MYERS l" "ICC-58" " 16-55-59-3" and a stencil on the side reading “GASOLINE AUTOMOTIVE COMBAT MIL-G-3056 [illegible] ARMY-12 [illegible] QM-61-9-spp-4 [illegible].”
T19	61.266395 -149.640078	5-gallon bucket that smelled like grease. OD green embossed "EN-EL-CU / STC / 24-5-55 / ICC37D 80 / ST LOUIS MO" on bottom.
S1	61.264111 -149.643698	Two wooden posts 3 in x 6 in. One post was embedded into the ground, the other is on the ground.
S2	61.260958 -149.649351	Frame for improvised shelter built from poles, nails, and parachute cord.
S3	61.269696 -149.643081	Improvised shelter frame made from poles and wire, approximately 3 m x 3 m.
S4	61.266597 -149.639451	Modern concrete bock with a loop and four bolts located on a sloped side.
S5	61.266154 -149.642818	Modern concrete bock with a loop and four bolts located on a sloped side.
S6	61.264872 -149.642543	Modern wooden training stand (sign base).
B1	61.266392 -149.640378	Wire stake next to foxhole.
B2	61.265064-149.647232	Spool of barbed wire.
B3	61.266384 -149.640247	Barbed wire and wire stake.
B4	61.266386 -149.640263	Barbed wire and wire stake.
B5	61.266449 149.640278	Barbed wire and wire stake next to a foxhole.
V1	61.270049 -149.647121	Unidentified aluminum airplane part, partially buried.
V2	61.270511 -149.645902	Unidentified small aluminum door marked “EXIT PLEASE PULL UP FOR EMERGENCY,” “INSULATION PANNEL,” “EMERGENCY EXIT,” and possibly “43E 4200.”
V3	61.266603 -149.63931	Tailgate for military vehicle, painted OD green with a stenciled white star and “US ARMY.” The serial number on this artifact has been intentionally scraped off.
V4	61.264713 -149.648713	General Motors Powerglide transmission (1950-1973).
V5	61.266548 -149.639462	OD green vehicle light.
V6	61.269906 -149.642869	Top of truck cab, painted OD green.

* NAD 83

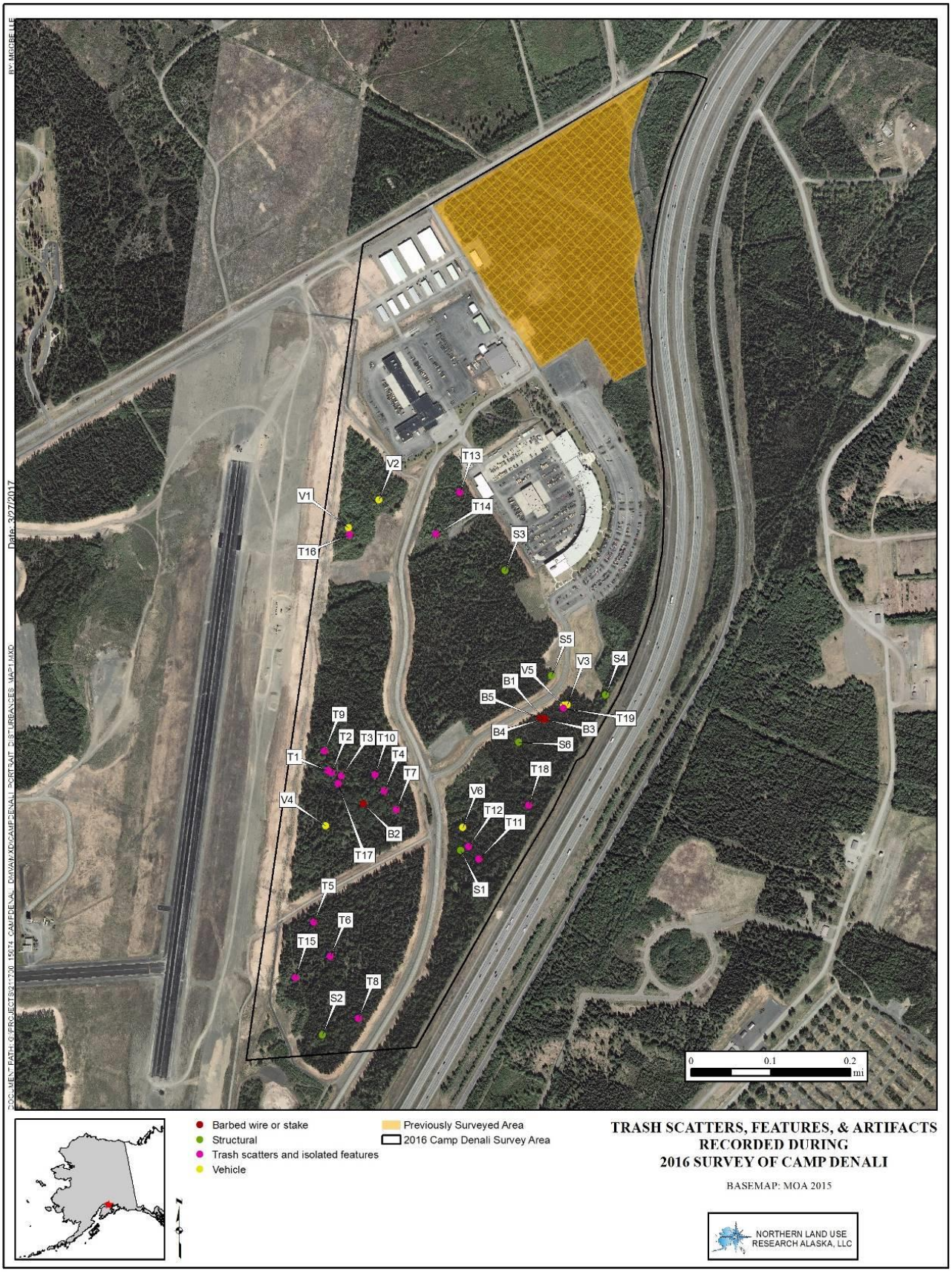

Figure 28. Trash scatters and isolated features/artifacts recorded during the 2016 survey of Camp Denali.

5.3.1 Trash

Many of the identified artifacts classified as trash had characteristics indicating that they were associated with the U.S. military. For example, one trash scatter (T17) contained stovepipes, multiple M-1941 stoves (Department of the Army 1969), an unidentified object (possibly a fire fighting backpack) marked "26 ORDINANCE CO," rubber hoses and olive drab (OD) green 55-gallon drums. T18 is an OD green 55-gallon drum with military stencils on the side.

Figure 29. Sample trash scatter (T17) located during the 2016 survey of Camp Denali.

Other artifacts could not be directly tied to the military. For example, T11 and T12 appear to be decomposing wooden shelving units and T4 is an isolated, steel, 12 ounce, flat top, Pabst Blue Ribbon (PBR) can (Figure 30), opened with a church key. These artifacts are not inconsistent with military activities or the actions of members of the military.

The cylindrical flat top beer can was introduced to the commercial American market in 1935 along with "church-key" openers used to pierce their tops. Although rusty, the lithography on T4 is clear enough to show the red stripe added to the PBR label in 1958 to celebrate Pabst's production of its 100 millionth barrel of beer (Clements 2010). All steel beer cans were gradually replaced with aluminum cylindrical beverage cans with pull-tab tops in the mid-1960s (Martells 1976). By 1965, 75% of all cans produced in American had some sort of easy opening top (Beer Can Collectors of America 2001). As such, T4 dates between 1958 and the late 1960s.

Beer cans of similar vintage were located in a foxhole on BAAF in 2013, and there is some information to indicate that they were associated with members of the military, either active duty or AKNG (Blanchard 2014).

Figure 30. Steel flat top Pabst Blue Ribbon can (T4)

5.3.2 Vehicle Related Artifacts

Six artifacts identified during the 2016 Survey of CD were related directly to a vehicle. This included two parts from an aircraft (V1 and V2), the tailgate of a military vehicle with the unit markings and serial number intentionally scrapped off (V3) (Figure 33), a Powerglide transmission (V4), an OD green vehicle light (V5), and the cut off roof of an OD green pickup truck (V6).

The Powerglide transmission was used on General Motors vehicles between 1950 and 1970 (Neidermeyer 2012). It is unknown if the Powerglide transmission was ever used in military vehicles, but the other automotive related artifacts recorded during the 2016 survey are consistent with military vehicles.

The two aircraft parts are an unidentified piece of aircraft made of aluminum (V1) (Figure 31) and a small heavily corroded aluminum emergency door (V2) (Figure 32). It is unclear of these artifacts were dumped, or, in the case of V2 came off an aircraft in flight.

Because V1 appears to be a structural element, it is unlikely that it fell off an aircraft in flight. Since no other traces of similar material were identified during the survey, it is likely that V1 was dumped, though it is possible that it was unrecovered debris from an air crash.

Figure 31. Unidentified fragment of aircraft (V1) located during the 2016 survey of Camp Denali.

Figure 32. Small heavily corroded aircraft emergency door (V2) recorded during the 2016 survey of Camp Denali.

Figure 33. Tailgate from a military vehicle (V3) showing the scratched off serial number and unit markings.

5.3.3 Barbed Wire Related Artifacts

Five items (B1-B5) (Figure 34) recorded during the 2016 survey of CD were associated with barbed wire. This included four ferrous barbed wire stakes, with associated barbed wire, and an isolated spool of barbed wire. The barbed wire stakes were located near foxholes.

Although originally developed for use in fencing in livestock during the nineteenth century, barbed wire has seen extensive use by the U.S. military since WWI both in training and combat.

5.3.4 Structures

The 2016 survey of CD located four "structures." These included two pieces of milled lumber, one embedded in the ground (S1), two improvised shelter frames (S2 and S3) (Figure 35), two large concrete blocks (S4 and S5) (Figure 41), that have one sloping side with projecting bolts, and a wooden training sign or stand (S6).

It is unclear what function the milled lumber imbedded in the ground (S1) had, but they are presumed to be the remains of training sign of stand, similar to S6. Similar features with training signs attached were recorded on CC (Blanchard 2014). No such signs were present on S1 or S6.

The shelter frames (S2 and S3) are similar to ones encountered during the surveys of CC and BAAF (Blanchard 2014; Guilfoyle and Stern 2012), and the CD USPFO (Blanchard et al. 2013), and are associated with military training activities.

According to Major Haller, the concrete blocks (S4 and S5) are associated with the antenna array that was constructed on the southern end of the CD Armory (49000) ca. 1993. The blocks showed minimal weathering, and based on Major Haller's information they were considered to be modern.

Figure 34. Barbed wire attached to a barbed wire stake.

Figure 35. Improvised shelter frame made from poles and wire (S3).

Figure 36. One of two concrete blocks (S4) associated with a modern communications array located during the 2016 survey of CD.

5.4 Roads and Trails

The 2016 survey of CD identified several roads and trails within the CD survey area (Table 9). These included a bypassed section of the Glenn Highway, a grid pattern of trails first visible in a 1950 aerial image of the CD Study Area, the northern section of Army Guard Road which, along with an unnamed road (referred to in this report as Old Hospital Road) is related to the WWII era hospital, an old alignment of Ruff Road, and a significant trail first visible in 1950.

Table 9. Roads and Trail identified during the 2016 survey of Camp Denali.

Map Label	*Lat / Long**	*Description*
Old Glenn	See map	Bypassed section of the Glenn Highway
Grid Pattern	See map	Ca. 1950 grid pattern within the trees
Army Guard Road	See map	Army Guard Road
Old Hospital Road	See map	Old Hospital Road
Old Ruff Road	See map	Old Ruff Road alignment
Ca. 1950 Trail	See map	Ca. 1950 Trail

* NAD 83

Figure 37. Roads and trails recorded during the 2016 survey of Camp Denali.

5.4.1 Bypassed Segment of the Glenn Highway

The CD Survey Area included a small section to the east of the area previously surveyed in 2013 (Blanchard et al. 2013). This section included a small paved bypassed segment of the Glenn Highway for this report. The approximately 1,200-foot long bypassed road section is first visible in 1965 aerial photograph (Figure 10). In this image, the road does not appear to be paved and it appears to connect the new alignment of the Glenn Highway with the Davis Highway. It is possible that the road is an early alignment of the Glenn Highway, but it may also have been an access road used during the construction of the Glenn Highway. At the time of the survey, there was a berm placed across the southern end of the bypassed road section to prevent access to the road from the Glenn Highway. At the northern end, a fence blocks access to the Davis Highway, though the bypassed road section was accessible by vehicles driving along the south side of the fence.

The terrain around this bypassed road section showed evidence of previous disturbance from heavy equipment and was covered in relatively young deciduous trees. No sites, features or artifacts were located within this portion of the CD Survey Area. The bypassed road section was not assigned an AHRS number.

Figure 38. Looking southeast along the bypassed section of the Glenn Highway, within the CD survey Area

5.4.2 Army Guard Road

The northern portion Army Guard Road, between the Davis Highway and the intersection of Ruff Road (a distance of approximately 1,300 feet) follows the road that formed the eastern boundary of the WWII Additional Hospital Facility. During the 2016 survey, Army Guard Road

was a modern paved road. With the exception of an unnamed road (called the Old Hospital Road in this report) the rest of the WWII era road system for the Additional Hospital Facility has been destroyed by development associated with the modern development of CD. Because the northern portion of Army Guard Road is only a fragment of the WWII era hospital road system, and has been upgraded to modern road standards, it was not assigned an AHRS number.

5.4.3 Old Hospital Road

Approximately 750 feet of unnamed road running parallel to the Davis Highway, on the south side of Buildings 49201, 49203, and 49205 (Figure 38) is located in the approximate location of a road that appears in all the historic aerial photographs of the WWII Additional Hospital Facility (Figure 7 through Figure 10). This road, along with the northern portion of Army Guard Road, were the only physical traces of the WWII Additional Hospital Facility. However, the 2016 survey showed that the Old Hospital Road was a modern road constructed to provide access to the warehouses located within the footprint of the WWII Additional Hospital Facilities. As such, the road was considered modern and not assigned an AHRS number.

Figure 39. Looking northeast along an unnamed road providing access to the warehouses built in the area of the WWII Additional Hospital Facilities. This road corresponds to one of the roads visible in historic aerial imagery of the Additional Hospital Facilities (Figure 7 through Figure 10).

5.4.4 Old Ruff Road Alignment

Analysis of the aerial photographs identified approximately 1,200-foot section of an old alignment of Ruff Road (Figure 39), which in 2016 had been turned into a running path connecting a sidewalk on the west side of the new alignment of Ruff Road with a paved path on

the east side of the BAAF boundary fence. Conversion of the old alignment of Ruff Road to a running path involved removal of one lane of the original road.

A review of the available aerial photography indicates that the realignment of Ruff Road occurred ca. 2007 and the original road appears to have been constructed after the AKNG acquired the lease for the property in 1976. As such, both the new and old alignments of Ruff Road within the CD Survey Area are modern and were not assigned AHRS numbers.

Figure 40. Looking roughly west along the old alignment of Ruff Road towards BAAF.

5.4.5 Ca. 1950 Grid Pattern

The grid system first visible in the 1950 aerial photograph (Figure 9 and Figure 41) is clearly identifiable in the 2015 aerial photograph used as a base layer for Figure 36. This grid extends over a large portion of FR and only a small portion of this grid is located within the CD Survey Area. In 2016, remnants of this grid were clearly visible as a gap in the trees in the undisturbed / forested areas within the CD Survey Area. In some areas, this gap was associated with the remains of a graded gravel road or trail. Based on the information gathered from Major Haller, this grid may be associated with the WWII expansion of FR, but no documentation has been located to support this assertion. During the survey, a large number of artifacts and artifact scatters were located in proximity to this grid system, suggesting that it was used to access the wooded areas within CD, either for training purposes or to dispose of waste. According to Major Haller, this kind of disposal was not uncommon among guardsmen, though the practice declined over time.

Figure 41. Sample of Ca. 1950 grid system visible during the 2016 survey of Camp Denali.

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6.0 Summary and Recommendations

The background research identified five historic contexts under which the sites subjected to survey as part of this Project could potentially be eligible for listing on the NRHP: WWII (1941-1945); Cold War (1950-1951); historic military landscape (1941-1964).

All of the buildings currently on CD were constructed after 1976 and are considered modern.

The 2016 survey identified mobile artifacts, excavated areas, trash scatters and isolated artifacts, and roads and trails within the CD Survey Area. All but one of the features and artifacts recorded during the 2016 survey of the CD Survey Area are interpreted as having an association with historical activities of the USA and/or the AK-ARNG between 1941 and 2016. The exception is a bypassed segment of the Glenn Highway.

NRHP DOE recommendations for the features and artifacts recorded during the 2016 survey of CD are provided below.

No additional cultural resource survey within the 2016 CD Survey Area is recommended.

6.1.1 Mobile Artifact DOE Recommendation

Production of all of the aircraft and vehicles on display in National Guard Memorial Park began more than 50 years ago, but, with the exception of the T-33A Shooting Star, production and use of these vehicles continued into the modern era.

Structures (as the NRHP defines them) that are designed to be moved, such as aircraft, tanks, and other vehicles can be eligible for listing on the NRHP. Since the ability to move is integral to their significance, these structures do not have to be in their original location to be eligible, but they must be located in an appropriate setting (Milbrooke et al. 1998). While the T-33A is no longer in its primary setting (at an airfield), the rest of the vehicles are displayed within sight of the guard vehicle maintenance shops and close to the CD helipad. As such, they are in an appropriate setting.

However, the vehicles in National Guard Memorial Park are part of an outdoor museum. They are displayed on prepared pads or held off the ground and many have interpretive panels. The NRHP generally excludes museum objects from being listed, because determining objects in museum collections to be eligible would be redundant, and because museums are not the setting in which the structures achieved significance. However, individual mobile structures can be determined significant, despite their presence in a museum collection, if they have extraordinary significance (Milbrooke et al. 1998).

Since there is little or no information about the history of the individual vehicles on display in the National Guard Memorial Park, it is not possible to determine if they have the extraordinary significance required to make them eligible for listing on the NRHP. However, since the AKNG as a whole is not known to have participated in combat operations during the period when these vehicles were in use, it is highly unlikely that individual AK-NG vehicles would have such significance.

Based on this information, it is NLURA's recommendation that the mobile artifacts (structures) recorded during the 2016 survey of CD are not eligible for listing on the NRHP because they are in a museum setting.

6.1.2 Excavated Area DOE Recommendation

The 2016 survey of CD recorded fifty-eight excavated areas. These included foxholes, fighting holes, a tank pit, and depressions of unknown function. These were consistent with excavated areas encountered during other surveys conducted on JBER (Blanchard 2012, 2014; Blanchard et al. 2013; Guilfoyle and Stern 2012; Shaw 2000). Although some of these features were clustered, they were not part of an identifiable defensive line or larger defensive system. As such, they were interpreted as evidence of military training activities.

Foxholes and bunkers located during the Level II survey of AK-ARNG tenant lands at CD associated with the construction of a new USPFO facility (Blanchard 2012b) that were part of an identifiable defensive line were subsequently determined by the SHPO to be ineligible for listing on the NRHP (Bittner 2013).

The excavated areas recorded during the 2016 suvey of CD do not deomnstrate a clear association with WWII activities on FR, nor do they represent elements unique to the Army's role in the Cold War. As such, they are not eligible under the WWII or Cold War contexts developed for EAFB (Cook et al. 1999) and FR (Blythe 1998; Waddell 2003). They are not known to be associated with significant events (Criterion A), they are not known to be associated with significant persons (Criterion B), they do not represent a unique design or the work of a master (Criterion C), and they have not and are unlikely to yield significant information about history or prehistory (Criterion D).

It is NLURA's recommendation that the excavated areas recorded during the 2016 survey of CD are not eligible for listing on the NRHP.

6.1.3 Trash Scatters and Isolated Artifact Recommendation

The 2016 survey of CD recorded numerous trash scatters and isolated artifacts. All of these artifacts were the result of intentional disposal, or were associated with military training activities. They do not communicate their association with WWII activities on FR, nor do they represent elements unique to the Army's role in the Cold War. As such, they are not eligible under the WWII or Cold War contexts developed for EAFB (Cook et al. 1999) and FR (Blythe 1998; Waddell 2003). They are not known to be associated with significant events (Criterion A), they are not known to be associated with significant persons (Criterion B), they do not represent a unique design or the work of a master (Criterion C), and they have not and are unlikely to yield significant information about history or prehistory (Criterion D).

It is NLURA's recommendation that the trash scatters and isolated artifacts recorded during the 2016 survey of CD are not eligible for listing on the NRHP.

6.1.4 Roads and Cleared Areas Recommendation

The 2016 survey identified two modern roads (the north section of Army Guard Road and the Old Hospital Road) that corresponded to the elements of the WWII era Additional Hospital Facility road system. These roads had been substantially upgraded to meet modern road standards.

Background research identified a fragment of a trail and a grid pattern first visible in a 1950 aerial image within the CD Survey Area. Traces of these features (particularly the grid system) were clearly visible during the 2016 survey. According to Major Haller, the grid system was part of the WWII era base expansion, but no documentary evidence has been located to support this assertion.

Although these road and trail related features appear to be related to military activities in the 1940s and 1950s, they do not meet the established criteria required to be eligible for listing under the themes identified for JBER (WWII (1941-1945), Cold War (1950-1951), and historic military landscape (1941-1964)).

The 2016 survey of CD identified a bypassed section of the Glenn Highway. This road section is not directly associated with the activities of the U.S. military. The section of the Glenn Highway directly adjacent to CD has been designated an interstate highway (Mead & Hunt 2014), and is therefore exempt from analysis under Section 106 (ACHP 2005). However, this exemption does not extend to bypassed sections of interstate highways.

The bypassed section of the Glenn Highway encountered during the 2016 survey of CD is no longer connected to the Glenn Highway alignment of the Davis Highway. It is not known to be associated with significant events (Criterion A), it is not known to be associated with significant persons (Criterion B), it is not a unique design or the work of a master (Criterion C) and it has not and is unlikely to yield significant information about history or prehistory (Criterion D).

NLURA's recommends that the roads and cleared areas recorded during the 2016 survey of CD are not eligible for listing on the NRHP.

6.2 Evaluation of Eligibility as a Historic District

Although the sites documented during the 2016 survey of CD are not recommended to be individually ineligible for listing on the NRHP, it is important to examine if they collectively have the significance and integrity to be listed on the NRHP as contributing properties to or elements of a historic district. As defined by National Register Bulletin No. 15 (NPS 1995), a historic district possesses a significant concentration, linkage or continuity of sites, buildings, structures or objects united historically or aesthetically by plan or physical development. It derives importance from being a unified entity as demonstrated by an interrelationship of its resources and its ability to convey a visual sense of the overall historic environment or as an arrangement of historically or functionally related properties.

Because of their association with the U.S. Army and the AK-ARNG, CD could theoretically be eligible for listing on the NRHP as a historic military landscape. According to the guidelines established by the NPS:

> A historic military landscape is a military landscape that is significantly associated with historically important persons or events, or is an important indicator of the broad patterns of history, or represents a significant example of design or construction. For the purposes of the National Register, a historic military landscape is a category of property potentially eligible for listing in the National Register of Historic Places as a historic site or district. To be eligible for nomination to the Register, a historic military landscape must have sufficient integrity to convey its significance (Loechl et al. 1996:9).

In addition to being an identifiable entity, a historic district must be significant. As such, districts will usually meet the last portion of Criterion C plus criterion A, Criterion B, other portions of Criterion C, or Criterion D. The elements that make up a district do not have to be individually eligible for listing on the NRHP. It is possible for a district to contain no individually eligible elements, provided that the grouping achieves significance as a whole within its historic context. However, the majority of the components that add to the district's historic character must possess integrity, as must the district as a whole (NPS 1995).

To be eligible for listing on the NRHP as a historic military landscape, a military landscape must be associated with themes, persons and/or events significant under one or more of the NRHP eligibility criteria. They must also retain sufficient aspects of the historic fabric and configuration to convey an association with the applicable historic themes, persons and events (Loechl et al. 1996).

The research shows that there was limited development within the CD Survey Area during WWII, but that subsequent development destroyed the structures associated with the WWII Additional Hospital Facilities.

Although the foxholes and other excavated areas recorded within the CD Survey Area represent a continuum of military training activities, they are not directly associated with any significant historic contexts or themes that would make them eligible as a historic military landscape. Both individually and collectively, they lack the ability to convey a sense of the overall historic environment and are not (other than in the most general sense) historically or functionally related properties.

In addition, CD did not become an AKNG property until 1976, so all of the AKNG structures at CD are not old enough for listing on the NRHP.
It is NLURA's recommendation that the features and artifacts recorded during the 2016 survey of CD are not eligible for listing on the NRHP as a historic district or as a historic military landscape.

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7.0 Limitations

This Project was carried out, and this report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed at the time the work was performed. This report is not a public document. It is intended for release to the Alaska Department of Military and Veterans Affairs (DMVA), the Alaska Army National Guard (AK-ARNG), the United States Army (USA), United States Air Force (USAF), the Alaska State Historic Preservation Office (SHPO), appropriate Alaska Native organizations and permitting agencies only.

This report is based upon written information and/or verbal accounts provided by the agencies and individuals indicated in the report. NLURA can only relay this information and cannot be responsible for its accuracy or completeness. This report is not meant to represent a legal opinion.

Because archaeological materials, features, and other potentially significant cultural remains are commonly buried, they may not be identifiable from the surface or revealed in limited subsurface sampling. Should indications of additional potentially significant cultural resources be encountered during ground-disturbing activities, all work in that area should cease until the discovery can be fully evaluated by a qualified archaeologist, and the landowner and Alaska SHPO notified.

In the event that human remains are found, all activity in the vicinity must be halted and the Alaska State Troopers, the land owner, the lead federal agency, the SHPO and other appropriate local officials must be contacted. The Project Manager should also notify local Alaska Native organizations likely to be culturally affiliated with the discovered remains.

Remains on federal or tribal lands are handled under the protocols established by the Native American Graves Protection and Repatriation Act. Immediate steps should be taken to respectfully secure and protect human remains and cultural items, including stabilization or covering, as appropriate.

We do not warrant that we have identified all potentially significant cultural resources present at the sites surveyed as these may be hidden in such a way that only extensive excavations, use of remote sensing equipment (e.g., ground penetrating radar, magnetometer), or other technologies/methods not included in our SOW will reveal them. No other warranty, expressed or implied, is made. Any questions regarding our work and this report, the presentation of the information, and the interpretation of the data are welcome. They should be referred to Senior Project Archaeologist Morgan R. Blanchard in NLURA's Anchorage office (907) 345-2457 or NLURA General Manager Burr J. Neely (907) 474-9684 in NLURA's Fairbanks office.

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JBER-IAA-106-FY13

SUPPORT AGREEMENT

1. AGREEMENT NUMBER (Provided by Supplier)	2. SUPERSEDED AGREEMENT NO. (If this replaces another agreement)	3. EFFECTIVE DATE (YYMMDD)	4. EXPIRATION DATE (May be "Indefinite")
JBER-13-115-106	ISA 125, ISA 420	130425	220425 Indefinite

5. SUPPLYING ACTIVITY	6. RECEIVING ACTIVITY
a. NAME AND ADDRESS 673d Air Base Wing 10471 20th St, Suite 139 Joint Base Elmendorf-Richardson, AK 99506	a. NAME AND ADDRESS USPFO for Alaska P.O. Box B Camp Denali JBER, Alaska 99505-2610
b. MAJOR COMMAND PACAF	b. MAJOR COMMAND National Guard Bureau

7. SUPPORT PROVIDED BY SUPPLIER

a. SUPPORT (Specify what, when, where, and how much)	b. BASIS FOR REIMBURSEMENT	c. ESTIMATED REIMBURSEMENT
Refer toSpecific Provisions (Attachment II) and Funding Annex (Attachment III)	Refer to Funding Annex (Attachment III)	
673 FSS Laundry & Dry Cleaning Services		$6,503.31
673 CES Utilities (Gas)		$563,006.20
673 CES Utilities (Electricity)		$856,403.54
673 CES Utilities (Water)		$221,024.97
673 CES Utilities (Sewage)		$97,018.04
673 CES Refuse Collection & Disposal		$25,066.41
773 CES Grounds Maintenance (Grass Cutting)		$12,750.00
773 CES Pavement Clearance (Snow Removal)		$385,071.45
773 CES Pavement Clearance (FOD Mitigation)		$11,874.45
		EST: $2,178,718.10 + Actual Cost

ADDITIONAL SUPPORT REQUIREMENTS ATTACHED: [X] YES [ ] NO

8. SUPPLYING COMPONENT		9. RECEIVING COMPONENT	
a. COMPTROLLER SIGNATURE Kim N. Taylor, LtCol, USAF	b. DATE SIGNED 8 Apr 2013	a. COMPTROLLER SIGNATURE Dragana Buch, Financial Manager	b. DATE SIGNED 10 APR 2013
c. APPROVING AUTHORITY		c. APPROVING AUTHORITY	
(1) TYPED NAME Brian P. Duffy, Col, USAF, Commander		(1) TYPED NAME Michael J. Williams, Col, USAF	
(2) ORGANIZATION 673 ABW JBER, AK 99506	(3) TELEPHONE NUMBER (907) 552-6731	(2) ORGANIZATION USPFO for Alaska JBER, AK 99505	(3) TELEPHONE NUMBER (907) 428-6183
(4) SIGNATURE	(5) DATE SIGNED 25APR13	(4) SIGNATURE Michael J. Williams	(5) DATE SIGNED 12 April 13

10. TERMINATION (Complete only when agreement is terminated prior to scheduled expiration date.)

a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED	a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED

11. GENERAL PROVISIONS *(Complete blank spaces and add additional general provisions as appropriate: e.g., exceptions to printed provisions, additional parties to this agreement, billing and reimbursement instructions.)*

a. The receiving components will provide the supplying component projections of requested support. *(Significant changes in the receiving component's support requirements should be submitted to the supplying component in a manner that will permit timely modification of resource requirements.)*

b. It is the responsibility of the supplying component to bring any required or requested change in support to the attention of 673 ABW, 673 CPTS, 8517 20th Street Rm 300 ATTN: FMP, JBER, AK 99506 prior to changing or cancelling support.

c. The component providing reimbursable support in this agreement will submit statements of costs to: USPFO for Alaska, ATTN:PFO-C-FA, P.O. Box B Camp Denali, JBER, AK 99505-2610.

d. All rates expressing the unit cost of services provided in this agreement are based on current rates which may be subject to change for uncontrollable reasons, such as legislation, DoD directives, and commercial utility rate increases. The receiver will be notified immediately of such rate changes that must be passed through to the support receivers.

e. This agreement may be cancelled at any time by mutual consent of the parties concerned. This agreement may also be cancelled by either party upon giving at least 180 days written notice to the other party.

f. In case of mobilization or other emergency, this agreement will remain in force only within supplier's capabilities.

g. Distribution: Publish on Sharepoint and PACAF/JBER Portal agreement webpage and send hardcopy and pdf of completed agreement to Receiver.

ATTACHMENTS TO ISA	DESCRIPTION	PAGE NO#
Attachment I	General Provisions (continued from block 11)	3
Attachment II	Specific Provisions (continued from block 12)	9
Attachment III	Funding Annex	71
Attachment IV	Manpower Annex	76
Attachment V	Wing Certification (SJA, Manpower, CE Environmental, Security Forces)	77
Attachment VI	3rd Wing Commander's Approval/Certification	78
Attachment VII	Buildings and Facilities Utilized by Receiver	79
Attachment VIII	Bryant Army Airfield Snow Removal Map	N/A
Attachment IX	Bryant Army Airfield Grass Cutting Map	N/A
Attachment X	Bryant Army Airfield Selfhelp 50ft Boundry Map	N/A

ADDITIONAL SUPPORT REQUIREMENTS ATTACHED: [X] YES [ ] NO

12. SPECIFIC PROVISIONS *(As appropriate: e.g., location and size of occupied facilities, unique supplier and receiver responsibilities, conditions, requirements, quality standards, and criteria for measurement/reimbursement of unique requirements.)*

a. Mission support categories performed by the 3rd Wing are included in this document for the convenience of the customer. See Funding Annex for reimbursement procedures where applicable. The 3rd Wing Commander approval/certification is at Attachment VI.

b. See Attachment II for additional Specific Provisions.

ADDITIONAL SPECIFIC PROVISIONS ATTACHED: [X] YES [ ] NO

JBER-IAA-106-FY13

SUPPORT AGREEMENT

1. AGREEMENT NUMBER (Provided by Supplier)	2. SUPERSEDED AGREEMENT NO. (If this replaces another agreement)	3. EFFECTIVE DATE (YYMMDD)	4. EXPIRATION DATE (May be "Indefinite")
JBER-13-115-106	ISA 125, ISA 420	130425	220425 -Indefinite-

5. SUPPLYING ACTIVITY	6. RECEIVING ACTIVITY
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b. MAJOR COMMAND PACAF	b. MAJOR COMMAND National Guard Bureau

7. SUPPORT PROVIDED BY SUPPLIER		
a. SUPPORT (Specify what, when, where, and how much)	b. BASIS FOR REIMBURSEMENT	c. ESTIMATED REIMBURSEMENT
Refer toSpecific Provisions (Attachment II) and Funding Annex (Attachment III)	Refer to Funding Annex (Attachment III)	
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10. TERMINATION (Complete only when agreement is terminated prior to scheduled expiration date.)			
a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED	a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED

DD Form 1144, NOV 2001 PREVIOUS EDITIONS MAY BE USED.

11. **GENERAL PROVISIONS** *(Complete blank spaces and add additional general provisions as appropriate: e.g., exceptions to printed provisions, additional parties to this agreement, billing and reimbursement instructions.)*

a. The receiving components will provide the supplying component projections of requested support. *(Significant changes in the receiving component's support requirements should be submitted to the supplying component in a manner that will permit timely modification of resource requirements.)*

b. It is the responsibility of the supplying component to bring any required or requested change in support to the attention of 673 ABW, 673 CPTS, 8517 20th Street Rm 300 ATTN: FMP, JBER, AK 99506 prior to changing or cancelling support.

c. The component providing reimbursable support in this agreement will submit statements of costs to: USPFO for Alaska, ATTN:PFO-C-FA, P.O. Box B Camp Denali, JBER, AK 99505-2810.

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Attachment X	Bryant Army Airfield Selfhelp 60ft Boundry Map	N/A

ADDITIONAL SUPPORT REQUIREMENTS ATTACHED: [X] YES [ ] NO

12. **SPECIFIC PROVISIONS** *(As appropriate: e.g., location and size of occupied facilities, unique supplier and receiver responsibilities, conditions, requirements, quality standards, and criteria for measurement/reimbursement of unique requirements.)*

a. **Mission support categories performed by the 3rd Wing are included in this document for the convenience of the customer. See Funding Annex for reimbursement procedures where applicable. The 3rd Wing Commander approval/certification is at Attachment VI.**

b. **See Attachment II for additional Specific Provisions.**

ADDITIONAL SPECIFIC PROVISIONS ATTACHED: [X] YES [ ] NO

General Provisions
(Continued from Block 11)

h. **As a result of JBER FOC this agreement combines W81MUX-06331-125 and FB5000-05188-420.** The purpose of this Interservice Support Agreement (ISA) is to establish guidelines and procedures for providing reimbursable administrative and logistical support to Alaska National Guard activities (both Army and Air at Camp Carroll, Camp Denali, and Bryant Army Airfield), hereafter referred to as the Receiver, by the 673d Air Base Wing, Joint Base Elmendorf-Richardson (JBER) hereafter referred to as the Supplier. **(This agreement does not include support to the AK ANG 176th Wing).** The support addressed in this ISA is provided by Supplier activities at JBER, Alaska in coordination with, and subsequent to, the approval of the Receiver. Several Mission Support Categories identified in this agreement are performed by the 3d Wing and any reimbursement for those services will be processed by the 673d Comptroller Squadron IAW the provisions outlined in the Funding Annex. No agreement involving Mission Support Categories will be signed by the 673 ABW Commander and/or Comptroller without first being staffed and approved by 3d Wing Staff Agencies and the Commander (see Attachment VI).

i. Receiver will ensure that any support requested from the Supplier which will be provided to contractors of the Receiver is consistent with the terms of the Receiver's contract provisions. Nothing in this ISA should be construed as adding to or limiting a Receiver's obligation to a contractor under the terms of an underlying contract, or creating any independent obligation from the Supplier to the contractor.

j. Interservice and Intragovernmental Support.

(1) Interservice Support. 673 ABW/3 WG shall provide requested support to other Department of Defense (DoD) activities when the head of the requesting activity determines it would be in the best interest of the U.S. Government, and the 673 ABW/3 WG determines capabilities exist to provide the support without jeopardizing assigned missions. BASOPS support is provided by the 673 ABW and mission support is provided by the 3 WG. Support categories of both are contained within this agreement but funding is channelized to the respective activity IAW the Funding Annex.

(2) Intragovernmental Support. 673 ABW may enter into support agreements with non-DoD federal activities when funding is available to pay for the support, it is in the best interest of the U.S. Government, 673 ABW is able to provide the support, the support cannot be provided as conveniently or cheaply by a commercial enterprise, and it does not conflict with any other agency's authority. These determinations must be approved by the head of the major organizational unit ordering the support and attached to the agreement.

k. Common Output Level Standards (COLS). For non-reimbursable Receivers services at Joint Base Elmendorf-Richardson (JBER) are provided at the COLS standard IAW OSD requirements for support at joint bases.

l. Effective date. This agreement either establishes or replaces all previous agreements and revisions and becomes effective upon the date of the last signature. It will remain in effect until it is renegotiated, revised, superseded or terminated in writing. This agreement will be reviewed triennially or sooner if changing conditions or circumstances warrant ensuring that its terms, provisions, and intent are current. This agreement may be modified or terminated at anytime with the consent of all parties, or unilaterally terminated when the initiator provides 180 days written notice to the other parties.

m. Prescribing Directives. This ISA is authorized and written in accordance with (IAW) Department of Defense Instruction (DoDI) 4000.19, Interservice and Intragovernmental Support, Defense Finance and Accounting Service-Indianapolis (DFAS-IN) Regulation 37-1, AFI 25-201, and AFI 25-01 PACAFSUP1.

n. Receiver's mission: The Receiver's mission is twofold; organize, man, equip and train Army National Guard MTOE units to conduct tactical and stability operations in support of US Army Pacific theater of

General Provisions
(Continued from Block 11)

operations; and organize, man, equip and train Air National Guard units in support of US Air Force tactical and support operations.

Note: This agreement provides general support to the Alaska National Guard on JBER and is signed by the US Property and Fiscal Officer (USPFO) not specific troop units within the command structure. Force management and stationing decisions regarding specific units within the Alaska National Guard located on JBER are relevant to JBER only within the context of the total number of personnel and/or any changes to the type equipment or facilities that may be supported by JBER functional areas. Reorganization or re-designation of units within the Alaska National Guard with an impact of less than +/- 5% total numbers does not affect the support identified or provided in this agreement; these type activities have little or no effect on training land requirements, environmental impact, or quality of life for Soldiers or Airmen stationed at JBER. Regarding any Alaska National Guard reporting requirements to National Guard Bureau; in general JBER has no objection to any reorganization that is within the parameters expressed above. The Alaska National Guard will inform JBER of any reorganization that exceeds these parameters. See AFI 10-530 for further guidance.

o. Review the Funding Annex of this agreement annually, or as requested by either the Supplier or Receiver. Supplier review of the funding annex is executed by the 673d Comptroller Squadron Financial Management section IAW AFI 25-201 w/PACAFSUP in coordination with the Support Agreement Manager (SAM). Review the Specific Provisions triennially, or as requested by either the Supplier or Receiver. Forward all contested matters of support contained herein to respective higher headquarters for disposition and further direction. The Receiver agrees to pay for resources in accordance with this agreement.

p. Receiver will report all violations or suspected violations of security to the JBER Security Forces at 552-3421. This responsibility includes incidents falling within the purview of DoD Regulation 5200.1-R.

q. Receiver personnel must abide by all base regulations, directives, and policies, to include postal, fire, safety, security and similar administrative procedures. Receiver personnel are permitted use of base facilities in accordance with applicable regulations. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

r. Should the Receiver fail to accept full quantity of reimbursable support provided for herein, the Supplier will make reasonable efforts to absorb and/or redistribute excess supplies or services. If redistribution or absorption cannot be accomplished, the Receiver shall reimburse (the Supplier) for any losses incurred by the Supplier.

s. Any contracts initiated by the Receiver or Receiver agency which have potential impact on the maintenance, repair, and/or modification of any real property owned or controlled by JBER must be reviewed by the 773 CES, then receive prior written approval of the 673 ABW Commander. (This provision includes contracts for utilities, refuse collection/disposal, and the renovation or alteration of the interior/exterior of assigned facilities, etc.) The Receiver or Receiver agency is responsible for all costs, expenses and damages resulting from such a contract unless the 673 ABW Commander provides prior written relief from such responsibility.

t. Any contracts initiated by the Receiver or Receiver agency which have potential impact on the maintenance, repair, and/or modification of any IT infrastructure owned or controlled by JBER must be reviewed by the 673 CS, then receive prior written approval of the 673d CS/SCXP. (This provision includes the use of government infrastructure to support unofficial communications requirements, i.e. cable television and commercial telephone or the modification of in-building IT infrastructure due to

General Provisions
(Continued from Block 11)

remodeling of real property.) The Receiver or Receiver agency is responsible for all costs, expenses and damages resulting from such a contract unless the 673 ABW Commander provides prior written relief from such responsibility.

u. If the Receiver requires an available service not addressed within this agreement, the Receiver may submit a DD Form 448, Military Interdepartmental Purchase Request (MIPR) to the 673d Comptroller Squadron budget office. If service is required on a recurring basis (defined in general as three times per year over two years or more), the Receiver will submit a written request to incorporate additional service(s) into this agreement. Submit request to 673 ABW, 673d Comptroller Squadron, 8517 20th Street, Room 300 ATTN: SAO, Joint Base Elmendorf- Richardson, Alaska 99506.

v. Services are provided during posted hours of operation. Services shall be equal to those provided to the Supplier's own military force and within established 673 ABW standards and guidelines including Common Output Level Support (COLS) when applicable. The Specific Provision narratives are the documented quality, quantity, frequency, and timeliness of a service. *NOTE:* Reserve Component (RC) priority of Morale, Welfare and Recreation (MWR) support is IAW applicable AFI.

w. This agreement ~~(will or will not)~~ remain in effect during implementation of Operations Plans (OPLANS) to the best ability of the Supplier.

x. Receiver point of contact:

USPFO for Alaska
ATTN: PFO-P-CA
P.O. Box B, Camp Denali
JBER, AK 99505-2610

Phone: (907) 428-6183, Fax (907) 428-6191

y. Supplier point of contact:

673 ABW
673d Comptroller Squadron
8517 20th Street, Room 300 ATTN: SAO
Joint Base Elmendorf Richardson, Alaska 99506

Phone: (907) 384-7094, Fax: (907) 384-6122
AK Defense Service Network (DSN) Access Code: 317

NOTE: This support agreement was coordinated and prepared by the Support Agreement Manager: Marc R. Coulombe.

z. JBER and AKNG unique relationship requirements (Excludes AK ANG 176 WG).

a. General. The USPFO is the state Real Property Accountable Officer (RPAO) for federal real property that has been licensed to the state for the National Guard. The state RPAO is responsible and accountable for all buildings, structures, utilities, and land under the control of the AKNG. Within the Alaska National Guard Joint Forces Headquarters located in Bldg 49000 there reside elements of both the Alaska Army and Air National Guard. The Army National Guard occupies approximately 65% of the facility and the Air National Guard approximately 5% with other state entities making up the remaining 30%.

General Provisions
(Continued from Block 11)

b. 673 ABW/JBER. The Air Force issued and maintains a license to the State of Alaska for the AKNG. The term of the license is no less than 25 years (revocable by JBER), for the land underlying and most facilities located on Camp Carroll, Camp Denali, and Bryant Army Airfield for use in support of AKNG activities and mission requirements. (License # USAF-PAF-HJZH-3-12-01).

c. Alaska National Guard (includes Air and Army National Guard elements).

(1) Identify all non-Alaska National Guard military State activities occupying space at Camp Carroll, Camp Denali, and Bryant Army Airfield. Assist Supplier in coordinating and executing the intent of this agreement by informing all non-NG military State activities/agencies that this is an agreement with the AKNG only and does not include or imply Supplier support for any other non-NG state agency, activity, or program.

(2) The State of Alaska thru the USPFO for AK (as the AKNG RPAO) will obtain approval in writing from the JBER Commander prior to authorizing use of Federal property for other than traditional AKNG mission requirements at Camp Carroll, Camp Denali, Bryant Army Airfield, or any other Supplier owned property. The State of Alaska nor the USPFO for AK (RPAO) are **NOT** authorized to enter into use agreements for use of Supplier-owned property. Submit all requests for such non-AKNG agencies to use Federal property to the JBER Commander in writing for consideration. Those requests approved by the JBER Commander will be issued an appropriate JBER originated real estate instrument. The AKNG (RPAO), Per Amendment one of License # USAF-PAF-HJZH-3-12-01, with written approval of the JBER Commander, will provide space only to those state activities directly related to working with the National Guard in the traditional mission of disaster relief or provided for in statute. An example of this type agency would be the Alaska Department of Emergency Services (ADES). An example of an agency provided for in statute would be the National Guard Youth Corps Challenge Program. The JBER Commander retains final authority concerning what activities may reside on the installation.

(3) AKNG will provide timely, written notification to Civil Engineering (CE) of the intent to construct or renovate facilities on Supplier property over $10,000 or that would change the primary use code (Category code). At the time of notification, the AKNG will request written approval from the JBER Commander through CE during the pre-design phase prior to beginning any work. The AKNG will include CE in the programming and planning phases of any proposed construction or renovation to facilities on Supplier property. CE will evaluate all AKNG programming and planning data and provide the AKNG written approval of such data prior to any digging, new construction, or renovation of existing facilities by the AKNG.

(5) Comply with applicable Air Force and JBER policies involving issues pertaining to environmental, fire, construction materials, and water lines. Federal guidance shall supersede all State guidance.

(6) Select an AKNG POC to attend all scheduled Installation Facilities Working Group Board meetings.

aa. ENVIRONMENTAL INSTITUTIONAL CONTROLS: Lands within Joint Base Elmendorf-Richardson Alaska have been identified on the U.S. Environmental Protection Agency's National Priorities List as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund" site, as enacted by Public Law 42, United States Code (USC) 1901 et seq. and defined by Title 40 of the Code of Federal Regulations (CFR), Part 300 et seq. All contiguous and non-contiguous acreage (approximately 74,519 acres at JBER) are included in this designation and contaminated sites within this acreage are being managed under the DOD Defense Environmental Restoration Program (DERP).

(1) In accordance with CERCLA, known source areas of contamination on the installations have been or are currently under investigation to determine the type and extent of contamination. The acreage addressed in this document contains numerous source areas of known contamination, however, due to

General Provisions
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the nature and type of training conducted, there is a potential for unidentified contamination to exist within the corridors selected. This opens the potential for unexploded ordnance (UXO) and other contaminants to be present within the selected acreage.

(2) For this reason, projects involving modification of facilities or excavation of any kind shall be coordinated by submitting a 673 CES JBER "Excavation Clearance Request" within a minimum of seven (7) working days prior to mobilization to the site. Coordination requirements are outlined on the permit.

(3) If contaminated soils, drums, unexploded ordnance or unusual debris are found on or around the work site, the agency shall stop work immediately and notify the JBER Fire Department by calling 911. Work at this site will be suspended until the area has been investigated and cleared for further work.

NOTE: Soil and groundwater shall not be removed from any part of JBER without written authorization from a duly appointed 673 CES JBER representative. Groundwater is defined as water that occurs below the surface of the earth, where it occupies spaces in soils or geologic strata.

bb. Precision Measurement Equipment Laboratory (PMEL).

(1) The provision of PMEL support although still available at JBER and contained as a category of support within this agreement is executed via a centrally managed contract at PACAF. The QAE function is executed by a centralized MSgt COR position at HQ PACAF who conducts quarterly on-site surveillance via TDY to Guam and Alaska PMELs.

(2) The 673 CPTS Support Agreement Office (SAO) will serve as a local facilitator to assist any JBER Tenant (or Supporting Component activity) in obtaining PMEL support from PACAF.

(3) Inclusion of this support category in this agreement is done as a customer convenience. Signature by JBER officials on the DD Form 1144 does not signify a commitment to perform the service or accept responsibility for reimbursement processing. The responsibility for these actions rests at the level the contract is let/managed and reimbursements are processed which is at PACAF.

(4) PMEL Administration:

(a) Address:
HQ PACAF/A4MYA
ATTN: PMEL Contract Functional Dir
25 E. Street, STE I-319
JBPH-Hickam, HI 96853-5427

(b) Phone Numbers:
PACAF PMEL Functional Director DSN 315 449-4011
Local JBER contract execution 3 MXS 552-1728,

(5) The Technical Manual for the Air Force Metrology and Calibration Program (TO 00-20-14), dated 30 September 2011, para 4.4.2 places the responsibility for generating PMEL agreements with the PMEL managers (or PMEL contract managers). These individuals require a working knowledge of support agreements and financial procedures to ensure resources are available and adequate to provide customer support. PMEL managers shall also be aware of how and when to charge customers for services rendered.

(6) Applicable References.

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(1) Air Force Instruction 21-113 *Air Force Metrology and Calibration (AFMETCAL) Management*, dated 23 Mar 2011.

(2) Technical Order 00-20-14 *Air Force Metrology and Calibration (AFMETCAL) Program*, dated 30 Sep 2011.

(3) DOD 7000.14-R, *Financial Management Regulation*, dated Mar 2012.

Specific Provisions
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c. Support Category Indexes.

DODI 4000.19 (6 Apr 2010 draft) Support Categories

Support Categories	Functional Area	POC Phone #	Agreement Page #
a. Facilities Sustainment	673 CES	552-3726/3727	Limited Applicability
b. Restoration and Modernization	673 CES	552-3726/3727	Limited Applicability
c. Disposal/Demolition	673 CES	384-0960/6223	Limited Applicability
d. Facilities Acquisition	673 CES	384-0960/6223	Limited Applicability
e. Facilities Operation	773 CES	384-3726/3727	—
(1) ~~Custodial Services~~	773 CES	552-5749/384-0150	N/A
(2) Explosive Ordnance Support	673 CES	552-8555	18
(3) Facility Construction and Major Repair	673 CES/CEP	552-3726/3727/384 6925/1807	19
(4) Fire and Emergency Services	673 CES	552-2801	21
(5) Grounds Maintenance and Landscaping	773 CES	552-3727	23
(6) Pavement Clearance	773 CES	552-3727	24
(7) Pest Control	773 CES	552-3727	27
(8) Readiness Engineering Services	773 CES	552-5061	28
(9) Real Property Management and Engineering Services	673 CES	384-0960/6223/552-5061	29
(10) Refuse Collection and Disposal	773 CES	552-5749/384-0150	32
(11) Utilities	673 CES	384-2763	33
f. Installation Services			—
(1) ~~Airfield Operations~~ Redundant with same Mission Support Category (4)	3 OSS/OSA 3 OSS/OSW	552-7543 552-5201, 552-9815	N/A
(2) Child and Youth Programs	673 FSS/FSF	552-8476	34
(3) ~~Civilian Personnel Services~~	673 FSS/FSMC	552-7432	N/A
(4) Command Support	See Note 3		35
–(a) Command Management	See note 4		—
–(b) Installation Safety	673 SEG	384-2382/552-6850	—
(5) ~~Education Services~~	AF – 673 FSS/FSDE Army-ACES	AF: 552-9647 Army: 384-0970	N/A
(6) Environmental Compliance	673 CES	552-3435	41
(7) Environmental Conservation	673 CES	552-1609	43
(8) Environmental Pollution Prevention	673 CES	552-3435	44
(9) Environmental Restoration	673 CES	552-5746	45
(10) Family Housing Services	673 CES	552-2911	46
(11) Food Service	673 FSS/FSVF	384-1743	47
(12) Health Services	673 MDG	580-4006	49
(13) Information Technology Services Management	673 CS/SCOS	552-2666	50
(14) Installation Law Enforcement Operations Services	673 SFS	552-3421	53
(15) Installation Physical	673 SFS	384-0821	55

Specific Provisions
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Security Protection and Services	673 ABW/CCW	384-2399	
(16) Laundry and Dry Cleaning Services	673 FSS/FSV	384-1903	56
(17) Lodging Services	673 FSS/FSVL	552-1205	58
(18) Military Personnel Services	673 FSS/FSMP Army Casualty Assistance Center ASA	552-6964 384-3811	59
(19) Morale, Welfare, and Recreation (MWR)	673 FSS/FSC Army SARC in ASA	552-5323	60
(20) ~~Mortuary~~	673 FSS	552-2252/5888	N/A
(21) ~~Procurement Operations~~	673 CONS	552-5318	N/A
(22) Small Arms Range Management	673 SFS Range Control Schedular Army manages ranges on behalf of JBER Cdr	552-1852 384-3508	61
(23) Supply Logistics	773 LRS/LGRM	384-1229/384-2801	62
~~(24) Supply, Storage, and Distribution (SSD) Munitions~~	Not utilized at JBER	N/A	N/A
~~(25) Training Service~~	Not utilized at JBER	N/A	N/A
(26) Transportation Logistics	773 LRS	Vehicle Dispatch, Elmendorf 552-4475 Deployments Elmendorf 551-8399/551-8627 Richardson 384-2390/384-2199 Personal Property Elmendorf 552-1797/552-5242/552-1793/552-4463 Richardson 384-1831	63
--(a) Base Support Vehicles and Equipment (BSV&E)	673 LRS/LGRV 773 LRS	552-9477 Vehicle Dispatch Elmendorf 552-4475/552-2793 Richardson 384-1433	64
--(b) Installation Movement	773 LRS	Vehicle Dispatch JBER 552-4475/552-2793 Deployments Elmendorf 551-8399/551-8627 Richardson 384-2390/384-2199 Personal Property Elmendorf 552-1797/5242/1793/4463 Richardson 384-1831	65

Specific Provisions
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~~(c) Tactical Vehicle Support~~	673 LRS/LGRV	552-9477	66
(27) ~~Unaccompanied Personnel Housing Services~~	673 CES	552-4439 or 384-7656	N/A
(28) ~~Warfighter and Family Services~~	673 FSS/FSF AER-ASA manages on behalf of JBER Commander	552-8148	N/A

Note 1. Infrastructure Support. The supporting Component will, in accordance with Information Technology Service Management (ITSM) Supplemental Guidance, take responsibility for maintenance and installation of all Open Systems Interconnection (OSI) Layer 1 assets on the Joint Base excluding network devices supporting the Pacific LandWarNet, which will be installed, operated, and maintained by the supported Component.

Note 2. Effective 1 Oct 2012, Tactical Maintenance transferred to Army Material Command.

Occupational Safety

Note 3. Command Support includes ~~Ground Safety~~, Public Affairs, Legal, Chaplain, Postal Services, Installation History, Financial Management, ~~Internal Review~~, Equal Opportunity, Administrative Services, and Information Protection.

Note 4. Legal Services--Claims, Military Justice consolidated with USARAK legal office, however, continues to remain on the ASA Table of Distribution and Allowances.

- Army records management is no longer a mission of the ASA & FOIA requirements have transferred to Ft. Wainwright.
- Installation Security service (CLS 21) remains with the Army under Ft Wainwright.

Specific Provisions
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AFI 25-201 Mission Support Categories (listed alphabetically)

Service	Functional Area	POC Phone #	Agreement Page #
(1) ~~Aerial Photography~~	Public Affairs	552-2906	Not applicable
(2) ~~Aerial Port Operations~~	See Airfield Operations	See Airfield Operations	Not applicable
(3) Aircraft Maintenance	3 MXG	552-3005	67
(4) ~~Airfield Operations~~	3 OSS/OSA 3 OSS/OSW	552-7543 552-5201, 552-0815	Not applicable
(5) ~~Ammunition~~	3 MUNS	552-3306/551-0854	Not applicable
~~(6) Avionics Maintenance~~	Not utilized at JBER	N/A	Not applicable
(7) Base Plans	673 XP	552-0949	68
(8) ~~Clothing and Textile~~	673 LRS/LGLO	552-7906	Not applicable
(9) ~~Consolidated Command Post~~	673 ABW/CP	551-3542	Not applicable
~~(10) Electrical Equipment and Components~~	Not utilized at JBER	Not applicable	Not applicable
(11) ~~Financial Services~~ Redundant w/Installation Svc (4)(g)	673 CPTS	552-2881	Not applicable
(12) ~~Flight Operations~~	Msn Dependant	552-4979	Not applicable
(13) ~~Geodetic Support~~	3 OG/OGV	552-8004	Not applicable
(14) ~~Innovation Development through Employee Awareness~~	673 FSS/FSMM	552-0907	Not applicable
(15) ~~Intelligence~~	3 OG/OGI	552-7673	Not applicable
(16) ~~Aircrew Flight Equipment~~	3 OSS/OSL	551-9358	Not applicable
~~(17) Logistics Air Support~~	Not utilized at JBER	Not applicable	Not applicable
(18) Maintenance Control	3 MOS/MXOOC	552-9321	Not applicable
~~(19) Missiles~~	Not utilized at JBER	Not applicable	Not applicable
~~(20) Missiles Equipment and Components~~	Not utilized at JBER	Not applicable	Not applicable
(21) ~~Petroleum, Oils, and Lubricants~~ Covered in Installation Spt Cat (23) Supply Logistics	673 LRS/CD	552-0223	Not applicable
(22) Precision Measurement Equipment Laboratory	3 MXS PACAF Contract	552-1726/2876 DSN 315 449-4011	69
(23) ~~Quality Assurance~~	3 MXG	552-3028	Not applicable
(24) ~~Records and Forms Flight Management~~	3 OSS/OSOF	552-0320	Not applicable
(25) ~~Safety (Air)~~	3 WG/SEF	552-4798	Not applicable
(26) ~~Search and Rescue~~	11th RCC	551-7230	Not applicable
~~(27) Ships and Vessels~~	Not utilized at JBER	Not applicable	Not applicable
~~(28) Survival Equipment Maintenance~~	Not utilized at JBER	Not applicable	Not applicable
~~(29) Synthetic Trainer~~	Not utilized at JBER	Not applicable	Not applicable
~~(30) Test and Evaluation~~	Not utilized at JBER	Not applicable	Not applicable

Specific Provisions
(Continued from Block 12)

SUPPORT CATEGORY (Limited Applicability)

a. Facilities Sustainment (DODI 4000.19 Support category) Provides resources for maintenance and repair activities necessary to keep facilities in the Department's real property inventory in good working order, including regularly scheduled adjustments and inspections, preventive maintenance tasks, and emergency response and service calls for minor repairs. It also includes major repairs or replacement of facility components (usually accomplished by contract) that are expected to occur periodically throughout the life cycle of facilities. This work includes regular roof replacement, refinishing of wall surfaces, repairing and replacement of heating and cooling systems, replacing tile and carpeting, and similar types of work. Responsibility for funding rests with the agency that has the sustainment organization code in the Real Property Inventory.

Functional Area: 673 CES and 773 CES

Supplier Will: Provide minor construction, alterations, additions and major repairs required to modernize, replace, expand or restore real property. Also includes related planning and design. Provide all normal cyclical maintenance and structural repairs of existing facilities. Support real estate facilities occupied by Receiver units by performing maintenance and repair and provide entomology management services and utilities. Provide for or arrange for project design, technical assistance, construction management, and completion of projects according to AFIs 32-1032, 32-1012,and 32-1023. Provide utilities for mobile units occupied by Receiver's according to AFIs 32-1063 and 32-1061. Inspect real estate facilities according to current directives. Process AF Form 332, BCE Work Request, for each action and identification of reimbursable elements. Perform maintenance and structural repairs of an emergency nature including service calls. Correct hazardous conditions. Provide Receiver with Supplier program for the prioritized system of correcting and /or reducing hazardous conditions in the work place. Hazards assigned as Risk Assessment Code (RAC) of 1, 2, or 3 shall be corrected as promptly as practical on a "worst first" basis with in house resources or by contract. Provide facility planning, engineering design, drafting and minor construction improvements, alterations and modifications to specification reproduction services. Provide inspection, job planning, estimating and budget planning for recurring contract procurement, military and minor construction. Work unable to be accomplished in house will, if requested and funded by Receiver, be accomplished by Architectural/Engineering or Engineering Services contract. Provide abatement and control measures directed against insects, rodents, weeds, fungi, etc., including but not limited to routine treatment of grounds, buildings, and equipment. Support owner of real property similar equipment as defined in AFI 32-1031 with field or intermediate level maintenance when the equipment cannot be supported by the logistics community and the maintenance is an existing skill within civil engineering. Work will be accomplished on a reimbursable basis. Provide authorized Receiver personnel access to Civil Engineering Self Help Store. Invite the Receiver personnel to participate in the Installation Facilities Working Group meetings. If Receiver is required to relocate to another building(s) or location(s) on the activity for the convenience of the Supplier, the condition and security features of the newly assigned building(s) or location(s) should be equal to or better than the vacated ones. Any related costs to move and/or upgrade newly assigned building(s) or location(s) will be the funding responsibility of the Receiver. Provide routine and cyclical preventative maintenance and minor repairs required to preserve or restore real property so it may be used for its designated purpose, as resource permit.

Receiver Will: Request support in compliance with Supplier's policies and guidance (AF Form 332). Identify (and update) a Facility Manager through whom all AF Form 332 and Direct Scheduled Work for Maintenance and Repair will be managed in conjunction with CE Customer Service. Building manager will maintain lawn, grass, and sidewalk areas adjacent to facilities. Finance real property maintenance activities according to AFI 32-1021. Assist the Supplier, as required, in assembling data to maintain real property accountability and submit real property reports according to Supplier's requirements. Reimburse for all work performed. Appoint an environmental POC and abide by all environmental protection regulations in effect at the Supplier's installation. When on-site generator maintenance cannot be performed (i.e. winter and inclement weather), Receiver's generator must be delivered for servicing to the

Specific Provisions
(Continued from Block 12)

Power Production shop. Fund all construction. Designate, in writing, individuals authorized to access to Self Help Store. Attend all Installation Facilities Working Group meetings Reimburse for requirements that are special or peculiar to the operation of the Receiver based on work orders. Bear the costs of initial repair, renovation, normal maintenance that has been deferred, or modification of existing facilities and structures that would not otherwise be accomplished by the Supplier but are required by the prospective Receiver for sole use of the Receiver.

POC: 773 CES/CEO, 552-3727.

BASIS FOR REIMBURSEMENT: Responsibility for funding rests with the agency that has the sustainment organization code in the Real Property Inventory.

Specific Provisions
(Continued from Block 12)

SUPPORT CATEGORY(Limited Applicability)

b. Restoration and Modernization. Provides resources for improving an inventory of facilities. Restoration includes repair and replacement work to restore damaged facilities due to accident or failure attributable to inadequate sustainment, excessive age, or other causes. Modernization includes alteration of facilities to implement a new, higher standard (including regulatory changes), to accommodate new functions, or to replace building components that typically last more than 50 years (such as foundations and structural components). Responsibility for funding rests with the agency that has the restoration and modernization organization code in the Real Property Inventory. Modernization pursuant to mission changes is always the responsibility of the receiver.

Functional Area: 773 CES

Supplier Will: (Engineering Support) Provides for cradle-to-grave technical, design, and construction surveillance of operations and maintenance projects by contract, including Simplified Acquisition of Base Engineering Requirements (SABER) projects. Also included are the management and preparation of technical data, studies, evaluation of projects, and base community and comprehensive planning and programming. Provide engineering support to include planning, design and programming functions for the construction, fabrication and repair maintenance, and repair of facilities. Provide engineering studies and design. Plan and prepare cost estimates, detailed designs, plans and specifications for construction, maintenance, or repair projects to existing or proposed facilities. Prepare projects, including scope, cost, and justification for inclusion in annual military construction (MILCON) or operation and maintenance (O&M) programs, IAW Facilities Board priorities. Interpret plans and specifications and analyze general provisions of contract documents. Develop special engineering studies to support more efficient maintenance and operation of facilities and equipment. Investigate and prepare projects for utility plants and systems, pavements, structure and buildings in support of and under the direction of a professional engineer. Review and approve schedules and control work requirements for maintenance, repair and minor construction work performed by commercial contractors. Review work requirements and identify and recommend those suitable for contract accomplishment. Analyze utility systems to support computer systems equipment operation. Receiver facilities, subject to Supplier approval and specific Receiver funding, including repairs occasioned solely by Receivers' occupancy or use.

Receiver Will: Inform the Supplier of Receiver requirements and provide justification data necessary to support new construction, improvement, or modification projects, when not within the capability of the Receiver. Appoint a real property building manager for each building or facility assigned according to AFI 32-9005. Furnish name, office symbol, and telephone number to Supplier, 773 CES/CEO and 673 CES/CEP. Do not alter or modify a real estate facility or structure, or remove or relocate real property installed equipment without approval from the Base Civil Engineer according to AFI 32-1031. Send AF Form(s) 332 to Supplier through the building manager for action after the Receiver commander or a designated representative validates it. Comply with Supplier's directives and policies to include architectural standards. Coordinate and provide requirements and justification for proposed projects. Defend and advocate for Supplier-funded projects to the Base Facilities Board. Submit plans to Supplier on proposed alterations/modifications. Participate in the review process for planned contract projects. For minor construction (<$750K), program and pay for design (A-E fees) and construction costs. For MILCON (new construction), program and fund through Receiver's higher headquarters. Space occupied in existing facilities will conform to Air Force Guidelines; excess space will be returned to the supplier for allocation to meet other needs

POC: 773 CES/CEP, 552-3727.

BASIS FOR REIMBURSEMENT: Responsibility for funding rests with the agency that has the restoration and modernization organization code in the Real Property Inventory. Modernization pursuant to mission changes is always the responsibility of the receiver.

Specific Provisions
(Continued from Block 12)

SUPPORT CATEGORY(Limited Applicability)

C. Disposal/Demolition. The removal from the Real Property Inventory of obsolete or excess facilities, including buildings or any other permanent or temporary structure as well as pavements, utility systems, and other supporting infrastructure. Includes environmental costs directly attributable to demolition/disposal to include inspection and removal of hazardous material (such as lead-based paint or asbestos). (Customarily reimbursable)

Functional Area: 673 CES Real Property

Supplier Will: Provides for cradle-to-grave technical, design, and construction surveillance of demolition and disposal projects by contract. Also included are the management and preparation of technical data, studies, evaluation of projects, and base community and comprehensive planning and programming. Provide engineering support to include planning, design and programming functions for the demolition/disposal actions. Plan and prepare cost estimates, plans and specifications as needed for demolition projects. . Interpret plans and specifications and analyze general provisions of contract documents. Review and approve schedules and control work requirements for demolition contractors.

Receiver Will: Inform the Supplier of Receiver requirements for demolition/disposal projects. Send AF Form(s) 332 to Supplier through the building manager for action after the Receiver commander or a designated representative validates it. Comply with Supplier's directives and policies for demolition activities. Coordinate and provide requirements and justification for proposed projects. Participate in the review process for planned demolition projects. Reimburse all costs to include the demolition contract cost and all associated disposal costs for hazardous materials and general building materials.

POC: 673 CES/CEAOR 384-0960/6223.

BASIS FOR REIMBURSEMENT: Actual cost of demolition and disposal fees, e.g. landfill tipping, contractor removal, etc.

Specific Provisions
(Continued from Block 12)

SUPPORT CATEGORY(Limited Applicability)

d. Facilities Acquisition. Provides resources to support the construction, erection, installation, acquisition or assembly of a new real property facility or the addition, expansion, or extension of an existing real property facility that adds to the existing facilities inventory. This also includes land acquisition. (Customarily reimbursable)

Functional Area: 673 CES

Supplier Will: Provide new facility construction and additions/expansions to existing facilities on a reimbursable basis. All such work will conform to Supplier standards including architectural standards. Also includes related planning and design. Provide for or arrange for project design, technical assistance, construction management, and completion of projects according to AFIs 32-1032, 32-1012, and 32-1023. Provide utilities for mobile units occupied by Receiver according to AFIs 32-1063 and 32-1061. Inspect facilities according to current directives. Process AF Form 332, BCE Work Request, for each action and identification of reimbursable elements. Provide facility planning, engineering design, drafting and provide minor construction improvements, alterations and modifications to specification reproduction services, inspection, job planning, estimating and budget planning for recurring contract procurement, military and minor construction. Work unable to be accomplished in house will, if requested and funded by Receiver, be accomplished by Architectural/Engineering or Engineering Services contract. Invite the Receiver personnel to participate in the Installation Facilities Working Group meetings. If Receiver is required to relocate to another building(s) or location(s) on the activity for the convenience of the Supplier, the condition and security features of the newly assigned building(s) or location(s) should be equal to or better then the vacated ones. Any related costs to move and/or upgrade newly assigned building(s) or location(s) will be the funding responsibility of the Receiver.

Receiver Will: Request support in compliance with Supplier's policies and guidance (AF Form 332). Building manager will maintain lawn, grass, and sidewalk areas adjacent to new facilities. Finance real property maintenance activities according to AFI 32-1022. Assist the Supplier, as required, in assembling data to maintain real property accountability and submit real property reports according to Supplier's requirements. Inform Supplier of all Receiver's requirements. Reimburse for all work performed. Appoint an environmental POC and abide by all environmental protection regulations in effect at the Supplier's installation. Fund all construction work in excess of $2,000 (funded cost) IAW AFI 32-1032. Attend all Installation Facilities Working Group meetings. Reimburse for requirements that are special or peculiar to the operation of the Receiver based on work orders. Comply with Supplier's policies and procedures

POC: 673 CES/CEAOR, 384-0960/6223.

BASIS FOR REIMBURSEMENT: Actual cost of project to include planning and permitting processes.

Specific Provisions
(Continued from Block 12)

SUPPORT CATEGORY

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(2) Explosive Ordnance Disposal (EOD) Support. Includes services and facilities for explosive ordnance storage, disposal and training. (Non-reimbursable)

Functional Area: 673 CES/CED (EOD)

Supplier Will: Perform explosive ordnance disposal responsibilities in accordance with AFJI 32-3002 and AFI 32-3001. Provide Explosive Ordnance Disposal (EOD) personnel to identify, render safe, recover and destroy all conventional, chemical/nuclear munitions and improvised explosive devices.

Provide training on ordnance recognition, hazards, mine awareness, terrorist bomb search procedures, and personnel protective measures to augment mandatory web-based training course as requested and within capabilities.

Maintain an Explosive Ordnance Disposal (EOD) capability according to AFI 32-3001 and MAJCOM EOD directives, except as modified by wavier or support agreement.

Receiver Will: Comply with Supplier's regulations and directives.

In the event of a bomb threat or suspect package, request EOD support through the 673 ABW Command Post or the 673 SFS Desk. Coordinate with EOD on emergency distribution of dangerously unserviceable Supplier munitions stocks (i.e. damaged). Comply with Supplier's directives.

POC: 673 CES EOD Flight Commander 552-8555

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable. Reimbursable IAW AR 75-14/AFJI 32-3002 when applicable.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes (support category added by JBER):

(3) Facility Construction and Major Repair Includes minor construction, alterations, additions, and major repairs required to modernize, replace, expand or restore real property, as resources permit. Also, includes related planning and design.

Functional Area: 673 CES

Supplier Will: As requested provide minor construction, alterations, additions, and major repairs required to modernize, replace, expand or restore real property as resources permit, on a reimbursable basis. All such work will conform to Supplier standards including architectural standards. Also includes related planning and design. Provide all normal cyclical maintenance and structural repairs of existing facilities. Support real estate facilities occupied by Receiver units by performing maintenance and repair and provide entomology management services and utilities, on a reimbursable basis. Provide for or arrange for project design, technical assistance, construction management, and completion of projects according to AFIs 32-1032, 32-1012, and 32-1023. Provide utilities for mobile units occupied by Receiver according to AFIs 32-1063 and 32-1061. Inspect facilities according to current directives. Process AF Form 332, BCE Work Request, for each action and identification of reimbursable elements. Perform maintenance and structural repairs of an emergency nature including service calls. Correct hazardous conditions as resource permit. Provide Receiver with Supplier program for the prioritized system of correcting and/or reducing hazardous conditions in the work place as follows: Hazards assigned as Risk Assessment Code (RAC) of 1, 2 or, 3 shall be corrected as promptly as practical on a "worst first" basis with in house resources or by contract. Provide facility planning, engineering design, drafting and Provide minor construction improvements, alterations and modifications to specification reproduction services, inspection, job planning, estimating and budget planning for recurring contract procurement, military and minor construction. Work unable to be accomplished in house will, if requested and funded by Receiver, be accomplished by Architectural/Engineering or Engineering Services contract. Provide abatement and control measures directed against insects, rodents, weeds, fungi, etc., including but not limited to routine treatment of grounds, buildings and equipment. Support owner of real property similar equipment as defined in AFI 32-1031 with field or intermediate level maintenance when the equipment cannot be supported by the logistics community and the maintenance is an existing skill within civil engineering. Work will be accomplished on a reimbursable basis. Provide authorized Receiver personnel access to civil Engineering Self Help store. Invite the Receiver personnel to participate in the Installation Facilities Working Group meetings. If Receiver is required to relocate to another building(s) or location(s) on the activity for the convenience of the Supplier, the condition and security features of the newly assigned building(s) or location(s) should be equal to or better then the vacated ones. Any related costs to move and/or upgrade newly assigned building(s) or location(s) will be the funding responsibility of the Receiver. Provide routine and cyclical maintenance and minor repairs required to preserve or restore real property so it may be used for its designated purpose, as resources permit.

Invite Receiver to participate in Installation Facilities Working Group meetings.

Receiver Will: Request support in compliance with Supplier's policies and guidance (AF Form 332). Building manager will maintain lawn, grass, and sidewalk areas adjacent to facilities. Finance real property maintenance activities according to AFI 32-1022. Assist the Supplier, as required, in assembling data to maintain real property accountability and submit real property reports according to Supplier's requirements. Inform Supplier of all Receiver's requirements. Reimburse for all work performed. Appoint an environmental POC and abide by all environmental protection regulations in effect at the Supplier's installation. When on site maintenance cannot be performed, i.e., winter and inclement weather, generator must be delivered to the Power Production Shop. Fund all construction work in excess of $2,000 (funded cost) IAW AFI 32-1032. Designate, in writing, individuals authorized access to Self Help

Specific Provisions
(Continued from Block 12)

Store. Attend all Installation Facilities Working Group meetings. Reimburse for requirements that are special or peculiar to the operation of the Receiver based on work orders. Costs of initial repair, renovation, normal maintenance that has been deferred, or modification of existing facilities and structures that would not otherwise be accomplished by the Supplier but are required by the prospective Receiver for sole use will be the Receiver's. Comply with Supplier's policies and procedures.

Comply with Supplier's policies and procedures.

POC: 773 CES/CEP, 552-3726/3727/384-6925/1807.

BASIS FOR REIMBURSEMENT: Responsibility for funding rests with the agency that has the new construction and major repair organization code in the Real Property Inventory. New construction and major repair pursuant to mission changes is always the responsibility of the receiver.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(4) Fire and Emergency Services. The protection of people, facilities, aircrews, aircraft and other assets from loss due to fire and/or explosion, including Fire Protection Management and Administrative Support, Fire Operations, Fire Prevention, and Disaster Preparedness. These encompass Hazardous Material (HAZMAT) activities, personnel rescue capabilities, and preliminary Emergency Medical Services for Structural Fire Protection and Aircraft Rescue and Fire Fighting. Operating fire-fighting facilities, alert services, and rescue operations is included. Includes development of fire prevention regulations and programs to reduce fire loss and to prepare for a wide range of emergency scenarios. The function includes fire code compliance including oversight fire extinguishers maintenance in accordance with appropriate DoD, Air Force and National Fire Protection Association (NFPA) directives. (non-reimbursable)

Functional Area: **673 CES**

Supplier Will: Provide fire protection and prevention services for facilities, assets and personnel assigned to the Receiver. The Fire Chief is the Authority Having Jurisdiction for all fire and emergency services and code enforcement related issues.

Communications: Provide emergency notification/dispatching services including E-911, automatic fire detection/suppression system alarm systems and Primary/Secondary Crash Network.

Operations: Provide fire fighting/rescue services for structural, aircraft, wildland, hazardous materials and emergency medical incidents in accordance with DoD, Air Force and National Fire Protection Association Standards. **Aircraft Rescue Fire Fighting (ARFF) capabilities will be provided to meet Airport Category 1-4 IAW NFPA Std 403 to support currently assigned mission aircraft (UH-60/C-23).**

NOTE: Aircraft Rescue/Firefighting (ARFF) standby support of Receiver training activities occurring away from the two primary airfields (Elmendorf/Bryant Field) is considered an enhanced level of service and will be provided on a reimbursable basis.

Prevention: Conduct fire code compliance as required by Air Force instruction or other Federal statute. Review all Civil Engineer work order request and projects for fire and life safety issues. Provide an aggressive public fire safety education program addressing local conditions and fire risks.

Fire extinguisher maintenance and servicing is a building occupant/custodian responsibility, services are available locally using the Government Purchase Card. A list of available vendors can be obtained from the Fire Prevention Office. New extinguishers may be purchased from General Services Administration (GSA) which in some cases may be more economical versus the cost of maintenance/servicing. Fire Inspectors will continue to provide guidance on extinguishers selection, location as well as conducting the required annual inspections. Facility Managers will be able to turn in unserviceable extinguishers to the Fire Prevention Office for proper disposal. If facility managers need assistance with the policy or procurement, please contact the Fire Prevention Office at 552-2620.

Receiver Will: Comply with applicable Air Force, DoD, JBER fire regulations and directives. Report emergencies by dialing 911. Provide Material Safety Data Sheets (MSDS) and a site safety location plan to F&ES citing all hazardous materials used/stored in assigned facilities. Furnish the exact location of these materials.

Purchase and maintain fire extinguishers IAW guidance from the Fire Prevention Office at 552-2620. Request assistance regarding fire prevention and emergency services from the Fire Chief.

Provide notification and obtain written approval from the CES POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).

Specific Provisions
(Continued from Block 12)

Receiver will incur all costs associated with providing ARFF capabilities exceeding NFPA Std 403, Airport Category 1-4 in the event of a change to current mission assigned aircraft (UH-60/C-23) or if transient aircraft size/frequency substantiate the need for increase capabilities IAW AF Allowance Source Code 010.

POC: 673 CES Fire Chief 552-3136/552-2801.

BASIS FOR REIMBURSEMENT: This support is customarily non-reimbursable; however Special Requirements directly attributable to a Receiver are reimbursable. See Funding Annex paragraph 1.a.(2).

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(5) Grounds Maintenance and Landscaping. Includes all associated landscaping activities, plant growth management of improved, semi-improved and unimproved land. Pavement sweeping of streets and sidewalks to remove grass and debris caused by grounds maintenance is included. Irrigation system maintenance within a grounds maintenance contract may be included in this activity to drain and charge systems, replace damaged or broken sprinkler heads, and to repair ruptured pipes. Re-lamping: replacement of light bulbs in landscape accent lighting or lighting along paths and walkways is included. Water features: operations and cleaning of manmade water features (i.e., ponds, waterfalls, and fountains) is included. (Common areas are customarily non-reimbursable, all other areas are reimbursable)

Functional Area: 773 CES

Supplier Will: Provide operation, maintenance, repair, minor construction and alteration of common use infrastructure, i.e. roads, grounds, surfaced areas, miscellaneous structures, real property, installed equipment, common benefit signs, energy consumption, street cleaning and beautification projects.

Receiver Will: Submit an AF Form 332, Work Request to 773 CES, Customer Services Center (552-3727) as services are required. Call CES for maintenance and repair services.

Provide notification and obtain written approval from CES prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).

POC: 773 CES 552-3727.

BASIS FOR REIMBURSEMENT: Common areas are customarily non-reimbursable; all other areas are reimbursable based on contract cost, overtime, over-hire, and directly attributable expendable supplies.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(6) Pavement Clearance. Includes (1) Snow and ice removal from paved areas including streets, airfields, piers, walkways, and parking lots, and (2) Pavement sweeping of streets, parking lots, piers, airfield pavements, and walkways. Includes in-house and contract snow and ice removal and pavement sweeping including personnel, equipment, and supplies. (Customarily non-reimbursable on common roads and major parking lots, all other areas are reimbursable)

Functional Area: 773 CES

Supplier Will: Remove snow/ice on common use areas (such as roads) IAW with the installation snow and ice removal plan. Provide snow/ice removal and grass mowing within available resources. Remove snow/ice and mow grass in all common-use areas beginning approximately 51 feet away from each building to include shared parking lots, streets, roads, etc. Perform street sweeping operations on roads and sidewalks to remove sand and debris.

NOTE 1: Tenants are responsible for snow/ice removal and mowing from the side of the building out 50 feet to where the standard support level begins, and for all sidewalks regardless of length.

NOTE 2: Exclusive-use parking lots and fenced compounds are the responsibility of the tenant occupying the building.

Receiver Will: Remove snow and ice in Receiver-use areas, i.e. sidewalks, stairs, and porches, parking lots and fenced compounds. Request services from CES as required.

NOTE: Ice melting compound is sometimes available at the Self-Help Store. Call the Self-Help Store for details. Housing occupants receive Self-Help services by presentation of a Self-Help card. Building occupants (including Receivers) must submit a delegation of authority form to receive Self-Help services. Receivers are required to attend mandatory training from the Self-Help Store before they can draw materials.

Provide notification and obtain written approval from CES prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).

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a. Snow removal and grass cutting at Bryant Army Airfield specific provisions:

(1) 673 ABW CE will provide snow removal and ice control for the airfield runways and taxiways as depicted in the attached graphic (**Attachments IX, X, and XI** to this agreement). The work includes, but is not limited to, the removal, disposal and control of snow and ice on Bryant Army Airfield. This includes runways, taxiways, parking aprons and work areas. Also, when appropriate, JBER will provide grounds maintenance in and around the airfield; that grounds maintenance work will entail brush clearing and mowing to support the Bryant Army Airfield Manager.

(2) 773 CE will work closely with the Airfield Manager to maintain the runway to a C-130 standard in coordination with flight schedules, airfield operations and in accordance with (IAW) Elmendorf Snow Plan. Coordination of flight schedules will be between 773 CE and the Army Aviation Support Facility (AASF) Flight Operations (907) 428-6333. Flight schedules should be e-mailed, or FAX to, 773 CE (907) 552-1233, with a copy furnished to the Airfield Manager (FAX) (907) 428-7870. Unscheduled flights will be furnished to 773 CE at the earliest opportunity telephonically (907) 552-2994. Upon notification, the 773 CE shall respond within a two (2) hour call out although the number of call outs should be minor as pre-coordination of schedules will serve as the primary means of work control. This means that upon

Specific Provisions
(Continued from Block 12)

notification the 773 CE will execute snow and ice control measures for Priority 1 areas on Bryant Army Airfield and will be completed within (72) hours. Emergency call outs will be done as soon as possible.

(3) Other than standard contractual ruling, snow removal activities can be initiated, modified, or canceled by 773 CE representatives (telephone) (907) 552-2994, fax, or email or by the BAAF Manager, (907) 428-7252 or Cell phone (907) 350-8336. Authorization of overtime for airfield services will be coordinated with and authorized by the BAAF manager.

(4) Runway 17/35 will be maintained at a Runway Friction Report of not less than a C-130 standard (or as determined by the Airfield Manager or his designated representative) as dictated by flight schedules and airfield flight operations. Brake action readings will be taken by the Airfield Manager, or his representative. Snow removal priority areas are depicted in the **enclosure 1 (attached).**

(5) Snow removal for **Priority 1** areas shall begin when airfield schedules or operations dictate the requirement. A snowstorm or snow drifting event prior to airfield operations with snowfall accumulation of 1.0 inch in depth or more will require snow removal and ice control operations.

(6) Snow removal for **Priority 2** areas shall begin when all snow has been plowed away or removed from Priority 1 areas, and snowfall accumulation in Priority 2 areas reach 1.0 inch in depth.

(7) Snow removal operations shall continue until all snow covered priority areas have been cleared in accordance with the snow removal Map and Priority list provided by the BAAF Manager.

(8) Snow removal operations on aircraft movement areas shall be performed in such a manner that yields to all aircraft traffic. Two way radio communications must be maintained between BAAF Base Operations or AASF Flight Operations (as appropriate) and the snow removal equipment operators on VHF 125.0. Bryant Army Airfield will supply the required radios to operators working on the airfield.

(9) Snow removal operations per snowstorm or snow-drifting event shall be completed within seventy-two (72) hours after snowfall or drifting ends, unless coordination with the BAAF Manager allows a longer timeframe. The commencement of each snowfall or snowdrift event begins another seventy-two hour time frame, even if such event begins during a previous seventy-two hour time frame. Snow plowing operations may include snow removal. Snow plowing operations include plowing snow to edges of hardstands and into berms as not to interfere with flight operations and the movement of aircraft to and from hangars, taxiways, parking ramps, and into parking and staging areas for later removal. Snow berms cannot be higher than 48 inches to allow for adequate wing tip clearance and safe operation of the aircraft.

(10) All snow berms higher than 48 inches within the runway/taxiway areas shall be removed within 72 hours, unless coordination with the BAAF Manager allows a longer timeframe. Snow outside of the runway and taxiway lights shall be profiled as shown in the attachment AC 150/5200-30C Design Group I and II

(11) Ice Control Operations: Ice control operations shall begin immediately upon removal of snow from the runways and taxiways.

(a) The use of FAA approved chemical runway deicers are authorized (such as brand name Cryotech as an example). Records of the amount, concentrations, and locations of chemical deice usage must be compiled, maintained by 773 /CEOH and kept on file for five (5) years. Notification of chemical usage will be made on a quarterly basis to the 673 CE Environmental Department, Water Resources Program Manager, (907) 384-0208. 773 CE will need to maintain records on use and application rates. AK ARNG will reimburse 773 CES for sand and deicing chemicals. Inside storage space will be provided by BAAF manager for equipment used for snow operations.

(b) Sand must meet the following gradation using a USA Standard Sieve conforming to ASTM E 11-81. Sieve Designation/Percent by weight passing of: #10/100%-#200/0-2%. Materials applied to aircraft movement areas must consist of washed granular mineral sand particles free of stone, clay, debris, slag, chloride salts, and other corrosive materials. Sand may be used when authorized by airfield manager.

Specific Provisions
(Continued from Block 12)

(12) Airfield Lighting: Airfield lighting shall remain operational and clearly visible during and after snow removal operations. Any damage to airfield lighting must be reported immediately to the BAAF Airfield Operations. Runway and taxiway lighting will be kept clear of snow conforming to the criteria contained in FAA Advisory Circular150/5200-30C.

(13) Airfield Grounds Maintenance (Grass/brush control): It is estimated that there will be two (2) brush cutting occurrences around the airfield per year. There will also be regular grass mowing events on average every two weeks during growing season. Field brush around the runway and south of taxiway alpha will be maintained at a height of no less than 8 inches and no more than 17 inches within 500' of of the respective centerlines and 1,200' from the end of the runway hard surface. Other grass areas are to be maintained at a height of from 8 to 17 inches.

(14) Foreign Object Damage (FOD) Mitigation: FOD mitigation vacuuming will normally be performed four (4) times per season. The first vacuuming process will be immediately after snow melt to remove the build-up of any sand on the runway/taxiways. Request for vacuuming will be coordinated through the airfield manager and 773 CES/CEOH.

(15) Cost: Actual cost will be based on the current 773 CES/CEOH Heavy Repair Shop Rates.

(16) Spill Response: 773 CES/CEOH is required to comply with the Storm Water Pollution Prevention Plan.

b. Specific Requirements:

(1) 773 CES/CEOH will:

(a) Provide Manpower and equipment to perform services.

(b) Provide snow removal service to the standards identified above.

(c) Provide grass cutting to standards identified above.

(d) Provide FOD mitigation as identified above.

(2) AKNG will:.

(a) Reimburse cost via Military Purchase Request (MIPR) process on a quarterly basis.

(b) Remove snow/ice within six (6) feet of Hangar doors.

(c) Pay for repair/replacement of runway/taxiway lights due to inadvertent damage.

(d) Reimburse for all de-icer used in airfield snow removal operations.

(e) Reimburse for all Pavement Clearance (snow removal) performed as part of this agreement.

POC: 773 CES/CEOH 552-3727.

BASIS FOR REIMBURSEMENT: Common areas are customarily non-reimbursable; all other areas are reimbursable based on contract cost, equipment lease costs, overtime, over-hire, and directly attributable expendable supplies.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

Functional Area: 773 CES

(7) Pest Control. Inclusive of all contracted and in-house (e.g., supplies, labor, training, admin costs) pest control and management. Includes facility and grounds, pest monitoring, pest response and removal, and installation pest education programs. Protects installation personnel from vector borne diseases and medical pests including animals or plants that do not directly transmit a disease pathogen but are medically important because of biting, stinging, or other annoyance including secondary skin infection. (Customarily non-reimbursable)

Supplier Will: Provide abatement and control measures directed against insects, rodents, weeds, fungi, reptiles, animals or plants that are determined by the Supplier to be undesirables.

NOTE: These undesirables may be discovered at any time. However, the seasons and available food sources often determine the volume of undesirable animal and plant life. Abatement and control measures include: routine treatment of grounds, buildings, equipment, supplies and other common carriers as necessary.

Perform scheduled pest control services in dining facilities, vacant quarters, family member schools, etc. IAW established time standards. Perform services on Standing Operation Orders (SOO) for common areas at JBER.

Receiver Will: Call the CES Customer Service Center for service as required or submit work requests to CES citing the last three digits of this agreement number. The current designated requestor for Pest Management services is the DMVA Maintenance Supervisor at (907) 428-6772. Also the following DMVA/FMD personnel are authorized to request Pest Management services: Deputy Director, Environmental Program Manager, Pest Management Project Manager, and the Compliance Project Manager.

Pest Management services will comply with Air Force Instruction (AFI) 32-1053, and JBER-Integrated Natural Resource Management Plan.

Notify pregnant and allergic employees located in/near the affected spraying area prior to pest treatment.

Obtain prior written approval from CES before purchasing, stocking, or applying any chemicals/products covered by this section. Reimburse Supplier for all support. Comply with CES regulations and directives to include Standing Operating Procedures (SOPs), Letter of Instruction (LOI), etc., which may be obtained from the CES Pest Control Office.

Provide notification and obtain written approval from the CES POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.) Contact the following POCs with any changes:

POC: 773 CES Customer Service Center, 552-3727.

BASIS FOR REIMBURSEMENT: Reimbursable for special requirements directly attributable to the Receiver.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(8) Readiness Engineering Services. Includes Explosive Ordnance Disposal (EOD) capability and engineering combat support capabilities. Provides contingency support services to prepare for installation operations during natural disasters, major accidents, war, and other emergencies. This includes operational planning, base recovery training, and specialized equipment management. Responsible for emergency management support during peacetime disaster response, and contingency operations for all threat spectrums. (non-reimbursable)

Functional Area: 773 CES/CEX

Supplier Will: Provide a program to minimize the loss of operational capability caused by enemy attacks, major accidents, and natural disasters. Define Receiver responsibilities in the installation Comprehensive Emergency Management Plan (CEMP). Provide security-related planning and inspections IAW applicable OPLANS for combating terrorism for on base Receivers. Integrate disaster planning, training, and resource employment into a single program. Support civil authorities as required during major accidents and disasters.

Provide an effective system to quickly disseminate disaster information to affected personnel. *NOTE:* The installation warning system must be designed for operation during disaster conditions.

Provide support to the Receiver in the event of a disaster. Establish command and control. Notify and update populace. Coordinate with local authorities. Maintain command and control. Establish displaced persons registry. Request help when necessary. Reassess the situation. Assess stocks of food and water.

The 773 CES/CEX is responsible for conducting a SAV on the AKNG Emergency Management Program. Brief AKNG staff quarterly with updates and changes to the Emergency Management program. Support AKNG Emergency Management training requirements if requested. Provide personnel and equipment assistance as resources permit during disaster operations, which threaten AKNG resources and are beyond theAKNG capabilities.

Receiver Will: Comply with Supplier's regulations and directives. Provide input to Supplier as required. Comply with applicable AFIs, directives, policies, etc... regarding tenant unit responsibilities. Request training only when qualified Receiver instructors are not available. Submit request for training well in advance whenever possible to 773 CES/CEX. Include specific course, quota requirements, and names of attendee.

Manage a Staff Assistance Visits (SAV) program for the units within the AKNG on the installation. Conduct required Emergency Management training for assigned AKNG personnel.

As a fundamental prerequisite for an effective disaster response capability, personnel assigned emergency management program responsibilities will be scheduled for formal courses as soon as possible. They will be involved in on-the-job training to develop functional expertise.

When requested provide available personnel and equipment resources to the 773 Emergency Management Flight.

POC: 773 CES/CEX Plans 551-PLAN/552-5061.

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(9) Real Property Management and Engineering Services. Includes (1) Facility Management and Administration and (2) Installation Engineering Services. Facility Management includes public works management costs, contract management, material procurement, facility data management (to include GeoBase), furnishings management costs, and real estate management. Installation Engineering Services includes annual inspection of facilities, Facilities Management, overhead of planning and design, overhead of construction management, and non-Sustainment and Restoration Modernization (SRM) service calls. (Customarily non-reimbursable)

Functional Area: 673 CES/773 CES

Supplier Will: Administer Air Force real estate. Ensure accountability of real property. Maintain real estate instruments. Provide construction administration services for installation projects. Lease space, as required, to support the installation mission, includes direct and reimbursable costs for real estate leases. Provide adequate space for office administrative, operational and storage purposes.

Account for facilities used by the Receiver and subsequent improvements thereto on the Supplier's real property inventory. Hand receipt buildings to the Receiver; conduct joint inventories and space utilization surveys as required. Use of facilities is subject to the Supplier's installation master plan (i.e., relocation, demolition, construction, etc.) and the Supplier's mission essential requirements.

(As requested by AKNG):
Review all requests/requirements necessary to modify existing facilities. Approve/disapprove said requests/requirements prior to initiating work. Provide Receiver-requested minor construction on a Supplier-approved basis, as available.

Provide facility master planning, engineering designs, and drafting and reproduction services.

NOTE 1: Services will be provided to support projects up to the Receiver's FY expected funding.

Provide site survey reports and inspection. Provide job planning and estimating required for the construction (military and minor), fabrication and repair of real property facilities and associated equipment at Receiver's request.

NOTE 2: Functions identified as workable by local personnel are scheduled by the office responsible to complete the action. Those functions identified as not workable by local personnel will be contracted.

NOTE 3: Systems furniture components used will be compatible to components used within the building.

Qualified personnel may accomplish reconfiguration, relocation, movement of furniture or power hookups and other modifications only. Qualified personnel may include Receiver contract workers upon prior written approval from CES.

Provide lock-changing services on interior locks within regulatory guidelines.

Provide Supervisory and Administrative (S&A) inspection of renovation projects.

Coordinate all new construction and renovation projects that could affect JBER ranges through the USARAK G-3 Deputy (384-2071).

Ensure that all construction and development projects are in compliance with the Installation Master Plan. Complete DD Form 1391 to provide budgetary and scoping documentation and justification for all new

Specific Provisions
(Continued from Block 12)

construction projects costing $750,000 or more. Provide project management support during design and construction of major projects. Maintain real property records for the installation.

Provide required space for office administration or operational purposes within the available assets.

Perform minor construction projects within installation funding limits. Accept requests from Receivers (work orders). Perform design/estimating for Receiver-requested, mission unique projects. NOTE: All design work for Receiver's mission-unique projects is fully reimbursable. Inspect contracts. Perform requested work by an in-house resource as funding allows.

Receiver Will: Retain buildings in present condition without change unless prior written authorization is obtained from CES Air Force Form 332 authorizing any changes. Notify Strategic Planning/Real Property of any requirements to modify/add to existing facilities. Program, budget and fund mission related minor construction projects.

Provide Supplier with a summary of space requirements. Sign for space occupied (hand receipt). Conduct joint inventories, as required. Provide updated building custodian orders to 773 CES Customer Service Office as appointments change.

Submit Air Force Form 332 IAW AFI 32-1001 to CES Customer Service Branch citing the last three digits of the ISA number. Develop project justification. Assist Supplier in the preparation of DD Form 1391. Submit document through command channels.

Assign a primary and alternate building custodian by appointment letter from the Squadron/Company Commander or equivalent. Provide the name and phone number of the selected building custodian(s) to 773 CES Customer Service Unit.

Reimburse for all design work performed on Receivers-requested, mission-unique projects. Provide reimbursement for those construction and alteration projects that are made solely for the mission of the Receiver at the request of the Receiver. Submit Receiver program data involving recurring new work and O&M projects that will be solely utilized by the Receiver.

Obtain written non-objection for clearance to begin the planning and/or construction phases for new construction or renovation projects from CES, Base Civil Engineer (552-3747) and USARAK G-3 (384-2071). USARAK G-3 will make all determinations as to whether the new construction or renovation project(s) will affect JBER ranges. Should JBER ranges be affected, USARAK G-3 will notify CES, Real Property and the Receiver to begin negotiations to resolve issues.

Prior to submission, all Receiver projects must receive written approval and be coordinated through CES Real Property (552-3139/384-0960) and Facilities Management (384-3004) for inclusion in the Installation Master Plan, citing approval by the 673 ABW Commander, and for technical edit and review. Receiver will be the approval authority for Receiver projects.

Reimburse for Supervisory and Administrative (S&A) inspection of renovation projects. Comply with Supplier's regulations and directives.

Provide notification and obtain written approval from the CES POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).

POC:	CES, Project Mgmt. Br.	552-2727/384-1853/3128/2602
	Asset Optimization Mgmt	384-6224/3003
	Customer Service Center	552-3727
	Real Property Office	384-0960/384-6223
	Madbull Site Mgr (773 CES)	552-5061/552-5321

Specific Provisions
(Continued from Block 12)

BASIS FOR REIMBURSEMENT: Real property management is non-reimbursable. Engineering services are reimbursable for actual cost of project.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(10) Refuse Collection and Disposal. Accounts for all costs associated with refuse collection. Includes: (1) Non-housing and housing, and (2) Recycling operations and administration. The non-housing and housing requirement includes disposal operations, trash collection, and disposal fees. In the recycling operations requirement, curbside pickup services and composting are included. (Customarily reimbursable)

Functional Area: 773 CES

Supplier Will: Provide refuse collection (trash and municipal solid waste materials), transportation, handling, and disposal services on a regularly scheduled basis, as determined by location, building number, quantity and size of dumpster(s). Operate equipment utilized for transportation, disposal, or destruction of waste materials. Furnish dumpsters. (Trash containers/waste paper baskets are the Receiver's responsibility.) Empty dumpsters as requested on the schedule by the Receiver. Notify Receiver should Supplier of service change for any reason. (This service has been contracted and is no longer provided by the CES staff).

NOTE: Refuse collection does not include handling hazardous waste or handling items other than trash *in* dumpsters.

Receiver Will: Request services as required from CES. Comply with Supplier's policy concerning dumpsters and pollutants by not dumping or disposing of any hazardous materials or hazardous waste into any dumpster. Ensure that CES has access to dumpsters. Do not leave trash outside of dumpster(s). Call Roads and Grounds Section when dumpsters are full and need to be emptied prior to the next regularly scheduled run. Notify the CES ISA Coordinator and Roads and Grounds/Operations to request changes in current schedule. All refuse collection containers (trash cans) in addition to dumpsters provided by 773 CES must be bear resistant.

NOTE: Cost estimates are based on the current Receiver-requested schedule.

Request services as required from Supplier. Police area around dumpsters. Pick up paper, trash, debris, etc., on a daily basis and put in dumpsters or trash barrels. Comply with Supplier's regulations and directives. Reimburse Supplier for services received. Provide notification and obtain written approval from the CES POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).

POC: 773 CES, 552-5749/ 384-0150 or Cell Phone # 854-9257.

BASIS FOR REIMBURSEMENT: Reimbursable; CES refuse collection and disposal rate is applied to customers based upon sq ft occupied. See Funding Annex.

Specific Provisions
(Continued from Block 12)

e. FACILITIES OPERATION. Responsibility for funding follows assignment of sustainment responsibility in the real property inventory. Common areas are generally the responsibility of the supplier. Facilities Operation includes:

(11) Utilities. Includes operations of utility systems for the generation and distribution of all energy and source fuels, (pneumatics--unavailable at JBER), other gases, heated water, chilled water, potable and non-potable water, and ice. Includes purchase of all water, electricity, natural gas, sewage disposal, and other utilities. Includes issues of motor fuel, diesel fuel, distillates and residuals from installation fuel supplies for heating and power production for real property facilities equipment. Includes utility system privatization costs after the system has been privatized and Energy Savings Performance Contracts. (Customarily reimbursable; where meters are available, they are the determinant for reimbursement)

Functional Area: 673 CES

Supplier Will: Provide procurement, production, and distribution of utility services for reimbursement to include water, sewage, electrical, natural gas and other utility services for buildings assigned to the Receiver.

a. For Privatized utility metered buildings: Read meters to determine actual utility usage by the Receiver, if reimbursable.

b. For un-metered buildings: Compute estimated usage by multiplying the effective utility rate against the gross square footage of the Receiver's assigned building(s), or space, as evidenced on JBER Form 15 (Real Property records), if reimbursable.

Provide assistance and guidance in meeting established goals. Provide technical assistance in making all buildings energy efficient by promoting energy-saving products, equipment, and devices that are cost-effective and proven to significantly save energy resources. *NOTE:* Efforts to achieve goals will not impair the health, safety, or productivity of military and civilian personnel.

Operate (or contract for) utility plant and system, sewage and waste collection systems, and purchase utilities service for reimbursement.

Receiver Will: Report immediately all utility-related deficiencies or malfunctions to the CES Customer Service Branch. Request services from CES as required. Assign and appoint an energy officer and building energy monitor(s) to assist in meeting energy conservation goals. Forward a memorandum listing officer/monitor names to CES Asset Optimization , ATTN: Utility Engineer. Update the memorandum as changes occur. Exercise a common sense approach to utility consumption. Promote the Installation's Energy Awareness Program. Develop an energy efficiency plan through the Installation Energy Manager.

NOTE: This plan will assist the command in meeting the mandated 35% energy reduction target by the year 2010 IAW Executive Order 13123.

Install meters at own expense at Receiver's discretion. For existing Non-Privatized metered buildings: Read meters to determine actual utility usage by the Receiver, if reimbursable.

Comply with Supplier's policies as set forth in the following references: (Applicable AFI), Executive Order 13123, DoD 4170.10, DoD 4120.14, DoD 5100.50, DoD 5126.46 (Reference U), Public Law 92-523, Executive Order 12759.

Provide notification and obtain written approval from the CES prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administration, latrine, etc.).
POC: 673 CES, Utility Engineer, 384-2763.

BASIS FOR REIMBURSEMENT: Reimbursable; calculated at the "A" rate (federal), if reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(2) Child and Youth Programs. Child and Youth Programs manage and deliver a system of quality, available and affordable programs and services (child development, school age, and youth program services) for eligible children and youth from birth through 18 years of age. (Customarily non-reimbursable for appropriated support only)

Functional Area:

Supplier Will: Provide quality daycare service for children of authorized personnel: Active duty military, including National Guard and Reserve personnel; DoD civilian employees; and contract employees. Supervise Family Child Care (FCC) homes. Provide special community programs through Supplemental Programs and Services (SPS). Provide centralized registration and training through SPS, to include teen baby-sitting and volunteer training. Furnish hot meals at least twice a day plus snacks. Sponsor a program to support the morale of parents by providing a comprehensive, year-round activities program that offers developmental activity schedules that are based on the children's age and developmental level. Plan daily programs for all ages of children, regardless of the time in care. *NOTE:* Programs include full day, hourly care, part day preschool, toddler time, and outreach programs, such as "Romp 'N Stomp."

Provide off-site and on-site activities through a youth center which offers programs for young people in grades 1-12, to include a game room, dance studio, craft and activity room, snack bar area, gym and basketball court. (Off-site programs include scheduled day camps with field trips as well as before and after school programs.) Offer classes, which could include piano, guitar, karate, gymnastics and tumbling, ballet, jazz dance, and crafts. Establish a sports program that could include baseball, softball, basketball, volleyball, soccer, wrestling, track, swimming, football, and cheerleading.

Provide employment, computer and homework tutoring, and outreach services.

Provide structured activities to youth (grades K-6), which support the health, interpersonal, knowledge, reasoning, creative, vocational, and self-awareness skills necessary to be successful in today's world. *NOTE:* Program includes before and after school care, full day, vacation, and summer camp activities. Activities may include recreational games, sports, instruction, arts and crafts, free choice play, and outdoor activities.

Receiver Will: Comply with Supplier's regulations and directives.

POC: 673 FSS/FSF 552-8476 and 384-2031

BASIS FOR REIMBURSEMENT: Reimbursable; individual user fees.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(4) Command Support. Command Support includes Command Management (CM), Installation Public Affairs (PA), Legal Support (LS), Financial Management (FM), Management Analysis (MA), Installation Ground Safety, Installation Chaplain Ministries, Installation History, Equal Opportunity, Administrative Services, and Information Protection. (Customarily non-reimbursable except specific functions as noted below.)

Command Management. Includes oversight and administration of military and business operations, sustainment of a positive command climate, executive support to quality of life initiatives and enhanced community relations. Includes Postal Services, Honors and Protocol Functions, Command Advisory Services, Administrative Management, Executive Office, and Inspector General and Internal Review. (Customarily non-reimbursable except where service provided exceeds standard capability of the installation)

Occupational

Installation Ground Safety. Includes functions to ensure prevention of accidents and mitigation of risk to the lowest acceptable level. Includes training, inspections and evaluations, investigations, technical consultations, and safety awareness promotions. Installation Safety sub-program areas include, but are not limited to: airfield safety, ground safety, occupational/ industrial safety, off-duty recreational safety, range safety, explosives safety and traffic safety. Installation Safety excludes aviation operational safety, maritime safety, space/missile safety, nuclear surety, acquisition system safety of weapon system development, and centralized technical support from safety centers. Also excluded is occupational health which includes industrial hygiene, occupational medicine, hearing conservation, ionizing radiation, radiofrequency radiation, laser safety, and other aspects of occupational health services. (Customarily non-reimbursable, exclusions are customarily reimbursable)

Provide command support including oversight and management through the installation commander and the command element office staff. Support DoD's Human Goals, with its emphasis on the infinite dignity and worth of the individual and the concept of equal opportunity. Provide DoD support of fund-raising campaigns. *NOTE:* Campaigns will be limited to those authorized by DoDD 5035.1 (reference h) and its attachment, the Manual on Fund-Raising within the Federal Service, to appeals authorized by the President or Chairman of the Civil Service Commission, and to the military service aid societies.

Occupational

Functional Area(s): Ground Safety, PAO, SJA, Chaplain, Postal Services, Installation History, ~~Financial Management, Internal Review~~, Equal Opportunity, Administrative Services, Information Protection.

Occupational

(a) Ground Safety.

Occupational

Installation Ground Safety. Includes functions to minimize loss of Air Force resources and protect Air Force people from death, injuries or illnesses by managing risks on- and off-duty. The Installation Ground Safety program provides a comprehensive safety and occupational health program that meets Occupational compliance requirements of the Occupational Safety and Health Administration (OSHA) Act of 1970.

JBER activities must comply with OSHA requirements at all times unless the military-unique exemption applies according to DoDI 6055.1, DoD Safety and Occupational Health Program, paragraph E3.4.5. NOTE: AFI guidance must be followed at all times. Comply with parts of OSHA 29 Code of Federal Regulations (CFR), AFI 91-202, JBERI 91-202 addresses additional local requirements not addressed in the above references. In addition, safety, fire prevention and occupational health requirements in equipment technical orders (TO) must be followed at all times.

The comprehensive safety program is broken down into five areas that include; Inspections (Facilities and Program Management), High Interest / Spot Inspections, Hazard Abatement, Mishap Prevention /Investigation, and Education and Training. Inspections: Program management includes but not limited to; confined space, hazardous energy control, fall protection, over head lifting devices. Hazard Abatement: Includes hazard tracking and Occupational Safety and Health Administration compliance.

Specific Provisions
(Continued from Block 12)

Mishap prevention/Investigation: Ranging from class A-E, DOD and OSHA reporting log and record keeping requirements and dissemination of findings and recommendations captured and sterilized from mishap investigations to share the lessons learned with the installation to ultimately prevent similar mishaps. Education and Training: Is broken down into traffic safety, PMV 4, PMV 2, general industry, continuing education, safety campaigns, and family / recreational safety. Excluded is occupational health/illness which includes industrial hygiene, occupational medicine, hearing conservation, ionizing radiation, radiofrequency radiation, laser safety, and other aspects of occupational health services. (Customarily non-reimbursable, exclusions are customarily reimbursable.)

occupational

SUPPLIER WILL: Administer a comprehensive ground safety program IAW AFI 91-202 and JBERI 91-202 that results in safe facilities, work areas, equipment, and work procedures. The comprehensive safety program is broken down into five areas that include; Inspections (Facilities and Program Management), High Interest / Spot Inspections, Hazard Abatement, Mishap Prevention /Investigation, and Education and Training. Inspections: Program management includes but not limited to; confined space, hazardous energy control, fall protection, over head lifting devices. Hazard Abatement: Includes hazard tracking and Occupational Safety and Health Administration compliance. Mishap prevention/Investigation: Ranging from class A-E, DOD and OSHA reporting log and record keeping requirements and dissemination of findings and recommendations captured and sterilized from mishap investigations to share the lessons learned with the installation to ultimately prevent similar mishaps. Education and Training: Is broken down into traffic safety, PMV 4, PMV 2, general industry, continuing education, safety campaigns, and family / recreational safety. Excluded is occupational health/illness which includes industrial hygiene, occupational medicine, hearing conservation, ionizing radiation, radiofrequency radiation, laser safety, and other aspects of occupational health services. (Customarily non-reimbursable, exclusions are customarily reimbursable.)

Offer safety education training on a space available basis to Receiver upon request. When notified by 773 CES of a major construction project which may impact Receiver operations, 673 ABW/SE will notify the Receiver of the project and permit them to review and comment on all available project proposals.

Upon request and dependent on the availability/assignment of primary duty/fulltime safety professional within the tenant/organizational unit, conduct joint safety inspections of Supplier owned facilities where Supplier and Receiver personnel are co-located. Upon request, provide initial ground mishap response and an Interim Safety Board (ISB) IAW applicable AFIs, directives, policies, etc... If a Receiver Class A on-duty ground mishap occurs locally, consult with the Receiver chain of command on ISB composition if a board is convened. Select qualified ISB members from the Receiver organization to serve on the ISB if required.

Supplier Safety, when notified by Supplier engineer assets of a construction project which may impact receiver operations or base traffic flow, will notify the Receiver safety office of the project and permit them to review and comment on all available project proposals.

occupational

RECEIVER WILL: Establish a comprehensive ground safety program IAW AFI 91-202 and JBERI 91-202 that results in safe facilities, work areas, equipment, and work procedures. Comply with federal, state, and local safety/health standards to ensure a workplace free from recognized hazards that may cause death or serious physical harm to employees. Ensure that employees comply with standards, rules, regulations, and orders applicable to their own actions and conduct. Comply with the Supplier's regulations and directives. Additional safety services provided by the host safety office should be dependent on the availability/assignment of primary duty safety personnel within the tenant unit.

Occupational

Submit requests for training to 673 ABW/SE Ground Safety Manager.

Receiver Safety, when notified by Receiver engineer assets of a construction project which may impact 673 ABW operations or base traffic flow, will notify the 673 ABW/SE of the project and permit them to review and comment on all available project proposals.

Specific Provisions
(Continued from Block 12)

Upon request, conduct joint safety inspections of Receiver owned facilities where Receiver and Supplier personnel are co-located.

(b) Public Affairs.

SUPPLIER WILL: Provide command information support to include access to military personnel and their families via the weekly command newspaper, the official installation guide, and maps of JBER. Support Receiver's community relation efforts, subject to operation requirements. (This includes, but is not limited to open house programs, charity fund raising events, and public relations activities.) Handle media release(s) and queries. Provide media relations support of events and actions that affect both the Supplier and the Receiver. Provide services IAW Department of Defense Directive 5410.18.

NOTE: The Alaska National Guard is the release authority for information directly related to National Guard personnel and activities. Any other installation activities (to include environmental, community operations, and media operations) or incidents on the installation are within the responsibility of the JBER Commander/PAO. Additionally, military personnel and DOD civilian employees desiring to seek publication of their military-related photographs/manuscripts/tapes (to include social media) are required to submit these materials to the Public Affairs Office for review prior to coordination with or submission to a media outlet.

Document Receiver's activities using digital photography and video recording/editing when requested IAW applicable AFIs, directives, policies, etc. If adding, updating, and replacing equipment and supplies is not possible, advise Receiver and provide cost estimate (s) prior to rendering service. Air Photo Document Receiver's activities upon request.

RECEIVER WILL: Provide information and newsworthy items to the installation Public Affairs Officer. Support the Supplier's community relations program. Comply with Supplier's regulations and directives. Advise VI of documentation requirements allowing no less than 72 hours in advance of need through appropriate e-mail channels.

Reimburse costs of adding, updating and replacing equipment and supplies utilized for Receiver documentation if needed equipment or supplies are not available.

For Aerial Public Affairs support comply with Supplier's requirements for scheduling.

(c) Legal Support.

SUPPLIER WILL:
(Administrative and Civil Law) Provide advice on civil law matters such as property utilization, environmental issues, procurement and contracting, and civilian personnel matters that are, in the Supplier's judgment, more appropriately provided by the Supplier's legal staff..

(Legal Assistance) Provide legal support when otherwise authorized in the area of legal assistance (generally, to individuals in title 10 status or most deployments).

Provide legal assistance to DoD civilian personnel, when authorized by law or in accordance with applicable regulation.

Allow use of 673 ABW courtroom, if available.

RECEIVER WILL:.
(Administrative and Civil Law) Comply with applicable regulations and directives.

Specific Provisions
(Continued from Block 12)

(Legal Assistance) Inform eligible (deployed or title 10) AKNG members of potential entitlement to personal legal assistance at the 673 ABW legal office. Request assistance as needed. Comply with Supplier's regulations and directives.

(Claims) Filed with and handled by Receiver's legal office.

(Courts Martial Jurisdiction) Handled by Receiver's legal office.

Request use of 673 ABW courtroom as needed.

(d) Chaplain Ministries.

SUPPLIER WILL: Provide pastoral and religious needs for all faiths within the military community. Provide support for worship and religious observance, religious education, pastoral care, visitation ministry, spiritual growth, lay ministry, stewardship, and social concerns. (Includes, but is not limited to: Child, youth and adult education, religious/moral counseling, baptisms, marriages, burials, and referrals to other religious centers for appropriate rites or ceremonies.)

Note: 673 ABW and AKNG Chaplains will work in concert during initial phases of emergency ministries.

RECEIVER WILL: Coordinate chaplain activities and support requirements with the Supplier base IAW applicable AFIs, directives, policies, etc...

(e) Postal Services.

SUPPLIER WILL: Provide acceptance, metering, sorting and routing of incoming and outgoing official mail and distribution (on post only). Provide briefing and instruction on duties and responsibilities of Mail Control Officer. Provide personal mail services and postal redirect/post locator and inspection and establishment of unit mailrooms. Further, the Supplier must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

Coordinate with Receiver to designate an activity distribution office (ADO). Provide ADO POC training IAW applicable directives, guidance, and policies. Accept, sort, route, and deliver Receiver's incoming and outgoing official mail and distribution. Provide administrative communications services IAW applicable directives, guidance, and policies.

(Mail Postage Service) Provide postage processing on outgoing mail. Further, the Supplier must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

Provide postage and fees for official mail on a reimbursable basis IAW applicable directives, guidance, and policies. Provide official mail metering equipment if the Receiver generates enough quantities of mail as determined by the base official mail manager IAW applicable directives, guidance, and policies.

Provide billing amount for the previous 6 months to the AKNG Official Mail Manager by 1 Oct and 1 Apr of each year.

RECEIVER WILL: Comply with applicable regulations and directives. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

Designate an activity distribution office (ADO) on the designated AF Form for Accountable Communications Receipt Authorization IAW applicable directives, guidance, and policies.

Specific Provisions
(Continued from Block 12)

Coordinate ADO training before activating the ADO. Request additional training, as needed.

Provision and operate the ADO to: provide internal distribution and collection to and from action offices; dispatch outgoing communications to the base official mail center.

(Mail Postage Service) Comply with applicable regulations and procedures. Reimburse Supplier for postal cost. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

Provide reimbursement for official mail postage IAW applicable directives, guidance, and policies. Operate official mail metering equipment if provided IAW applicable directives, guidance, and policies.

(f) Installation History.

SUPPLIER WILL: Maintain objects (aircraft, etc.) of historical military value and significance for display to enhance es'prit' de corps and a sense of tradition on the installation.

RECEIVER WILL: Request support as required. Comply with Supplier's directives and guidance.

~~(g) Financial Management~~. *Not required for this agreement.*

~~(h) Internal Review~~. (Function is being eliminated at JBER due to reshaping) *Not required for this agreement.*

(i) Equal Opportunity.

SUPPLIER WILL: Provide EO assistance to civilian and military personnel; includes training pertaining to human relations and unit climate assessments. If requested, provide AKNG EO a secure classroom and conference room for Receiver to comply with all EO services IAW AFI 36-2706.

RECEIVER WILL: Provide Supplier with advance notification, minimum of 5-duty days, in requesting use of facilities. Comply with Supplier's policy and guidance. Inform Supplier of Receiver's requirements.

(j) Administrative Management.

Army retains these responsibilities with the exception of storage. AF will provide storage for records IAW (ARIMS). Army also maintains FOIA for all Army controlled units and records. See Note 4 from page 10.

(k) Information Protection.

SUPPLIER WILL:: Provide assistance/overall oversight as required to AKNG IPO/Unit Security Manager concerning annual Information Protection Management Evaluation (IPMEs). Assist sampling/review of subordinate unit security programs. Assistance includes all Secure Open Storage (SOS) certification by the Information Security Program Manager (ISPM) now identified as Chief, Information Protection. Oversight includes all aspects of Industrial and Information Security oversight and, due to funding lines, limited Personnel Security oversight/assistance. Offers assistance with potential and actual Security Incidents involving AKNG and subordinate units when requested. Support includes assistance regarding EMSEC certifications and Structural Surveys and areas covered in the USAF Information Protection (IP) CONOPS dated 1 July 2008.

Receiver Will: Comply with all applicable DoD, Air Force, Army, and local instructions, guidance, and policies. Provide oversight to receiver subordinate units for areas of security to include Industrial, Personnel, and Information Security (less SOS certifications) program reviews. Provide support, training

Specific Provisions
(Continued from Block 12)

and oversight to all receiver subordinate units As required. Responsible for life-cycle management of all AKNG and subordinate Security Incidents and provides final coordination copies to Supplier IPO. Provide oversight to subordinate units as outlined in the USAF Information Protection (IP) CONOPS dated 1 July 2008. Appoint Installation Security Advisory Group (ISAG) POC and attend local meetings/training as required.

POC:
Commander 673 ABW, 552-3698
Occupational 673 ABW ~~Ground~~ Safety Office, 552-6850/~~6857~~ 6851
673 ABW Public Affairs Office, 552-8151/552-8152/552-8153
673 ABW/JA, 384-0420/0400/0371/0300/3997 also 552-3048, fax 552-0129
673 ABW Chaplain, 552-4422, emergency duty Chaplain 440-0160
673 ABW Command Postal Manager, 384-2900/552-1395
673 ABW Historian, 552-4763/5217
673 ABW Comptroller Squadron, 552-2881
673 ABW Internal Review Office, 384-7639
673 ABW Equal Opportunity Office, 384-2034
673 CS (Communications Focal Point), 552-2666
673 ABW Information Protection, 552-1088

BASIS FOR REIMBURSEMENT: Command Support: Non-reimbursable.

Occupational
(a) Ground Safety--Non-reimbursable for on JBER inspections. Reimbursable for off JBER inspections for travel and per diem costs.

(b) Public Affairs. Non-Reimbursable.

(c) Administrative and Civil Law: Non-reimbursable.

(d) Chaplain Ministries: Non-Reimbursable.

(e) Postal Services: Non-reimbursable. Mail Postage Service: Reimbursable; actual cost of postage directly attributable to the receiver.

(f) Installation History: Non-Reimbursable for installation related issues. Reimbursable for supplies, overtime, and over-hire directly attributable to the Receiver.

~~**(g) Financial Management:** Reimbursable for supplies, overtime, and over-hire directly attributable to the Receiver.~~

~~**(h) Internal Review**. Customarily non-reimbursable. Reimbursable for additional travel and supply costs incurred while providing audit support to tenant activities.~~

(i) Equal Opportunity. Customarily non-reimbursable.

(j) Administrative Management. Customarily non-reimbursable. Reimbursable for supplies, overtime, and over-hire directly attributable to the Receiver.

(k) Information Protection. Customarily non-reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(6) Environmental Compliance. Includes actions to achieve and maintain full and sustained compliance with federal, state, and local environmental laws and regulations, Executive Orders, DoD policies, legal obligations, final governing standards (overseas requirements), and other binding agreements (see DoDI 471 5.6, April 24, 1996). (Customarily non-reimbursable, environmental Compliance Cleanup where the receiver is the responsible party is reimbursable)

Functional Area: 673 CES

Supplier Will: Upon request of Receiver, provide assistance and/or advice concerning implementation of environmental compliance programs, including training requirements and sound environmental management. Assistance may, but not customarily, include visits to activities to evaluate the quality of the activities management program, and review of environmental-related documents.

Environmental Safety Occupational Health Committee (ESOHC). Offer Receiver the opportunity to participate in the Installation ESOHC as a member or observer and on ESOHC subcommittees, as appropriate.

(Clean Air Act Conformity). Have ultimate authority to make final determinations regarding conformity with the Clean Air Act for activities on the installation. Supplier may request information from Receiver related to Receiver's activities to ensure compliance.

(Enforcement Action). Notify the Receiver immediately of any enforcement actions, or notices to comply, taken by environmental regulators in which the violation may be attributed to the action or inaction of Receiver. Supplier will provide Receiver with a copy of the enforcement action, with all supporting documentation, and a synopsis of reasons for concluding that Receiver is responsible for the violation.

Review. For fines or penalties attributable to Receiver, provide Receiver a reasonable opportunity, in relation to any payment deadline, to review and coordinate the proposed fine or penalty. Participate in preparing any response to the enforcement action-involving Receiver.

Coordination. For enforcement actions, fines, or penalties attributable to Receiver, coordinate with Receiver all strategies to resolve such enforcement actions, fines, or penalties, including negotiation and litigation, and will serve as the final decision-maker with respect to such efforts.

Payment. If a civil fine or penalty is being sought in connection with an alleged violation, Supplier will request that the regulatory agency provide a breakdown of the civil fine or penalty for each violation. Based upon the breakdown received or the enforcement policies of the relevant agencies. Supplier will identify to Receiver that portion of the civil fine or penalty it believes is attributable to violations by Receiver, along with a statement of reasons in support of that conclusion.

Receiver Will: Comply with all applicable local command, Air Force, State and Federal regulations. Such regulations could include those promulgated by the Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration – National Marine Fisheries Service, US Fish and Wildlife Service, US Forest Service, Alaska Department of Environmental Consevation, Alaska Department of Fish and Game, Occupational Safety and Health Administration (OSHA), Department of Transportation (DOT), DoD, and other appropriate regulations. Request assistance from the Natural Resource Management Element as required.

Environmental Safety Occupational Health Committee (ESOHC). If applicable, participate in the ESOHC and ensure that all relevant Receiver activities are briefed and coordinated with the ESOHC.

(Clean Air Act Conformity) Provide to Supplier, in advance and in a timely manner, any information that relates to Receiver's activities that might have an impact upon the installation's air conformity status.

Specific Provisions
(Continued from Block 12)

(Enforcement Action). Provide Supplier with timely comments or positions on the propriety of any enforcement action, including civil fines and penalties.

Review. Assist Supplier, as needed, in all efforts to resolve enforcement actions, including a payment of civil fines or penalties. In addition, Receiver will take appropriate action.to correct the violation that led to or contributed to the enforcement action.

Coordination. Where resolution of enforcement actions, fines, or penalties involves implementation of supplemental environmental projects provide Supplier with a list of all qualifying projects.

Payment. For all fines and penalties for which Receiver is determined to be responsible and which are paid directly by Supplier. Receiver shall promptly transfer funds to Supplier for payment of such fines or penalties.

(Permitting) Obtain and maintain all necessary environmental permits. Not commence any activities until applicable environmental-required permits are formally approved (e.g., construction), and will immediately notify Supplier of any Receiver activity that may constitute a permit violation.

(Training) Ensure personnel and contractors are properly trained IAW applicable statutes and regulations.

POC: 673 CES/CEANQ 552-3345.

BASIS FOR REIMBURSEMENT: Customarily reimbursable for services to include but not limited to materials, disposal, sampling and cleanup where the receiver is the responsible party. Receiver is responsible for any fines levied by external regulatory agencies.

Enforcement actions are reimbursable for actual costs including repairs or modifications related to the enforcement action/fine.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(7) Environmental Conservation. Includes actions to protect, enhance, and sustain mission capability through effective planning and management of natural and cultural resources to guarantee DoD access to air, land, and waters. Includes sustainable use of resources for the public benefit, and actions to comply with laws, Executive Orders, DoD policies, final governing standards (foreign requirements) and other binding agreements (see DoDI 471 5.3, May 3, 1996). (Customarily non-reimbursable)

Functional Area: 673 CES

Supplier Will: Administer programs for the control of cultural and natural resources

As requested and where applicable the Supplier would provide National Environmental Policy Act (NEPA) support by assisting the Receiver in preparation of Environmental Impact Analysis Process (EIAP) for actions that qualify for a Categorical Exclusion (as defined in 32 CFR 989). Other NEPA Services provided by the Supplier include review of the NEPA documents prepared by the Receiver. The Receiver would be responsible for preparation of NEPA documentation for projects that do not qualify for a Categorical Exclusion which may require an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

Include the Receiver in development and review of the installation's Integrated Natural Resource Management Plan. Provide, upon request from Receiver, advice and guidance on conservation, cultural, and natural resources management. Supplier has specific interest in reviewing and approving BASH plans. Assist Receiver's personnel to ensure compliance with applicable rules, regulations, and recreational permit requirements.

As requested, provide archeological, wetlands, historical and endangered species support, investigations and guidance. Sustain forests and lands. Interface with regulatory agencies regarding conservation, culture, and natural resources compliance programs.

Receiver Will: Comply with all applicable local command (ABWI 32-7001), Air Force, State, and Federal regulations. Such regulations could include those promulgated by the Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration – National Marine Fisheries Service, US Fish and Wildlife Service, US Forest Service, Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, Occupational Safety and Health Administration (OSHA), Department of Transportation (DOT), DoD, and other appropriate regulations regarding conservation, cultural, and natural resources compliance management programs. Request assistance from Natural Resources Management Element as required. Receiver needs to complete Endangered Species Act Section 7 requirements in conjunction with the Supplier prior to starting any Federally funded action. Coordinate with Supplier to ensure BASH plans/actions are in agreement with JBER policies. The Receiver should specify the office of responsibility for BASH coordination, compliance, permitting and their telephone number.

POC: 673 CES Environmental 552-1609.

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable. See Funding Annex paragraph 1.a.(2). Reimbursable for but not limited to: NEPA documentation, wetlands permits, etc.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(8) Environmental Pollution Prevention. Includes planning, advocacy, and actions to reduce, recycle or eliminate (rather than control or treat) the future impact that an operation may have on the environment (including natural infrastructure) through the source reduction of pollutants, more efficient use of natural resources, recycling (programs and equipment investments), and/or reduced emissions of toxic and other undesirable materials or wastes. This covers, but is not limited to, installation level pollution prevention plans, assessments, equipment and projects. (Customarily reimbursable)

Functional Area: 673 CES/CEANQ

Supplier Will: Clean up spills or contamination caused by Receiver, within Supplier capability, if the Receiver requests assistance or fails to respond in an appropriate and timely manner.

(Exercises). Include Receiver in exercise scenarios, as appropriate.

NOTE: Costs will be reimbursed based on actual work hours, equipment usage, transportation, contract fees and disposal costs.

Receiver Will:

Comply with all applicable state and federal regulations and requirements relating to environmental and natural resource management, including, but not limited to regulations and requirements associated with the handling and storage, utilization, and disposal of hazardous materials, substances, or wastes. Report immediately all spills of reportable quantities of hazardous materials, substances, or wastes to the JBER Fire and Emergency Services.

Be responsible for environmental conditions sustained in connection with the activities undertaken by Receiver pursuant to this agreement. (Among other things, this provision provides for the Receiver to reimburse the Supplier for any and all damages, including natural resources damages, sustained in connection with the activities undertaken by Receiver pursuant to this agreement.)

Perform cleanup and disposal of spills caused by Receiver's operations using environmentally and legally acceptable methods. Bear financial responsibility for clean up, disposal and restoration in the event an incident caused by the Receiver results in a reportable spill. Reimburse costs associated with work the Supplier performs to clean up any spill caused by the Receiver, when the Receiver requests services.

Provide, upon request from the Supplier, information pertaining to environmental aspects of the Receiver's operations conducted pursuant to this Agreement. (Such information may include, but is not limited to, information regarding air, storm water, wastewater, and other waste generation emissions associated with Receiver's operations.) Provide written notice to the Supplier a minimum of 30 days prior to any planned change in Receiver's operation that may affect. Suppliers ability to comply with environmental regulations and requirements.

(Exercises). Participate in exercises conducted by Supplier which have been previously coordinated with the Receiver. Non- reimbursable.

POC: 673 CES/CEANQ 552-3345.

BASIS FOR REIMBURSEMENT: Customarily reimbursable; actual cost per incident. Exercise participation is non-reimbursable except for the use of training materials/expendables directly attributable to the receiver.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(9) Environmental Restoration. Applies to releases of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances or pollutants or contaminants; releases of petroleum, oil, or lubricants; releases of hazardous wastes or hazardous waste constituents; releases of radioactive materials or wastes; munitions and explosives and/or munitions constituents; and correction of other environmental damage that creates an imminent and substantial endangerment to public health and the environment.

Functional Area: 673 CES

Supplier Will: Manage the JBER environmental restoration program (ERP) and provide adequate notification of any ERP activity affecting Receiver's activities.

Receiver Will: SEE SPECIAL ENVIRONMENTAL INSTITUTIONAL CONTROLS IN GENERAL PROVISIONS

Comply with all applicable local command, State and Federal regulations regarding environmental cleanup and restoration. Conduct all necessary environmental restoration activities to address releases of hazardous substances, petroleum products, radioactive materials, or munition-related contaminants resulting from Receiver actions or activities. Historic contamination discovered by the Receiver, but not resulting from Receiver actions or activities, will be reported to the Supplier immediately upon discovery.

Comply with land use controls identified in the following paragraphs: All environmental land use controls which are in force on JBER. Not damage or interfere in any way with groundwater monitoring wells, remedial treatment systems or sampling efforts. Allow 673 CES/CEANR and their contractor's access, including but not limited to, vehicle access to existing monitoring wells for sampling and maintenance. Should the need arise, the Receiver will allow access for 673 CES/CEANR and their contractors to close existing wells or install new monitoring wells, as required. Within five working days of discovery, the Receiver will provide 673 CES/CEANR with written notice of any failures to comply with the environmental land use controls identified in the above paragraphs.

POC: 673 CES Environmental 552-5746.

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(10) Family Housing Services. Includes property and asset management services for privatized family housing, housing referral services, management of the family housing furnishings in privatized housing program, and the overseas family housing loaner furnishings program. (Customarily non-reimbursable)

Functional Area: 673 CES

Supplier Will: Provide privatized family housing per lease transaction documents (if stationed on JBER and receiving BAH at the with dependent rate for this area's rate), off-installation housing referral services and furnishings support to authorized personnel. Provide Officer Quarters (OQ), Senior/Junior Enlisted Quarters (EQ) accommodations for authorized AGR personnel assigned to JBER. Provide housing services on the same basis and standards as provided to other authorized personnel IAW AFI 32-6001 and AFI 32-6007, Property Owner lease requirements, and the command housing policies. Operate, maintain and administer the JBER housing program.

Provide adequate family housing to eligible families based on rank and family size. Provide loaner furnishing IAW AFI 32-6004 at no charge to Receivers residing in both privatized and community housing. Receivers are expected to seek community housing when on-installation housing is not available for privatized housing.

Property Owner assigns family housing in accordance with applicable lease requirements. The government housing office provides assistance in obtaining available off installation housing on an equal opportunity basis IAW DoD instructions.

Receiver Will: Inform incoming personnel to visit the government housing office for on and off-installation housing. Ensure Receiver personnel provide a copy of their PCS orders and show a valid Common Access Card or Military Identification card upon arrival. Ensure appropriate deductions are made from military pay, if applicable, for any unpaid debt incurred while residing on JBER. (This condition applies to active duty ID cardholders.) Ensure installation residents are informed of applicable installation policies.

Individual service member will be offered housing, in compliance with Supplier's policies.

Assist Supplier in developing guidance for procedures, policies, and restrictions when providing housing for Receiver active duty members.

POC: 673rd CES 552-2911 Housing Storefront Offices 552-4439 (99506), or 384-7656/0133 (99505) and furnishing Management Offices 552-2740 (99506), or 384-0092/0088 (99505)

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(11) Food Service. Includes costs specifically identified and measurable to plan, manage, coordinate, and execute for the operation and administration of installation food service for authorized patrons including installation feeding, remote feeding, and flight/ground support feeding as applicable. Excludes the costs of food, costs of non-installation field support, Hospital Food Services, and Basic Allowance for Subsistence. (Customarily non-reimbursable for authorized patrons)

Functional Area: 673 FSS/FSVF

Supplier Will:
(Food Advisor and Dining Facilities (DFAC)) Operate dining facilities at JBER. Provide, prepare and serve food to authorized personnel IAW applicable Air Force and Army Food Service Programs.

(Troop Issue Subsistence Activity) Provide "Meals-Ready-to-Eat" (MRE) and "Ration Cold Weather" (RCW) support, as requested and within capabilities. Schedule with Receiver pickup time for bulk issue following receipt of DD Form 3161 (Request for Issue or Turn In).

Maintain a memorandum that lists Receiver personnel authorized to request and receive MREs. Check the DD Form 577 (Signature Card) of personnel receiving issue.

Provide full food services support for Receiver during authorized training sessions, Provide training to Receiver sustainment services personnel through coordination with Receiver sustainment services manager when providing food service during training periods. Any meal card holder will not be crossed service billed.

Receiver Will:
(Food Advisor and Dining Facilities (DFAC)) Maintain sanitary standards IAW TB-Med 530 Occupational and Environmental Health Food Sanitation. Comply with Supplier's regulations and directives. Provide supplier with Monthly Headcount Data on first working day of each month for previous month.

(Troop Issue Subsistence Activity) Provide DD Form 3161 (Request for Issue or Turn-in) to the supporting Troop Issue Subsistence Activity (TISA). Initial request must be submitted 45 working days prior to need. No later than three working days prior to the requirement date, notify TISA personnel of the intent for pick up. Identify Receiver's DODAAC to both TISA and DFAS offices. Provide points of contact for billing and supply actions.

Provide a memorandum to the TISA listing the authorized requesters/Receivers of MREs. Ensure that Receiver's representatives complete a DD Form 577 (Signature Card) for use as identification when processing through the TISA.

Comply with applicable Army and Air Force regulations and directives.

AKNG food service personnel may be provided when available to assist/augment JBER food service operations and will be under the control of JBER food service superviors for the duration of the operation. Provide Supplier dining facility manager with training schedule identifying training periods that may impact dining facility operations. Members receiving BAS are required to pay the meal cost, plus any additional surcharge.

Provide the flight kitchen with appropriate paperwork for flight and or ground support meals in advance of the scheduled date(s).

Specific Provisions
(Continued from Block 12)

Request meals through applicable agencies IAW applicable directives and guidance. Will arrange pickup and delivery of requested meals.

Comply with Supplier requirements for storage.

POC: 673 FSS/FSVF 384-1743, TISA 384-1869

BASIS FOR REIMBURSEMENT:

(Food Advisor and Dining Facilities (DFAC)) Non-reimbursable; Meals at the meal rates in DFAC.

(Troop Issue Subsistence Activity) Reimbursable; current Defense Logistics Agency (DLA) price at time of issue.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(12) Health Services. (support category added by JBER) Includes administration of health care programs, inpatient and outpatient medical and dental treatment, and other related medical support and professional services.

Functional Area: 673 MDG

Supplier Will: Provide medical support when requested as able.

Flight Medicine. Provide medical support when requested as able.

Medical Logistics. Provide medical support when requested as able.

Nursing Services. Provide medical support when requested as able.

TRICARE. Provide medical support when requested as able.

Bioenvironmental Engineering and Public Health. Provide Receiver with bioenvironmental and public health survey reports as applicable. Drinking water surveys will be coordinated with private utility operator on JBER-Richardson and 673 CE. Private utility operator is responsible to ensure the drinking water system and quality on JBER-Richardson is compliant with EPA standards.

Receiver Will: Provide proper identification at time of treatment. Request ambulance services on an emergency basis. File a US Department of Labor Form CA-16 with the 673 MDG within 48 hours of treatment as authorization. Pay the full reimbursement rate in effect for civilians within 30 days of treatment. Identify beneficiaries with a valid military identification card and pay subsistence charges within 30 days of discharge. Provide information for all military dependents on any additional health insurance coverage they have for all outpatient and inpatient services. Provide a request in writing outlining any occupational physicals required by the sponsoring agency. Schedule physicals and examinations at least 14 work days prior to required date. Comply with Supplier's policies and guidance. Provide all required documentation to the 673d Medical Group. Comply with all health related and environmental directives issued by the 673d Medical Group.

Comply with Supplier's policies and guidance. Comply with all health related and environmental directives issued by the 673 MDG. Request SAVs in writing to applicable section within the Receiver Med Group. Comply with Supplier's policies and guidance if SAV support is requested.

Flight Medicine. Request, in writing, required assistance from Flight Medicine.

Nursing Services. Request, in writing, required assistance from Nursing Services.

TRICARE. Provide the Supplier with the most current information to AKNG beneficiaries. Ensure beneficiaries adhere to Supplier's policies, guidelines, and processes in regards to enrollments, Line of Duty (LOD), claims processing, and overall coordination of benefits.

Bioenvironmental Engineering and Public Health. Request, in writing, required assistance from Bioenvironmental Engineering and Public Health. Provide a representative or report to the base ESOH council for items of interest as it related to the AKNG via the Occupational Health Working Group (OHWG) and/or Aerospace Medicine Council (AMC).

POC: 673 MDG, 580-4006

Basis for Reimbursement: Reimbursable for individual user fees. Customarily non-reimbursable for Bioenvironmental Engineering. See Funding Annex.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(13) Information Technology Services Management. Includes the delivery of services consisting of secure and non-secure fixed voice communications, wireless voice, data and video connectivity services, video conferencing services. Provides infrastructure support, including the design, installation, and maintenance of special circuits/systems in support of life safety/security systems and monitoring/control systems. Provides Collaboration and Messaging Services including services and tools for workforce to communicate and share information). Provides Application and Web-hosting including operation and management services required to support web and application hosting. Provides for IT Operations Centers including systems and processes necessary to allow customers to have seamless access to IT applications and solutions. Provides Desktop Management Support including management and support for end-user hardware and software services and tools. Includes Service Desk Support, Continuity of Operations (COOP) and Disaster Recovery support, requirements and training for common-user software applications, and Information Assurance.

Functional Area: 673 CS/SCXP

Supplier Will:
(Telephone Systems Management) Provide telephone systems and lines for:

- Telephone lines that permit access to central offices, toll trunks, ISDN and DSN.
- Telephone lines that permit access to central offices, local off post trunks, and DSN.
- Telephone lines for conducting official government business without access to trunking capability.

Provide telephone lines for incoming calls and lines for intra-switch calling. Ensure service meets operational goals. Provide, through DoD channels, facility upgrades to satisfy Receiver requirements. Further, the Supplier must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources. Ensure Receiver support is available during standard duty day. On call support is available during non-duty hours with a two-hour recall for critical operations only.

Teleprocessing: Operate and maintain a stable communication hardware and software environment. Provide terminal access availability in accordance with user provided schedules. Monitor telecommunication lines for reliable service; coordinate hardware/software system problem resolution with vendor personnel; provide site preparation and survey in Receiver's spaces prior to terminal installation; and provide access control to the computer in accordance with information provided by the Receiver.

(Telephone Services)
Provide official telephone service with access to Defense Switched Network (DSN), Federal Telephone System (FTS), leased lines, commercial telephone systems, and alterations or extensions of existing service IAW applicable directives, guidance, and policies. Provide technical solutions for new and changed telephone requirements.

Receiver Will:

Submit all communications requirements IAW applicable directives, guidance, and policies. Receiver will not install, remove, or relocate any communications equipment without coordination and approval of Supplier. Receiver will not operate any government-owned device capable of receiving or transmitting radio frequencies for official purposes without coordination and approval IAW applicable directives, guidance, and policies. Prior to obtaining any equipment capable or RF transmissions, approval must be given by installation Frequency Manager for frequency coordination.

Specific Provisions
(Continued from Block 12)

Coordinate all acquisition/installation actions for all communications, security, or surveillance systems with Supplier. Approval from the Base Communications Systems Officer is required for any installation, modification, and/or removal of communications/information system or infrastructure.

(Telephone Systems Management) Comply with Supplier's regulations and directives. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

(Message and Data Processing) Comply with installation directives pertaining to this service. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

Comply with Supplier's policies, directives and regulations. Further, the Receiver must ensure that effective management controls are in place and operating as intended to safeguard against waste, fraud, and abuse of government resources.

(Network Services)
Comply with Elmendorf AFB computer system certification and accreditation requirements. No equipment, systems, or wiring will be installed, reconfigured, or attached to any Elmendorf AFB network without prior approval of Supplier. Request assistance, guidance, and training, as needed.

Unclassified Network: Ensure all personnel requiring access meet the access requirements and accomplish training IAW applicable directives, guidance, and policies.. Comply with supplier's applicable directives, guidance, and policies. Contact supplier POC for assistance with end user equipment.2.Appoint Client Technicians to assist with all end user equipment to include workstations, radios and telephones.

Classified Network: Ensure all personnel requiring access complete required security awareness training, have proper security clearance, have a need to know, and accomplish all security requirements as established by the Wing Information Assurance Office IAW applicable directives, guidance, and policies. Comply with supplier's applicable directives, guidance, and policies. Contact supplier POC for assistance with end user equipment. .Appoint Client Technicians to assist with all end user equipment to include workstations, radios and telephones.

Foreign Nationals: Ensure foreign national personnel coordinate with the Wing Information Assurance Office IAW applicable directives, guidance, and policies prior to gaining access to any network.

(Telephone Services)
Submit requirements IAW applicable directives, guidance, and policies. Fund telephone equipment and expendables listed in technical solutions to new or changed requirements. Equipment may include phone instruments, line cards, and necessary ancillary equipment.

Designate in writing a unit Telephone Control Officers whose duties will include certifying telephone usage is for official purposes, coordinating telephone work orders for the Receiver, and controlling cable television equipment.

(Personal Wireless Communications Systems)
Designate in writing a unit PWCS Manager. Submit PWCS requirements IAW applicable directives, guidance, and policies. Receiver will not operate any government-owned device capable of receiving or transmitting radio frequencies for official purposes without coordination and approval IAW applicable directives, guidance, and policies. For new PWCS installations, procure equipment and expendables as listed in technical solutions and reimburse labor costs as applicable.

Low Power High Frequency (LPHF) radio, ground-to-ground and air-to-ground ATC Radio, and ATC communication services. Prior to obtaining any equipment capable of RF transmissions, approval must be given by Installation Frequency Manager for frequency coordination.

Specific Provisions
(Continued from Block 12)

Submit all LPHF, ground-to-ground and air-to-ground ATC radio, and ATC communication equipment requirements IAW applicable directives, guidance, and policies. Receiver will not install, modify, remove, or relocate any ground-to-ground radio, air-to-ground ATC radio, or LPHF equipment without approval IAW applicable directives, guidance, and policies.

Fund radio equipment, expendables, and labor listed in technical solutions for new or changed requirements. Equipment may include, but is not limited to, radio transmitters, Receivers, transmission line, equipment racks, and necessary ancillary equipment.

Assign an organizational Information Assurance Officer (IAO) to execute IA responsibilities protecting and defending information systems by ensuring the availability, integrity, confidentiality, authentication, and non-repudiation of data through application of IA measures IAW applicable directives, guidance, and policies. Receiver will ensure and execute IAO responsibilities for the following programs:

Network and Computer Security (COMPUSEC) Program.

Communications Security (COMSEC) Program.

Emissions Security (EMSEC) Program.

Telecommunications Monitoring and Assessment Program (TMAP).

IA Notice and Consent certification program.

POC: 673 CS Telephone Maintenance 552-7100, Communications Focal Point 673 CS 552-2666

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable (see Funding Annex, paragraph 1). (Telephone Systems Management) Non-reimbursable; routine. Reimbursable; long distance charges and applicable incremental costs (to include operator services, directory assistance, dialing assistance, etc.). Cell phones and pager communication service agreements are processed and funds for tolls and services are reimbursable.

(Message and Data Processing) Reimbursable; actual cost of user unique requirements.

(Automation Equipment Repair and Maintenance) Reimbursable; actual cost based on shop rates/parts or contractor cost. ADPE one time repairs and maintenance, requested through the help desk, which are not under warranty are reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(14) Installation Law Enforcement Operations Services. Includes Installation Law Enforcement (LE) Operations such as enforcing federal, state and military law, enforcing installation guidance, issuance of citations, detaining suspects, motor vehicle traffic management, traffic investigations, apprehension and restraint of offenders, and crowd control, crime prevention, crime detection, LE patrols, LE liaison, apprehension of persons who commit crimes on the installation, testifying in prosecution cases and temporary detention of offenders. (Customarily non-reimbursable)

Functional Area: 673d Security Forces Squadron

Supplier Will: Provide Law Enforcement and Weapon Registration services. Provide police services to maintain order and to enforce laws or regulations. Control vehicular and pedestrian traffic. Investigate criminal activity IAW regulations or other appropriate directives. Confinement facilities/services are not available at JBER. Conduct physical security/crime prevention inspections IAW Integrated Defense Plan(IDP). *Note: AKNG has own Physical Security Section.*

All persons (military and civilians) desiring to carry, transport and/or store weapons on JBER must register the weapon(s) on an AF Form 1314 (Firearms Registration). After Oct 2010 only use AF Form 1314 at the Base Defense Operations Center. Personnel residing on JBER and desiring to store their weapons in their on base housing must register the weapon upon in processing the base or within two working days of acquiring the firearm(s). The procedures that personnel will follow are:

a. Complete AF Form 1314 in triplicate.

b. AF Form(s) 1314 (not the firearms(s)) will be taken to the weapons registration office.
(1) One copy is forwarded to 673 SFS/SFAR.
(2) One copy is provided to the owner.
(3) One copy is sent to the unit orderly room to be filed in the member's Personnel Information File and retained until one year after expiration term of service/permanent change of station or the firearm(s) is sold or transferred to another individual. The new owner must register the firearm using the procedures beginning with paragraph "a" above and the previous owner must ensure the weapon is deregistered immediately upon transfer.

c. While at the Security Forces weapons registration office, AF Form 1314 will be completed and provided to the registrant.

d. Authorized war trophies will be registered as stated above.

Authorize installation access to all AKNG Military (regardless of status), Technicians, DOD Civilian, and State Employees as Mission Essential personnel. Allow installation access and issue required bases passes to all Receiver's contractors and deliveries as requested IAW Supplier's policies.

Provide military working dog support, as needed. This request must have 673 SFS chain-of-command approval prior to providing support.

Receiver Will: Secure own equipment IAW IDP, (Integrated Defense), AR 190-11 through 190-51 and USARAK Regulation 190-1 (Physical Security Program). Designate a Receiver point of contact for matters concerning the preservation of order, physical security and crime prevention. Apprise Supplier of relevant information concerning serious incident reports. Comply with Supplier regulations on law and order, physical security and crime prevention related to occupancy of the installation.

Be responsible for securing Receiver facilities. Provide personnel to secure Receiver facilities upon failure of the alarm systems until the alarm system has been repaired. Designate point of contact to work

Specific Provisions
(Continued from Block 12)

with Supplier staff on preservation of order and physical security and crime prevention matters. Comply with Supplier's policies and guidance. Respond to all reports, as required.

Issue DoD identification, state identification, or provide current list of employees who require access. Provide current list of contractor(s) 72 hours prior to requested access date. Delivery access will be IAW Supplier's policies.

Submit military working dog requests through 673 SFS/S-3 Operations when needed.

POC: 673d Security Forces Squadron, Base Defense Operations Center 384-0825/552-3421

BASIS FOR REIMBURSEMENT: Non-reimbursable. Reimbursable; Receiver requested special security, to include equipment modifications and upgrades that are above the Air Force's regulatory requirement for JBER to provide.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(15) Installation Physical Security Protection and Services. Includes personnel, procedures and equipment measures employed or designed to safeguard personnel, facilities and property from loss, destruction, espionage, terrorism, or sabotage on the installation; prevent unauthorized access to facilities/installations/restricted areas, equipment, and materials. Includes regulation of people, material, and vehicles entering or exiting a designated area; mobile and static security activities for protecting installation or government assets; conduct of physical security inspections/assessments, construction design review, special protection of high value or sensitive property and management of installation security systems, plans and funding. **ANTITERRORISM (AT)** Includes operation of AT programs, training requirements and support, intelligence support and support of the host installation Threat Working Group (TWG). Also includes support for the host installation security council. (Customarily non-reimbursable).

Functional Area: **673d Security Forces Squadron.** For AT the Functional Area is **673 ABW/CCW.**

Supplier Will: Provide Physical Security services as specified in this paragraph only. Respond to alarms when called by outsourced security company. Conduct building checks and provide immediate response to all Protection Level 4 assets.

Note: AKNG has own Physical Security and Antiterrorism Section, and do not require our sevices for Paragraph 15. All IDS systems are Outsourced to private security company. AKNG will maintain membership and support of the host installation threat Working Group (TWG) that includes support for the host installation security council and intelligence support.

Receiver Will: Secure own equipment IAW AFI 31-101, IDP. Designate a Receiver point of contact for matters concerning the preservation of order, physical security and crime prevention. Apprise Supplier of relevant information concerning serious incident reports. Comply with Supplier regulations on law and order, physical security and crime prevention related to occupancy of the installation.

Comply with any storage requirements such as inventory, sealing, locking, etc as specified by 673 SFS. Give as much advance notice as possible when access to equipment is necessary.

Note: Any AKNG Military Police or Security Forces personnel will not establish unilateral security operations on JBER. 673 Security Forces will integrate AKNG security personnel into operations when applicable and AKNG personnel are available. All security operations on JBER are under the direction of 673 ABW Security Forces and any AKNG augmentation personnel are under the control of the 673 ABW Security Forces Commander for the duration of the operation or training exercises. (per JBER Commander guidance.) This provision does not include State Security personnel charged with the security of the Alaska National Guard facilities at Camp Denali/Camp Carroll, and Bryant Army Airfield.

(Antiterrorism) Comply with applicable AFIs, directives, policies, etc.... Supply material for facility and resources stand-off distance(s) as required. Place barrier(s)/material for stand-off distances as required. Enforce stand-off distances during increased Force Protection Conditions (FPCONs). Work any construction, to include remodel, improvements and new construction through the wing engineers and installation ATO.

POC: 673 SFS Base Defense Operations Center 384-0825/552-3421, Antiterrorism 673 ABW/CCW 384-2399/384-2437

BASIS FOR REIMBURSEMENT: Non-reimbursable. Reimbursable; Receiver requested special security, to include equipment modifications and upgrades that are above the Air Force's regulatory requirement for JBER to provide.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(16) Laundry and Dry Cleaning Services. Includes laundry and dry cleaning services to clean and press textiles, garments, linens, and other fabrics. Includes Organizational Clothing and Individual Equipment (OC&IE) and other articles required by the installation. Includes sewing on rank and unit patches on service member's initial issue of clothing. Excludes laundry and dry cleaning inherent to medical care. (Customarily reimbursable) *(formerly covered in JBER-XXXXX-213)*

Functional Area: 673 FSS/FSV

Supplier Will:
(Organizational Clothing and Individual Equipment) Provide laundry and dry cleaning services for Organizational Clothing and Equipment (OCIE), government property and personal articles of military personnel. Provide bulk laundry and dry cleaning services for OCIE to authorized Receiver personnel, within capability. Provide over the counter laundry and dry cleaning services to authorized Receiver personnel for OCIE. Conform to special laundry and dry cleaning instructions (within capabilities) when given prior notice by the Receiver. *NOTE:* The Supplier reserves the right to refuse items needing special care or handling.

~~(Cash Counter Services) Provide over-the-counter laundry and dry cleaning services to authorized Receiver personnel (Soldiers; family members; military retirees) on a cash and carry basis. Provide services IAW AR 210-130, Laundry and Dry Cleaning Operations. Provide sewing services to authorized Receiver personnel. Provide the above support as requested and within capabilities. (Note: FSS in process of re-establishing service in near future.)~~

(Sewing-Unit Sewing Services) Provide satisfactory and economical sewing services for required government property as requested and within capabilities. Provide services IAW AR 210-130, Laundry and Dry Cleaning Operations.

Receiver Will:
(Organizational Clothing and Individual Equipment) Submit an original with two copies of DA Form 1687 (Notice of Delegation of Authority - Receipt for Supplies) or the automated equivalent to the laundry manager for each bulk submission. Ensure that the unit commander signs DA Form 1687.

Complete DA Form 1974 (Laundry List) and/or DA Form 2707 (Dry Cleaning List) or the automated equivalent for each bulk submission.

Instruct authorized Receiver personnel on procedures for turn-in of OCIE to the JBER Laundry. Instruct authorized Receiver personnel on procedures for turn-in of items for sewing of insignia as outlined in applicable regulations. *NOTE:* Authorized military personnel must fill out (TA-50 Clothing and Equipment Cleaning Records) or the automated equivalent at the laundry to identify items requiring service. Sewing required to be provided at Government expense under applicable regulations is paid for by the unit or organization. Personnel must present valid military identification card. Comply with local policies and procedures.

Notify Supplier in writing of any special care instructions for new or special articles to be laundered or dry-cleaned. Submit special care instructions prior to submitting items for service. *NOTE:* An increase in cost may be assessed on items needing special care or handling.

~~(Cash Counter Services) Instruct Receiver personnel on turn-in procedures for those items requiring sewing of insignias as outlined in applicable uniform regulations. Provide (in writing to the Supplier) special care instructions for articles requiring special laundry or dry cleaning considerations. Submit special care instructions prior to submitting item(s) for service. NOTE: An increase in cost may be~~

Specific Provisions
(Continued from Block 12)

~~assessed on items requiring special care or handling. Establish an account at the JBER laundry when applicable. Comply with Supplier's regulations and directives.~~

(Sewing-Unit Sewing Services) Instruct Receiver personnel on turn-in procedures for items needing sewing of insignia (as outlined in AR 700-84). Establish an account at the JBER laundry when applicable. Comply with Supplier's regulations and directives.

POC: 673 FSS/FSV 384-1903

BASIS FOR REIMBURSEMENT:
(Organizational Clothing and Individual Equipment) Reimbursable; piece/bulk prices based upon type of item and the prevailing contract or in-house rate. See Funding Annex for specific costs.

~~(Cash Counter Services) Reimbursable; piece/bulk prices based upon type of item and the prevailing contract or in-house rate. See Funding Annex for specific costs.~~

(Sewing-Unit Sewing Services) Reimbursable; prices based on the prevailing contract or in-house rate.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(17) Lodging Services. Includes lodging and related services to authorized TDY personnel and for authorized personnel and family members to support PCS orders for travel and to maintain maximum occupancy in DoD facilities to reduce official and personal travel costs. (Customarily non-reimbursable)

Functional Area: 673 FSS/FSVL

Supplier Will: (Transient Lodging) Provide temporary duty lodging for authorized Receiver personnel when in official travel status. Provide off-base lodging referral service if on-base lodging is not available for dates required.

Submit, if required, a DD Form 139 (Pay Adjustment Authorization) to the Receiver's Finance and Accounting Office for collection of any unpaid lodging charges. *NOTE:* This process directly charges a debtor's pay account, and only applies to military service members.

Provide lodging accommodations to transient enlisted members, officers, and families, or provide non-availability authorization for contract hotels contingent on each individual's status and the availability of quarters. Every attempt will be made to accommodate transient personnel in on-base quarters. Priority for quarters will be IAW applicable AFI, MAJCOM guidance and local directives.

Provide on base lodging for eligible AK NG personnel in inactive duty for training (IDT) status. Provide on base lodging or contract quarters IAW with applicable AFI's for AK NG members in an active duty status. If on base accommodations are not available for AK NG personnel in IDT status, direct the member to the AK NG SV manager. Provide agency bill(s) for lodging payment at least once per month.

Receiver Will: (Transient Lodging) Call the Lodging Office at applicable military installation for reservations. Ensure that Receiver personnel provide a copy of their travel orders and a valid ID card upon arrival. Ensure that availability or non-availability of government quarters is cited on TDY orders. Make hotel accommodations if government quarters are not available. *NOTE:* Reimbursement is required on an individual cash basis for government quarters provided. Ensure appropriate deductions are made from military pay for any unpaid debt accrued while residing on JBER. Ensure installation residents are informed of applicable base policies and (applicable AFI).

Provide the Supplier with temporary lodging requirements at the earliest possible date and IAW applicable directives. Provide the reservationist with a computer generated list of personnel requiring lodging during UTA's, and other authorized periods of training. Receiver will pay contract hotels directly if contract quarters are utilized for personnel in IDT status. Request information from Supplier. Verify the agency bill(s) and promptly pay the lodging bill(s).

POC: 673 FSS/FSVL 552-1205,

BASIS FOR REIMBURSEMENT: (Transient Lodging) Reimbursable; individual cash basis for guest housing or transient accommodations.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(18) Military Personnel Services. Includes military personnel information systems, and customer support services. (Customarily non-reimbursable)

Functional Area: 673 FSS/FSMP, Army Casualty Assistance Center ASA

Supplier Will: Provide services that include, but are not limited to, identification cards, passport, mobility process and casualty assistance reporting. Within capability provide services on-the-job training assistance for those base services AFSCs which the Receiver does not have the capability to train on a day-to-day basis.

Receiver Will: Ensure mobility processing requirements are completed. All outgoing personnel must process according to Supplier policies. Ensure personnel actions are requested and processed in compliance with appropriate policies and guidance.

Coordinate with the appropriate Supplier base services functional managers to arrange required on the job training. Ensure trainee reports for training at the time and place agreed upon with AF Form 623, On-the-Job Training Record, in possession. Ensure trainee meets all AFI 10-215 standards.

POC: 673 FSS/FSMP 552-6964, Army Casualty Assistance Center ASA 384-3811

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(19) Morale, Welfare, and Recreation (MWR). Includes all Category A activities (Mission-Sustaining Activities) in support of programs that promote the physical and mental well-being of the military member, their families, and other authorized users as defined by DoDI 1015.10. Provides appropriated fund resources for all Category B activities (Community Support Programs) in support of programs, closely related to mission sustaining programs, which satisfy the physiological and psychological needs of military members, their families, and other authorized users as defined in DoDI 1015.10. Provides appropriated fund resources for all Category C activities (Revenue-Generating Programs) in support of programs at designated remote and isolated locations as defined and authorized in Enclosures 4 and 5 of DoDI 1015.10. (Customarily non-reimbursable for appropriated support only)

Functional Area: 673 FSS/FSC

Supplier Will: In accordance with applicable regulations and directives, furnish all morale, welfare, and recreation programs and activities that may include the Fitness Center, Bowling Center, Golf Course, Outdoor Recreation Program activities, Community Center, Information, Tickets & Travel (ITT) Office, Skills Development Center, Horse Stables, Aero Club, Library, Seward Recreation Camp, and Consolidated Club as available at JBER.

NOTE: Reserve Component (RC) priority of Morale, Welfare and Recreation (MWR) support is IAW AFI 34-262.

Receiver Will: Comply with Supplier's regulations and directives.

Pay associated fees and charges for services received and comply with directives governing the operation of the facilities and programs.

POC: 673 FSS/FSC 522-3626

BASIS FOR REIMBURSEMENT: Reimbursable; individual user fees.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(22) Small Arms Range Management. Includes range administration, maintenance, and operation support services. (Customarily non-reimbursable)

Functional Area: 673 SFS, (JBER Richardson Ranges Managed by Army Support Activity)

Supplier Will:
(JBER-Richardson Range Use) Provide range use and services, to include range operations, targets, communications (non-tactical communications on request), warm-up facilities, and latrines. Conduct periodic safety inspections to ensure adherence to safety regulations. Conduct close out inspections of training areas, ranges, and facilities. Ensure that facilities are returned in same standard/condition as when assigned. Support non-standard ranges and tactical field training by providing portable mechanisms, wooden targets and accouterments. Must be requested IAW USARAK Regulation 350-2.

(JBER-Elmendorf Range Use) Provide Receiver with unescorted access and use of the Combat Arms Training and Maintenance facility and indoor firing range, Bldg 4309. Range usage will normally be requested on weekdays and on weekends. Range usage for the AKNG Unit Training Assemblies will be scheduled and reserved in accordance with CY Joint HQ Alaska ANG Special Order (which is published annual). Coordination of range usage other than UTA's will be conducted between Supplier and Receiver. Receiver will be considered for scheduling before other agencies. Provide training for tower operator as needed. Supplier will handle all range maintenance/repair as needed. Pre and post deployment weapons inspections as requested.

Receiver Will:
(JBER-Richardson Range Use) Submit range use requests IAW USARAK Regulation 350-2 supplier range use procedures. Sign for and accept responsibility of assigned area(s). Inspect designated range area(s) prior to occupation. Provide tactical communications support as needed to support mission or range requirements. Report to Range Control 24 hours prior to range use. Restore assigned area(s) to original standard/condition upon completion of training.

(JBER-Elmendorf Range Use) Request use of Combat Arms Training and Maintenance indoor firing range, Bldg 4309, No later than 72 hours prior to use.

a. requested date and time
b. name, duty, and daytime phone number of range master.
c. type weapons and ammunition to be fired.
d. number of personnel
e. reason for training (to allow the Supplier to prioritize in the event of conflict).
f. POCs name and phone numbers.

Leave the facility in the secure condition found to include ensuring building security. Notify Supplier immediately upon receipt of information that could result in the rescheduling or cancellation of scheduled training. Reimburse the 673 SFS for any negligent misuse or damage caused to the indoor range and associated equipment or the facility. Request Tower operator training as needed 72 hours in advance.. Submit request in writing (e-mail) NLT 72 hours prior to requested support. Receiver will supply all necessary parts/equipment for necessary modifications IAW applicable AFIs.

POC: JBER-Richardson, Range Facility Manager 384-6233, JBER-Elmendorf, 673 SFS/SFM 552-7163

BASIS FOR REIMBURSEMENT: JBER-Richardson ranges are customarily non-reimbursable, See Funding Annex.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(23) Supply Logistics. Includes the requisition, receipt, storage, issue, shipment, and reutilization/disposal of the installation's materiel, products for various installation customers, and support as required by Army Materiel Management Flight/Central Issue Facility functions and AR 710-2. Provide Bulk Breakdown and Temporary Storage, through Central Receiving Point, for only Supply Classes II, IV, III(P), VII, and IX. (Customarily non-reimbursable except where service provided exceeds standard capability of the installation.)

Functional Area: **773 LRS/LGRM**

Supplier Will: Provide Central Issue Facility supply support as required by Army Materiel Management Flight functions and AR 710-2.

Accept turn-ins for the same supply classes on an as needed basis.

Provide limited Class IX support when funds are provided by ARNG.

(Central Receiving Point) Provide Bulk Breakdown and Temporary Storage for only Supply Classes II, IV, III(P), VII, and IX.

(TISA) Issue Meals Ready to Eat (MREs) upon submission of request and provides Unit Group Rations (UGRs) when approved by 673 Food Service Officer.

Receiver Will: Exercise proper supply discipline for the care, use, and safeguarding of public property per AR 710-2. Provide the Supplier necessary data to load or update organization records that include the establishment of an organizational account for reimbursements.

Work closely with the Supplier on supply matters to resolve any problems. Budget and fund for all supplies and equipment requirements.

POC: 773 LRS/LGRM 384-1229/384-2801

BASIS FOR REIMBURSEMENT: Reimbursable; civilian overtime labor costs.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(26) Transportation Logistics. Includes manpower authorizations, contracts, peculiar and support equipment, and associated costs specifically identified and measurable to manage and administer the acquisition, dispatch, operation (includes arranging for the movement of passengers, cargo, and personal property), maintenance, and disposal of all non-tactical government owned and controlled vehicles and transportation related equipment used for the day-to-day support of installation operations. This includes Installation Movement operational activities to include deployment, sustainment (resupply), redeployment, passenger services, passenger terminal and cargo handling operations to include airfield arrival/departure, personal property movement, Privately Owned Vehicles (POVs), mobile homes, and movement of freight. (Customarily reimbursable)

Functional Area: Vehicle Dispatch, 773 LRS/LGRNO JBER 552-4475
Deployments, 773 LRS/LGRX Elmendorf 551-5440/1758, Richardson 384-9960
Personal Property, 773 LRS/LGRN Elmendorf 552-1794, Richardson 384-1831

Supplier Will: Provide support services to Receiver after all resources have been exhausted by the receiver unless otherwise requested or approved by the Supplier.

Receiver Will: Comply with Supplier policies, directives and instructions.

POC: 773 LRS/LGRNO 552-4475

BASIS FOR REIMBURSEMENT: Reimbursable for mission unique and civilian overtime labor costs. See Funding Annex.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(26) (a) Base Support Vehicles and Equipment (BSV&E). Includes acquisition, dispatch, operation, maintenance and disposal of all non-tactical government owned and controlled vehicles and transportation related equipment used for the day-to-day support of installation operations. This does not include those vehicles and equipment used in direct connection with or in support of combat or tactical operations. (Customarily reimbursable except for shuttle services)

Functional Area: 673 LRS and 773 LRS

Supplier Will:
(Vehicle Operations Support) (773) Provide vehicle operations U-Drive-It and operator provided support on a reimbursable basis, only after the AKNG has exceeded their capability to support internally.

(Government Motor Vehicle Licensing) (773) Provide Government Motor Vehicle licensing guidance and expertise IAW applicable AFIs, directives, policies, etc. Provide Training Validation and Operations (TVO) validation services to trained AKNG personnel IAW applicable AFIs, directives and established local policy.

Receiver Will:
(Vehicle Operations Support) Comply with Supplier's requirements. Designate a single point of contact for all vehicle support requirements and request vehicle support IAW Supplier's directives only after first validating and exhausting assigned vehicles.

(Government Motor Vehicle Licensing) Administer an effective Operator Records & Licensing (OR&L) program and issue AF From 2293 (Operator Identification Card) for the for the AKNG personnel IAW applicable AFIs, directives, and policies. Comply with the JBER TVO program IAW AFIs, directives and established local policy for tractor/trailer combinations and 16 passenger and higher capacity passenger carrying vehicles.

Comply with base licensing, vehicle accident, abuse, and misuse procedures and policies.

POC:
(Government Motor Vehicle Licensing) 552-8892
(Vehicle Operations Support) 552-4475/2793

BASIS FOR REIMBURSEMENT:
All requested LRS Transportation support provided via Government Motor Vehicles, a supplied/supported operator, or both. Reimbursable; based on Operations and Maintenance (O&M) costing data (provided by 673 LRS/LGRV), U.S. General Services Administration Fleet leased assets Billed Office Address Code fees, computing reimbursement costs formulas IAW AFI 24-301, hourly or milage rates (depending on vehicle type). Accumulated distance traveled, employee overtime, and total time in service.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(26) (b) Installation Movement. Includes activities to arrange for the movement of passengers, cargo, and personal property. Includes deployment, sustainment (resupply), redeployment, passenger services, passenger terminal and cargo handling operations to include airfield arrival/departure, personal property movement, Privately Owned Vehicles (POVs), mobile homes, and movement of freight. (Customarily non-reimbursable)

Functional Area: Vehicle Dispatch, 773 LRS/LGRNO Elmendorf 552-4475/2793
Deployments, 773 LRS/LGRX Elmendorf 551-8399/8627, Richardson 384-2390/2199
Personal Property, 773 LRS/LGRN Elmendorf 552-1797/5242/1793/4463, Richardson 384-1831

Supplier Will:
(Passenger, Personal Property, and Freight) Provide complete passenger travel service IAW appropriate regulations. Provide movement of personal property to include privately owned vehicles IAW appropriate regulations. Provide freight movement services on request IAW appropriate regulations.

Provide use of JMC facility personnel and cargo processing for deployment operations to include DCC for AKNG exercises and deployments, as mission requirements dictate. Provide use of cargo bay and scales for cargo processing in support of AKNG exercises and deployments.

Establish requirements with Receiver for deploying forces from Elmendorf AFB, and publish in the Installation Deployment Plan (IDP). Provide quarterly Deployment Training Schedule and quota to Receiver for deployment training sponsored by 773 LRS/LGRXD.

Receiver Will:
(Passenger, Personal Property, and Freight) Provide travel orders for all official travel. Ensure that travel orders reflect proper destination, special entitlements and chargeable fund code. Furnish appropriate documentation for shipping/receiving of freight. Provide funding documentation as appropriate. Comply with Supplier's guidance and directives. Comply with related directives and instructions. Furnish appropriate documentation to ship/receive personal property.

Request use of facility IAW Supplier's instructions. Provide Supplier with AKNG exercise schedule.

Request use of facility IAW Supplier's instructions. Adhere to the deployment planning procedures and requirements established and published in the IDP. Provide 773 LRS/LGRXD advance notification of training requirements, and schedule attendee on a mutually agreeable basis.

POC: 773 LRS/LGRN 552-5522/552-6830
773 LRS/LGRX 551-8399/551-8627

BASIS FOR REIMBURSEMENT:
(Passenger, Personal Property, and Freight) Reimbursable; civilian overtime labor costs.

Specific Provisions
(Continued from Block 12)

f. INSTALLATION SERVICE

(26) (c) Tactical Vehicle Support. Includes maintenance and repair of customer vehicles, and supply, maintenance and repair of vehicles provided for a customer's use.

Functional Area: 673 LRS/LGRV

Supplier Will: Provide unscheduled vehicle maintenance support to AKNG on an as available basis. Unscheduled maintenance will consist of maintenance that is not scheduled but is required to correct deficiencies and to restore the vehicle or equipment to a serviceable condition IAW applicable references. Perform services Monday through Friday on a reimbursable basis.

Receiver Will: Provide technical or commercial publications for receiver owned vehicles. Provide AKNG vehicle maintenance personnel if available to assist. Reimburse supplier for all parts, supplies, and civilian overtime/over hire. Accomplish routine vehicle inspections/services which are usually accomplished by the vehicle operator. Accomplish all preventive and minor maintenance on AKNG owned vehicles.

Provide a POC to 673 LRS/LGRV for vehicle management issues.

POC: 673 LRS/LGRV 552-5065.

BASIS FOR REIMBURSEMENT: Reimbursable for parts, supplies, civilian overtime/over hire or other directly attributable costs associated with this support.

Specific Provisions
(Continued from Block 12)

Mission Support Services
(IAW AFI 25-201)

(3) Aircraft Maintenance (A/C MAINT) (non-DODI 4000.19 support category) – Includes all aspects of aircraft maintenance (e.g. corrosion control, machine, Aerospace Ground Equipment, Non-Destructive Inspection, repair and reclamation, structural repair, off and on equipment etc.) not previously addressed.

Functional Area: 3 MXG

Supplier Will: Ensure assigned aircraft and equipment are safe, serviceable, and properly configured to meet mission needs. Maintenance actions include, but are not limited to, inspection, repair, overhaul, modification, preservation, refurbishment, troubleshooting, testing, and analyzing condition and performance.

Receiver Will: Coordinate aircraft maintenance requirements with the Maintenance Operations Center and respective Maintenance Operations Offices.

POC: 3 MXG 552-3005

BASIS FOR REIMBURSEMENT: Parts, POL, overtime or over-hire. See Funding Annex.

Specific Provisions
(Continued from Block 12)

Mission Support Services

(IAW AFI 25-201)

(7) Base Plans (BASE PLANS) (non-DODI 4000.19 support category) – Manages installation plans development of base-level operations and contingency procedures not specifically assigned by directive to other functional areas. XPX will provide the installation with contingency and emergency action plans, programs and emergency management checklists during real-world events and exercises.

Functional Area: 673 XP

Supplier Will: Manage, monitor and review installation-level plans, programs and emergency management checklists for units assigned to Joint Base Elmendorf-Richardson (JBER). XPX (Plans) will staff all AKNG plans, programs and checklists that require installation review to the appropriate 673 ABW agencies for coordination/approval. XPI (Inspections and Exercises) will conduct emergency management and operational readiness exercises to evaluate JBER IAW applicable AFI, directives, policies, etc. (including AKNG participation).

Receiver Will: Review and update organization plans, programs and emergency management checklists as required and submit to 673 XP. Provide plans, programs and checklist input to Supplier as required. Comply with applicable AFIs, directives, policies, etc... regarding tenant unit responsibilities.

POC: 673 XP 552-4309

BASIS FOR REIMBURSEMENT: Non-reimbursable

Specific Provisions
(Continued from Block 12)

Mission Support Services

(IAW AFI 25-201)

(22) Precision Measurement Equipment Laboratory (PMEL) (non-DODI 4000.19 support category) – Includes precision measurement laboratory support. (N.B. Where appropriate, this should be used in preference to the more general DODI 4000.19 category "Equipment Maintenance, Repair and Calibration."

Functional Area: 3 MXS

Supplier Will: Maintain, calibrate, and certify TMDE, traceable through the AF Primary Standards Laboratory (AFPSL) to the National Institute of Standards and Technology (NIST), or other AF Metrology and Calibration (AFMETCAL) approved source.

Provide maintenance, repair, calibration and certification of Test, Measurement, and Diagnostic Equipment (TMDE). Calibration intervals and procedures will be IAW applicable Technical Orders, Air Force technical data, labels, and forms that are authorized for use. Calibration intervals and procedures will be IAW TO 33K-I-100-1/2 or Army intervals provided by the Receiver. **Receiver will assume all responsibility for equipment calibrated with other than Air Force prescribed intervals.**

Provide support on a reimbursable basis, IAW applicable DoDI, Air Force, MAJCOM, and local directives for labor.

Receiver Will: Coordinate PMEL requirements through the 3 MXS and adhere to established contractual guidelines. Comply with applicable technical orders, AFIs and supplements, and local procedures as set forth in the TMDE coordinator's guide.

a. Provide day shift TMDE coordinators. Ensure coordinators are scheduled for training through the TMDE scheduling section, within 30 days of initial TMDE support.

b. Include a list of all equipment for which support is requested. Include a list of all equipment for which support is requested. Requests for additional equipment support of +/- 10% may require renegotiation of this portion of the support.

c. Identify TMDE that has special requirements. Ensure unique TMDE is accompanied by applicable tech data at the time of calibration.

d. Take necessary actions for items that, for any reasons, cannot be calibrated or repaired by PMEL, and needs to be sent to the manufacturer or contractor.

e. Set-up and provide Supplier access to an organizational/base supply account to charge repair parts or provide the PMEL with the parts required for repair. Take necessary actions for items that, for any reasons, cannot be calibrated or repaired by PMEL, and needs to be sent to the manufacturer or contractor.

f. Contact PMEL scheduling section weekly to ensure completed TMDE is picked-up or shipped unless prior arrangements are made with the PMEL.

Specific Provisions
(Continued from Block 12)

POC: 3 MXS 552-1728, Functional Director DSN 315 449-4011

BASIS FOR REIMBURSEMENT: Reimburse labor IAW applicable guidance. Provide necessary funding documents (e.g., MIPR, purchase order; etc.) to cover estimated charges. Forward funding documents to:

HQ PACAF/A4MYA
ATTN: PMEL CONTRACT FUNCTIONAL DIR.
25 E. STREET, STE I-319
HICKAM AFB, HI 96853-5427.

Reimburse costs for Transportable Field Calibration Unit (TFCU) on-site support IAW applicable guidance TFCU support will be used only if determined to be advantageous to the Receiver and Supplier.

FUNDING ANNEX
Financial Provisions

1. Duties and Responsibilities

a. Organization/Unit Requesting Support (Receiver)

(1) The Resource Advisor/FAAC for the requesting unit will determine what type of support is required for their organization and from there will engage with the Resource Advisor/FAAC of the organization providing that specific service/support. Once an agreement has been reached between both organizations, both Resource Advisors will work with 673 CPTS Financial Management Analysis Flight and 673 CPTS Support Agreement Office personnel to ensure that all costs are accounted for, that each organization understands their funding responsibilities and the funding process.

(2) For mission-unique requirements, support (i.e., measurable direct incremental costs) is reimbursable and is charged IAW Air Force policies and DoD instructions throughout the duration of this agreement. Categories identified as "Customarily Non-reimbursable" (CN) are *generally* provided at no cost to the Receiver. However, the Supplier may charge the Receiver for incremental CN costs (e.g., special requirements, supplies, materials, and civilian overtime or over hire), which are directly attributable to the Receiver. If Functional Areas are unable to perform support with existing manpower during the standard duty day and overtime, they should only over hire fully reimbursable temporary or term employees. If temporary or term employee hire is necessary and the Receiver cancels support the Receiver agrees to bear all costs associated with any resulting Reduction in Force (RIF).

(3) Reimbursable charges are "**best estimates**" calculated by the 673d Comptroller Squadron Financial Analysis Flight (673 CPTS/FMA personnel based on inputs from the Functional Area Agreement Coordinator (FAAC) and Resource Advisor (RA) for each support function through the effective date of this agreement. When applicable the three year average is used for services to established Receivers. The reimbursement basis (unit charge) for all support categories is subject to annual review by the 673 CPTS/FMA section in coordination with the FAAC/RA and the Support Agreement Manager (SAM). As such, annual charges to the Receiver are subject to revision, i.e., to reflect change in operation costs and/or inflationary conditions.

(4) For specific Intra and Inter-service Responsibilities for Host Command/Tenants Units and Contract Provided Support please reference the following Air Force Instructions:

- AFI 25-201 w/PACAFSUP1, Support Agreements Procedures
- AFI 65-601 Vol 1, Budget Guidance and Procedures
- DoDI 4000.19, Interservice and Intragovernmental Support

b. Intraservice Relationships (Within the Air Force)

(1) General Host Tenant Responsibilities

(a) When a tenant command asks, the host command (Supplier):

- Provides administrative and logistical support to the tenant under AFI 25-201 and this section. The tenant requirements must be consistent with the unit precedence in the USAF Program, Bases, Units, and Priorities Documents (PD).
- Administers funds made available by the tenant's parent command to support the tenant.

(b) The tenant command (Receiver):

- Advises the host command of tenant requirements early enough to permit consideration when the host formulates its budget and financial plan and revisions.
- When the host command asks, furnishes program guidance and factors so the host can include tenant support requirements in host budget estimates and financial plans.
- The tenant provides similar guidance when the host base budget office provides budget

support to the tenant under AFI 25-201.
- Will not change planning factors such as utilization rates and overall scope of activity (once tenant support requirements are agreed upon) without notifying the host command in advance.

(c) The parties jointly:

- Revise AFI 25-201 agreements depending on the size of the tenant's requested changes and their effect on the host's support capability.
- Follow procedures in AFI 25-201 when support agreements are required and commands can't agree.
- Prepare and negotiate a host-tenant agreement, following AFI 25-201, which identifies responsibilities for services that aren't covered.
- Forward such agreements through prescribed command channels for approval.

(d) Tenant units off base fund all communication services received from anyone other than the host. At activities where the Air Force is the Defense Metropolitan Area Telephone System (DMATS) manager (for example, Dayton, Ohio), bill AF tenant activities for local dedicated communications and prorated WATS service. When the host can provide one of these services only through a contract, the off-base tenant command funds the service. If service is provided by contract, the tenant command has funding responsibility. However, if the host command contracts out the service after providing it in-house, the tenant command will assume funding responsibility budget lead time away.

(2) Tenant Command (Receiver) Funding Responsibilities The tenant command budgets, funds, and provides for the following tenant requirements:

- Civilian personnel costs.
- Travel costs for assigned military and civilian personnel.
- Purchase of expense materiel, supplies, and equipment from DWCF Supply Management (previously stock fund) divisions and local procurement sources (non-DWCF).
- This includes ground fuels such as gas, oil, and other lubricants issued to or procured by the tenant for vehicles and other ground powered equipment.
- It also includes gratuitous replacement of uniform clothing lost, damaged, destroyed, or otherwise rendered unserviceable through no fault or neglect of the owner.
- ***EXCEPTIONS***: Contractual services, except communication services, utilities, training, contract custodial services for on-base facilities, and other on-base, civil engineering services done under contract such as trash hauling, snow removal, and contracts required to provide common services.

(3) <u>Interservice Relationships</u>

(a) This section prescribes uniform guidance for interservice support (Air Force and other DoD components), consistent with DoDI 4000.19, Interservice and Intragovernmental Support. **CrossServicing:** For budgeting and funding, cross-servicing divides into category one (reimbursable) and category two (direct cite).

(b) **Under category one (reimbursable)**, Air Force activities acting as the:

- Ordering agency must budget and fund for the cost of the items or services ordered.
- Procuring or performing agency must budget on a reimbursable basis. Fund the materiel or services for the ordering agency the same as for similar products or services for your own account.

(c) **Under category two (direct cite):**

- The contractor bills each ordering agency separately for articles delivered or services rendered, based on the ordering agency's instructions. But, when articles are delivered for storage to the procuring agency for the ordering agency's account, the agencies must make cross-disbursing arrangements so the procuring agency can pay vendor's invoices against funds cited by the ordering agency.

FUNDING ANNEX
Financial Provisions

- Unless the departments otherwise agree, don't accept or issue Military Interdepartmental Purchase Requests (MIPRs) citing expiring appropriations (must be obligated by 30 September of that fiscal year) after 31 May.
- If you need to submit MIPRs citing expiring appropriations after the cutoff date, first contact the procuring department to find out if it can execute a contract or otherwise obligate the funds by fiscal year-end. Procuring departments must attempt to obligate funds for all such MIPRs accepted after the cutoff date, but accepting a late MIPR doesn't mean they will obligate all such funds.
- These instructions don't restrict processing MIPRs as long as the procuring department can execute contracts or otherwise obligate the funds before the end of the fiscal year.

(d) **Determining Cross-Servicing Charges.** Base charges for cross-servicing on the guidance in this paragraph. Depending on your agreement, you may need to apply more than one type of cross-servicing in one agreement. Refer to DoD 7000.14-R, Vol. 11A and DFAS-DE 7010.2-R to determine reimbursable costs and amounts to collect for interservice support, unless another directive or instruction authorizes different reimbursements. Examples would be instructions governing major range and test facility bases, revolving fund (DWCF) operations, and foreign military sales. Compute charges for cross-servicing by activities operating an industrial fund cost accounting system according to Defense Working Capital Fund guidance and the business area's approved charter. DoD guidance on common service warehousing (that is, non-reimbursable) doesn't apply to industrial funds if they incur costs for services they provide.

- Air Force activities operating an industrial-type cost accounting system will include direct labor, direct materiel, and overhead, but not military pay and allowances, in cross-servicing charges. The furnishing department bills these items at cost: electricity, gas, steam, water, or other similar utilities furnished as a separate cross-service. They can't be incidental to another cross-service.

- Air Force activities may not levy surcharges or other charges not authorized in this Annex.

(e) **Accepting Cross-Service Orders.** The procuring agency will send a written acceptance or rejection with explanation, not later than 30 days after receiving a cross-service order. (The base activity that contracts or provides the ordered service or materiel, not Accounting and Finance, accepts MIPRs.). Include in an acceptance at least:

- Identification of cross-service order (number and date, ordering agency, and address).
- Statement accepting the order. For accepting MIPRs, the statement must say: The terms of this MIPR are satisfactory and are accepted, subject to the corrections for consolidated reimbursable procurement stated herein. The items requested will be furnished as follows

(f) **Contract Provided Support.** When a receiving unit requests support that is provided to the supplier via a base support contract, a formal support agreement is necessary. Base contract support costs are reimbursable IAW DoDI 4000.19, paragraph 4.6 and AFI 65-601, Vol. 1, as applicable. Each functional category provided by a base contractor will be documented in broad, general terms IAW enclosure 6 to DoDI 4000.19 or the supplier's support capability catalog. Neither specific reference to the supporting contract number nor detailed wording contained in the contract will be included. Receiving activity requests for changes in support must be routed through the SAM and forwarded to the appropriate Point of Contact (POC) for contract impact review. Contract modification costs resulting from receiving activity requests are the responsibility of the receiving activity. To prevent the appearance of impropriety, the contractor will not serve as the FAAC for the contractor provided support.

2. 673 CPTS/FM Responsibilities.

a. The personnel from the 673rd FMA will assist support providers (functional areas) in identifying what the receiver pays for, including its basis and estimated reimbursements, on the DD Form 1144 and its funding annex.

b. 673rd FMA will detail all costs billed to the receiver for relevant support categories to include the following:

- Computation details of the reimbursables.

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- Frequency of billing (e.g. monthly, quarterly, or annually).

c. Inter-service and intra-governmental receivers will normally be charged for direct incremental costs only, as per DoDI 4000.19, paragraph 4.6. Reimbursement policy for intraservice agreements is covered by AFI 65-601, Volume I.

d. **DoDI 4000.19, paragraph 4.6:** Reimbursement. Interservice and intragovernmental support is reimbursable to the extent that provision of the specified support for a receiver increases the support supplier's direct costs (i.e., incremental direct cost). Costs associated with common use infrastructure are non-reimbursable, except for support provided solely for the benefit of one or more tenants. Support costs that are charged to a support receiver (i.e., reimbursable cost) must be measurable and directly attributable to the receiver. Indirect costs will not be included in reimbursement charges, except those included in stabilized rates charged for DBOF mission products and services. Suppliers of interservice and intragovernmental support are permitted to waive reimbursement from receivers who use or benefit from available support without appreciably increasing the supplier's costs (i.e., revenues would be less than the anticipated expense of billing and disbursing funds).

e. 673 CPTS/FMA personnel will record all reimbursement computations in sufficient detail to provide an audit trail by clearly documenting computation methods, factor sources, and results. In addition, the Funding Annex should include sufficient documentation to satisfy the financial concerns of the receiver. The Funding Annex must include program element code, any statutory limitations applicable to the program element code, funds expiration date for obligated purpose, method of reimbursement, method of recording obligations, and name and phone number of the originator of the document. Reimbursement should be understood to mean the transfer of funds from one agency to another, not the exchange of services.

f. If current Air Force standard base level accounting systems do not directly correlate identification of incurred expenses with the support categories outlined in DoDI 4000.19 and AFI 25-201 w/PACAFSUP1, then estimation of anticipated reimbursements should be based on:

- General and specific provisions of the agreement.
- Reasonable projections of required levels and amounts of support.
- Generally accepted cost analysis techniques and principles.

3. Funding Procedures

Federal Funds

a. The receiver will provide certified funding documents with the support agreement number included on the document to each Supplier (functional area) for any required support. The funding document will reflect a complete accounting classification to be charged and it will include a point of contact, telephone number and email address. The Receiver and Supplier Resource Advisors will verify annually that a correct bill to address is on record with DFAS.

b. Place the following statement on all agreement funding documents for goods: "I certify that the goods acquired under this agreement are legitimate, specific requirements representing a bona fide need of the fiscal year in which these funds are obligated.

c. If the funding document is a MIPR (DD Form 448), the Supplier RA will sign accepting funds (DD Form 448-2) and in turn will send a copy back to the receiving unit. Forward a copy of signed DD Form 448-2, respective MIPR along with appropriate accounting addresses (FSR & PSR) to DFAS-LI (Process Center code R) for obligation of the funds. Other funding documents will be sent to DFAS-LI for obligation of annotated accounting addresses.

d. Reimbursement documents for services provided will be generated by the organizations furnishing the services and sent to DFAS-LI for billing. The Supplier RA will provide copies of the bills to the receiver.

e. Payment is due upon receipt of the bill and becomes delinquent if not paid within 30 days following the respective billing date.

FUNDING ANNEX
Financial Provisions

Accounting Office Address:

DFAS-Limestone
27 Arkansas Road, Suite104
Limestone, ME 04751-6216

State Funds

a. The receiver will provide an advanced payment check on a, quarterly or yearly basis including the support agreement number and the SDN (Standard Document Number) provided by the supplier resource advisor

b. The supplier resource advisor will send a request to the receiver for advance payment based on a quarterly or yearly estimates. Receiver will forward payment **with a copy of the request for advance payment** to:

START

Disbursing Operations Directorate
ATTN: 3801 Limestone Field Site
PO Box 269339
Indianapolis, IN 46226-9339

Note: Make your check payable to "DSSN3801LI".

4. Manpower of activity supported (data provided by Receiver):

Active Guard & Reserve (AGR) (Full Time)	**National Guard Technicians (Full Time)**	**Traditional Guardsmen (Part Time)**	**Totals**
Army = 107 Officers	Army = 242	Army = 561 (includes 0 techs)	1255
Army = 345 Enlisted			
Air = 5 Officers	Air = 13	Air = 10	**Full Time: 736**
Air = 24 Enlisted			**Part Time: 571**
Total = 481	Total = 255	**(561 + 10) = 571**	**Combined: 1,307**

* Technicians also serve as DSG.

5. **Funding Annex administration.**

a. The proponent for all JBER Support Agreement Funding Annexes is the 673^{d} Comptroller Squadron, 8517 20th Street, Room 300 ATTN: Budget Officer, Joint Base Elmendorf-Richardson, Alaska 99506.

b. Annuallly updated Funding Annexes are posted by FMA on the agreement Sharepoint site (https://jber.eim.elmendorf.af.mil/673ABW/CPTS/SAO/default.aspx) and are also available from 673 CPTS/FMA, contact the Budget Officer at phone # (907) 552-3922.

6. **Cost Calculations.** See the attached cost calculation roll up and supporting documentation for the agreement total and basis for reimbursement for each reimbursable support category. In addition to the hardcopy provided the Receiver, the Funding Annex (Attachment III) is posted in the Funding Annex area of the 673 CPTS SAO SharePoint site.

MANPOWER ANNEX

1. The Manpower Annex (Attachment IV) is inserted here unless it is too extensive. If so it will be developed as a separate document and provided as a separate electronic file and/or at the end of this document (after Attachment VII) in hardcopy form.

2. The proponent for the Manpower Annex is the 673 FSS/FSMM at 384-2035.

3. Manpower impact of 5 positions. See Manpower Annex (Attachment IV) at end of document.

Wing Certification

Staff Judge Advocate

I have reviewed this support agreement for legal sufficiency and find there (are) (are no) legal objections.

Laura Patterson
673 ABW SJA
Date: 4/1/13

Manpower

I have reviewed this support agreement and find there is a manpower impact of 5 positions.

Janet Johnson
673 FSS/FSMM
Date: 12 Dec 12
JANET JOHNSON, DAFC, GS-12
Manpower Analyst

CE Environmental

I have reviewed this support agreement for civil engineering functional areas of responsibility and certify that there (is) (is not) an environmental impact.

673 ABW CES
Date 3/25/13

Security Forces

I have reviewed this support agreement for security related concerns and find that there ~~(is)~~ XX (is not) a security impact.

ERIK J. BRUCE, Lt Col, USAF
673 ABW Security Forces
Date: 3 Jan 2013 (via E-mail)

3d Wing Commander Approval/Certification

I have reviewed this support agreement for 3 WG Wing mission support category descriptions, applicability to this customer, and the reimbursement procedures. I approve of the establishment/update of this support agreement relationship.

3d Wing Commander
Date: 17 JAN 13

Buildings and Facilities Utilized by Receiver

Functional Area: 673 CE673 CES

GENERAL. Receiver maintains exclusive use of their assigned portion of buildings (see list of buildings in grid below) located on JBER. Receiver maintains exclusive use of any facility or portion thereof, financed by, or constructed for/by Receiver. Control of facilities reverts to JBER when no longer required by Receiver and Receiver notifies Supplier.

NOTE: Permits are not required for Air Force-to-Air Force usage.

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
57024	5,298	No	61050-12 CFMO Offices	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
*57033	2,880	No	44220-01 Quonset Hut/Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
*57035	2,880	No	61050-04 Admin Office	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57040	1,440	No	61050-04 Log Cabin/Offices	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57224	576	No	44220-01 Quonset Hut/Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57226	2,160	No	72412 Transient Quarters	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57409	960	No	44240 CFMO/Paint Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57423	1,558	No	44240 CFMO/Paint Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57425	2,634	No	44240 CFMO/Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57426	1,250	No	44222 CFMO/Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57427	336	No	72412 Generals Hut	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57428	5,719	No	21910 Workshop	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
*57432	2,016	No	72360 Operation Santa Claus	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57433	3,840	No	76010 Museum Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57460	1,200	No	44220-05 NG Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57462	1,200	No	44220-05 NG Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57464	1,200	No	44220-05 NG Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57466	1,200	No	44220-05 NG Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
57468	1,200	No	44220-05 NG Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
*57501	1,440	No	17120 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll

Buildings and Facilities Utilized by Receiver

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
57503	3,308	No	17120 Classroom	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
*57528	1,440	No	17120 Classroom	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
58100	5,000	No	44220 YC Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60606	2,151	No	72114 BEQ	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60620	10,650	No	72210-02 Mess Hall MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60700	2,161	No	61050 Computer Lab MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60702	2,161	No	61050 Headquarters MYC Admin	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60704	2,346	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60706	2,346	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60708	2,346	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60710	1,265	No	55010 MED Clinic MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60712	1,010	No	73030-01 Laundry MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60714	2,120	No	73075 Double Latrine MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60716	3,200	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60718	2,400	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60720	3,200	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60722	2,400	No	17120-04 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60724	3,200	No	72114 STARBASE MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60726	2,400	No	61050 TLC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60728	3,200	No	17120 Classroom MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60730	2,400	No	17120 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60732	3,200	No	17120 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60734	2,400	No	72114 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60736	3,200	No	72114 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll

* Indicates building that the Guard has scheduled to be demolished within 3-5 yrs subject to funding.

Buildings and Facilities Utilized by Receiver

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
60738	2,400	No	72114 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60740	2,400	No	72114 Barracks MYC	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60802	4661	No	61050 Counter Drug	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60806	2,133	No	17119 RTI Supply	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60808	2,133	No	17119 Counter Drug	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60810	3,000	NO	17120-04 Acad Lec Hall/Whse	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll
60820	15,551	No	72122 RTI - 200 Man Barracks	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Carroll

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
49000	168,455 + 800 total-169,255 40,948 State portion	No	17180 Armory 61050	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49010	438	No	750371 Recreation Shelter	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49040	17,091	No	21407 OMS	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49045	100	No	14165 POL Bldg - Fuel	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49050	10,460	No	44262 Vehicle Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49140	24,527	No	44220-06 USPFO Warehouse	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49142	6840	No	44110 Cold Storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49144	925	No	44262 USPFO Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49150	68,000	No	21419 CSMS/UTES	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49200	4,000	No	44220-02 AK DES	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49201	20,000	No	44230 C Humid P Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49202	4,000	No	61050 AK State Defense Force	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49203	20,000	No	44230 C Humid P Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49204	4,000	No	44220 Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49205	20,000	No	44230 C Humid P Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49206	4,000	No	44220 Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49208	4,000	No	44220 Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali
49209	4000	No	442758 Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali

Buildings and Facilities Utilized by Receiver

49210	4,000	No	44220 Storage Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Camp Denali

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
47420	10070	No	14112-02 AASF Ops. Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47424	4000	No	442758 Org Stor	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47425	4000	No	442758 Humidity Ctrl Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47427	42,245	No	21110-01 AASF Hangar 6	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47428	4,300	No	44262 AASF Grnd. Spt. Bldg.	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47429	6,611	No	44262 Fuel truck storage	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47430	21,969	No	21110 Hangar 1	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47431	37198	No	21110-01 Hangar 4	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47432	4,625	No	14132 WMD CST Facility	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47433	6,930	No	21110 Hangar 2	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47436	1,465	No	89144 Fire Protection Sys. Non-potable.	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
47437	9,905	No	14132 CST Ready Bldg	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield
48000	1,476	No	13310 Control Tower	USAF-PAF-HJZH-3-12-01	JBER-Richardson Bryant Airfield

Bldg. #	Sq. Ft.	Maintained by CE Y/N	Category Code & Bldg Name/Type	Real Estate Permit #	Location
9309	476	Yes	A1/Admin, Operations, Office	FXSB2001-07-License-14	JBER -Elmendorf
9311	6597	Yes	U1/Maintenance (hangar)	FXSB2001-07-License-14	JBER- Elmendorf

NOTE: Receiver shall obtain written authorization and approval from the 673 CE673 CES prior to changing usage of any facility, either whole or in part. Receiver will not acquire additional facility space on the installation (or relinquish space to another Receiver or unit) without prior written approval and coordination by the 673 CE673 CES. When facilities are no longer required, control reverts to JBER. (This pertains only to Air Force-owned facilities.)

Building number, size, code and name are provided by 673 CE673 CES and reflect which buildings are occupied. The square footage must match with Funding Annex spreadsheets to accurately capture the reimbursement data.

POC:	CES, Project Mgmt. Br.	384-1853/3128/2602
	Asset Optimization Mgmt	384-6224/3003
	Customer Service Center	552-3727
	Real Estate/Real Property	384-0960/384-6223
	673/773 CEG FAAC	384-2559

Permit No. FXSB 2001-06-04

DACA85-4-07-0145

DEPARTMENT OF THE AIR FORCE

PERMIT

TO U.S. DEPARTMENT OF THE ARMY, NATIONAL GUARD BUREAU, OPERATIONAL SUPPORT AIRLIFT AGENCY, U.S. ARMY OPERATIONAL SUPPORT AIRLIFT COMMAND (OSACOM)

FOR PROPERTY LOCATED ON

ELMENDORF AFB, ALASKA

Form 2.1 (Permit/Standard)
01/04/2003-SAF/GCN

Agreed
12/12/07

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DEPARTMENT OF THE AIR FORCE

PERMIT

TO U.S. DEPARTMENT OF THE ARMY, NATIONAL GUARD BUREAU, OPERATIONAL SUPPORT AIRLIFT AGENCY, U.S. ARMY OPERATIONAL SUPPORT AIRLIFT COMMAND (OSACOM)

FOR PROPERTY LOCATED ON ELMENDORF AFB, ALASKA

PREAMBLE

THE SECRETARY OF THE AIR FORCE, hereinafter referred to as "Grantor", hereby grants to the U.S. Department of the Army, National Guard Bureau, Operational Support Airlift Agency, Operational Support Airlift Command (OSACOM), hereinafter referred to as "Grantee", a Permit, revocable at will by Grantor, for use of real property and facilities at Elmendorf AFB, Alaska, identified in EXHIBITS A and B, both attached hereto and made a part hereof, hereinafter referred to as the "Premises". This Permit grants to Grantee the privilege of using the Premises located on Elmendorf AFB Alaska,

hereinafter referred to as "Installation", including appropriate access across the Installation, in accordance with the terms of this Permit. The specific uses to which the Premises may be put are more fully described in Condition 13. Grantor and Grantee, when referred to together, are hereinafter referred to as the "Parties", and may be referred to in the singular as a "Party". The parties acknowledge that the terms of the previous permit will govern the rights and responsibilities of the parties for the period June 30, 2003 until October 31, 2006.

THIS PERMIT is granted subject to the following conditions.

BASIC TERMS

1. TERM

1.0. This Permit shall be effective beginning on November 1, 2006, and shall expire without further notice on October 31, 2011, unless sooner terminated or revoked by Grantor or cancelled by agreement of the Parties. At the end of its full term, this Permit may, upon the written request of Grantee and at the discretion of Grantor, be renewed for an additional period, not to exceed its original term, subject to agreement between the Parties on the payment of consideration, if any. Grantee must submit any request for renewal at least ninety (90) days prior to expiration of the Permit. Grantor has complete discretion in granting a renewal and may consider, by way of example and not by way of limitation, the past practices of Grantee on the Installation, the timeliness of Grantee's request for renewal relative to requests by other organizations for similar permits, and the changing requirements of the Air Force. The obligations of Grantee under this Permit, excluding those of Condition 2, but including those regarding remediation of environmental contamination and removal of structures, facilities, and equipment installed or owned by Grantee, shall remain in effect after the expiration, cancellation, revocation, or termination of this Permit unless otherwise agreed to by the Parties. The previous Permit expired on June 30, 2003. The parties acknowledge Tenancy at Sufferance for the period Jun 30, 2003 until 31 Oct 2006.

2. CONSIDERATION AND COSTS

2.1 Grantee shall pay no fee to Grantor for this Permit.

2.2. The use, operation, and occupation of the Premises pursuant to this Permit shall be without cost or expense to the Department of the Air Force, except as may be specifically provided otherwise herein.

3. CORRESPONDENCE

3.0. All correspondence to be sent and notices to be given pursuant to this Permit shall be addressed, if to the Grantor, to the 3rd Civil Engineer Squadron (3 CES), ATTN: Real Property Officer, 6326 Arctic Warrior Drive, Elmendorf AFB, Alaska 99506, and if to the Grantee, to the Commander, U.S. Army Corps of Engineers, Alaska District, ATTN: Chief Real Estate Division, P.O. Box 6898, Elmendorf AFB, AK 99506-0898, or as may from time to time otherwise be directed by the Parties. Notice shall be deemed to have been duly given if and when enclosed in a properly sealed envelope or wrapper addressed as aforesaid, deposited, postage prepaid, and postmarked in a post office regularly maintained by the United States Postal Service.

4. ACCESS

4.1. The use, operation, and occupation of the Premises is subject to the general supervision and control of the Installation Commander, or the Commander's duly authorized representative, hereinafter referred to as "said officer".

4.2. In accepting the privileges and obligations established hereunder, Grantee recognizes that the Installation serves the national defense and that Grantor will not permit the use, operation, and occupation of the Premises to interfere with the Installation's military mission. This Installation is an operating military installation which is closed to the public and is subject to the provisions of Section 21 of the Internal Security Act of 1950, 50 U.S.C. § 797, and of 18 U.S.C. § 1382. Access to the

Installation is subject to the control of its commanding officer and is governed by such regulations and orders as have been lawfully promulgated or approved by the Secretary of Defense or by any designated military commander. Any access granted to Grantee, its officers, employees, contractors of any tier, agents, and invitees is subject to such regulations and orders. This Permit is subject to all regulations and orders currently promulgated or which may be promulgated by lawful authority as well as all other conditions contained in this Permit. Violation of any such regulations, orders, or conditions may result in the termination of this Permit. Such regulations and orders may, by way of example and not by way of limitation, include restrictions on who may enter, how many may enter at any one time, when they may enter, and what areas of the Installation they may visit. Grantee is responsible for the actions of its officers, employees, contractors of any tier, agents, and invitees while on the Installation and acting under this Permit. Any liability of Grantor resulting from the actions of Grantee's employees, agents, contractors of any tier, agents, and invitees when acting under this Permit shall be the responsibility of Grantee. Grantee is responsible for the costs of complying with these regulations and orders, including, if necessary, background investigations of its employees required to obtain a security clearance.

4.3. Said officer may enter upon and into the Premises with or without notice for the purpose of ensuring compliance with the terms and conditions of this Permit.

4.4. This Permit does not guarantee that the Installation will remain open or active at its current level.

5. TERMINATION AND REVOCATION

5.1. This Permit may be terminated, in whole or in part, by Grantor for failure by Grantee to comply with the terms of the Permit. Termination in accordance with this Condition 5 shall create no liability on the part of Grantor for Grantee's capital costs, costs of construction, installation, maintenance, upgrade, and removal of facilities, transportation, or relocation, and such costs shall not be recoverable from Grantor.

5.2. This Permit may be revoked at will by the Grantor. Such revocation may only be directed by the Secretary of the Air Force who may delegate such authority to the

Under Secretary of the Air Force and the Assistant Secretary of the Air Force (Installations, Environment, & Logistics), but to no other person.

OPERATION OF THE PREMISES

6. CONDITION OF PREMISES

6.0. Grantee has inspected and knows the condition of the Premises. It is understood that the Premises are granted in an "as is, where is" condition without any warranty, representation, or obligation on the part of Grantor to make any alterations, repairs, improvements, or corrections to conditions or to defects whether patent or latent. The Parties shall jointly perform and sign or otherwise authenticate a Physical Condition Report at the beginning of the Permit period to document the condition of the Premises. This report shall be made a part hereof as **EXHIBIT C**.

7. PROTECTION OF PREMISES

7.0. Grantee shall, at all times, protect, repair, and maintain the Premises in good order and condition at its own expense and without cost or expense to Grantor. Grantee shall exercise due diligence in protecting the Premises against damage or destruction by fire, vandalism, theft, weather, contamination, or other causes related to Grantee's activities. Any property on the Installation damaged or destroyed by Grantee incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by Grantee to the satisfaction of said officer. To the extent that the property damaged or destroyed by Grantee is Grantee's property, said officer may, if said officer determines there to be no detriment to the Grantor, consent to Grantee restoring the underlying property without repairing or replacing the damaged or destroyed property.

8. AIR FORCE PROPERTY

8.0. Any interference with the use of, or damage to, or destruction of property under the jurisdiction, custody, or control of Grantor incident to the exercise of Grantee's

privileges herein granted shall be promptly corrected by Grantee to the satisfaction of said officer. If Grantee fails to promptly repair or replace any such property, said officer may repair or replace such property and Grantee shall be liable for the costs of such repair or replacement. Grantee agrees to reimburse Grantor for Grantor's reasonable actual costs resulting from Grantor's inability to utilize such property during the repair or replacement period.

9. RESTORATION OF PREMISES

9.1. In accordance with 10 U.S.C. § 2691, on or before the date of expiration, cancellation, revocation, or termination of this Permit, Grantee shall vacate the Premises, remove its property therefrom, and restore the Premises to their original condition, less fair wear and tear. Grantor may, in its sole and absolute discretion, consent to Grantee abandoning all or part of its property and improvements on the Installation, but such consent must be unequivocal and in writing. Restoration of the Premises, for purposes of this condition, shall include any remedial, removal, or corrective action necessitated by the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or the Solid Waste Disposal Act (SWDA), or similar state laws applicable to the Premises; fair wear and tear does not extend to anything necessitating a remedial, removal, or corrective action. Said officer may, if said officer determines there to be no detriment to the Grantor, consent to Grantee removing its property and restoring the Premises after the expiration, cancellation, revocation, or termination of this Permit. If Grantee fails to perform any required removal and restoration in a timely manner as determined by said officer, Grantor may perform the required removal and restoration in Grantee's place and Grantee shall reimburse Grantor its costs of removal and restoration.

9.2. To the extent that this Permit is a continuation or follow-on permit to previous permits or licenses for essentially the same premises and for essentially the same purposes, the term "original condition" as used in Condition 9.1 shall apply as though it took effect at the beginning of the original use of the Premises by Grantee, including Grantee's predecessors in interest.

10. ALTERATIONS OF THE PREMISES

10.1. Any and all alterations, additions, construction, installation, maintenance, and repair (herein "alterations") of any type whatsoever must comply with this Permit. Grantee shall make no alterations of the Premises without the prior written consent of said officer. Consent by Grantor will not be unreasonably withheld. Said officer may in said officer's discretion grant blanket approvals in advance for certain specified categories of work.

10.2. Said officer may, in granting consent to Grantee's alterations, impose such additional conditions as said officer deems necessary. Such conditions may include, by way of example and not by way of limitation, restrictions on transportation routes and times and requirements to protect or restore transportation routes.

10.3. Grantee shall neither place nor display advertising of any kind whatsoever on the Premises nor on its property located on the Premises, nor suffer any advertising of any kind whatsoever to be placed on its property located on the Premises.

10.4. If Grantee's property located on the Premises intrudes into airspace subject to regulation under the Federal Aviation Regulations or their Air Force counterparts, such property shall be operated, constructed, installed, repaired, and maintained in conformance with such regulations.

10.5. If Grantee makes alterations to the Premises, Grantee shall maintain records showing the locations and nature of its facilities and fixed equipment on the Premises. Such records shall be kept current by Grantee. Grantee shall, at no cost to the Grantor, provide Grantor a copy of these records, along with any changes to them when those changes are made.

11. COSTS OF SERVICES

11.1. Grantee is responsible for the cost of all utilities, janitorial services, building maintenance, environmental costs (including recycling), and grounds maintenance for the Premises without cost to the Department of the Air Force. Grantor

may, if its capabilities permit, consent to provide certain of these services to Grantee in accordance with the Economy Act, 31 U.S.C. § 1535. In the case of some services, Grantor may, for purposes of Installation-wide contract uniformity and control of access, require Grantee to use the services of the Installation contractor providing that service; such services shall be reimbursable.

11.2. If Grantee qualifies under Department of Defense or Grantor regulations, some or all of the costs of those services listed in Condition 11.1 may be provided by Grantor without reimbursement.

11.3. If Grantor obtains any permit or license wholly or in large part because of Grantee's activities under this Permit, Grantee shall reimburse Grantor Grantee's proportionate share of the cost to obtain the permit or license.

12. SUPPORT AGREEMENTS

12.0. Grantor and Grantee may enter into a support agreement under the provisions of Air Force Instruction 25-201, *Support Agreements Procedures*, which may supplement this Permit and provide added detail. Nothing in the support agreement may modify or contradict the provisions of this Permit and, if there is any conflict between the provisions of this Permit and any support agreement, the provisions of this Permit shall govern.

13. USES OF THE PREMISES

13.0. Operational Support Airlift Agency, Operational Support Airlift Command (OSACOM) is permitted to use 1,197 square feet of hangar space located in Building No. 9309; 17,223 square feet of hanger spaced located in Building 9311, together with adjacent ramp space and Facility No. 85-380 consisting of a covered walkway connecting the two buildings, to maintain a fixed wing aircraft operation, on Elmendorf AFB, as identified in Exhibit A attached hereto and made part hereof, hereinafter to as the premises, with rights of ingress and egress thereto.

ENVIRONMENT

14. ENVIRONMENTAL COMPLIANCE

14.1. In its activities under this Permit, Grantee shall comply with all applicable environmental requirements, and in particular those requirements concerning the protection and enhancement of environmental quality, pest management, natural resources management, pollution control and abatement, safe drinking water, wastewater, air quality, and solid and hazardous waste. Responsibility for compliance with such requirements rests exclusively with Grantee, including liability for any fines, penalties, or other similar enforcement costs.

14.2. Grantee shall comply with all permits issued to the Installation for those actions of Grantee covered by said permits. Any fines, penalties, or charges of any kind levied against the Grantor which are based on the violation of a permit shall, if such violation is the result of actions of Grantee, be paid by Grantee. In those cases where a fine, penalty, or charge is attributable to the actions of other entities besides Grantee, Grantor shall apportion the liability for the fine, penalty, or charge between those entities whose actions generated the fine, penalty, or charge. Grantor's apportionment shall be final and conclusive on Grantee. Grantor may pay any fine, penalty, or charge levied against Grantor based on such violation in order to meet mandatory response times but Grantee shall reimburse Grantor for such payment to the extent Grantee is responsible under this Condition 14.2.

14.3. To the extent its activities require one, Grantee shall obtain its own United States Environmental Protection Agency (USEPA) generator identification number, unless said officer directs Grantee to use the Installation identification number.

14.4. Grantor is the focal point for communications with regulatory authorities for all activities on the Installation. Grantee shall, in complying with applicable environmental requirements, coordinate with Grantor and communicate with regulatory agencies and the public through Grantor.

14.5. The Grantee will not use water from Elmendorf AFB's shallow aquifer for any purpose including, but not limited to, drinking, irrigation, fire control, dust control, or

any other activity. It is understood that portions of the shallow aquifer are contaminated and may pose a health risk.

14.6. No later that December 31 of each year the grantee will provide a written certification to 3 CES/CEVR, 6326 Arctic Warrior Drive, Elmendorf AFB, AK 99506 regarding their compliance with the prohibition on use of ground water from the shallow aquifer.

14.7. The grantee agrees not to damage or interfere in any way with groundwater monitoring wells, remedial treatment systems and/or sampling efforts. The grantee will allow 3 CES/CEVR and their contractors access, including but not limited to vehicle access to existing monitoring wells for sampling and maintenance. Should the need arise, the grantee will allow access for 3 CES/CEV and their contractors to close existing wells or install new wells as required.

14.8. Within five (5) working days of discovery, the grantee will provide 3 CES/CER with written notice of any failures to comply with the environmental institutional controls identified in the above paragraphs.

15. ASBESTOS AND LEAD-BASED PAINT

15.1. Grantee shall make no additions to or alternations of those parts of the Premises which contain asbestos-containing material (ACM), without prior consent of said officer; any such improvements or construction shall be done in compliance with all applicable Federal, state, interstate, and local laws and regulations governing ACM. Grantee is responsible for monitoring the condition of ACM on any portion of the Premises for deterioration or damage. Grantee is responsible, at its expense, for remediation of any ACM on the Premises which is disturbed or damaged by Grantee or which becomes friable during the term of this Permit.

15.2. Grantee shall test any painted surface to be affected by any of its operational, construction, installation, repair, or maintenance activities to determine if the paint is lead-based and shall handle that surface in compliance with all applicable laws and regulations and at Grantee's expense.

16. Safety, Hazardous Materials, and Waste Management

16.1. Grantee, at its expense, shall comply with all applicable laws on occupational safety and health, the handling and storage of hazardous materials, and the proper handling and disposal of solid and hazardous wastes and hazardous substances generated by its activities. Nothing in this Permit supercedes the requirements of 10 U.S.C. § 2692, *Storage, treatment, and disposal of nondefense toxic and hazardous materials*.

16.2. Grantee shall not bring solid or hazardous wastes or hazardous substances upon the Premises. Grantee shall be responsible for the cost of proper disposal of solid and hazardous wastes generated by its activities under this Permit. Grantor may require Grantee to utilize Grantor's centralized systems for the handling, treatment, storage, and disposal of solid and hazardous wastes. Grantor may require Grantee to participate in Grantor's pollution prevention and recycling programs.

16.3. Upon discovery of previously unknown hazardous wastes or hazardous substances or of a spill of hazardous materials or wastes on the Premises, Grantee shall immediately notify said officer of such discovery and cease activities at the site of the discovery, except such activities as may be directed at containing a spill.

16.4. The terms 'hazardous materials', 'solid wastes', 'hazardous wastes', and 'hazardous substances' are as defined in the Federal Water Pollution Control Act, CERCLA, SWDA, the Clean Air Act, and the Toxic Substances Control Act, and their implementing regulations.

17. Historic Preservation

17.0. Grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archaeological, architectural, or other cultural artifacts, relics, vestiges, remains, or objects of antiquity. In the event such items are discovered on the Premises, Grantee shall cease its activities at the site and immediately notify said officer and protect the site and the material from further disturbance until said officer gives

clearance to proceed. Any costs resulting from this delay shall be the responsibility of Grantee.

18. Installation Restoration Program

18.1. If the Installation has not been listed on the National Priorities List (NPL) at the time this Permit is granted, but is listed subsequent to the granting of this Permit, Grantor will provide Grantee with a copy of any Federal Facility Agreement (FFA) that is entered into between Grantor and the U.S. Environmental Protection Agency (USEPA), along with any amendments to the FFA when they become effective.

18.2. If the Installation has been listed on the NPL at the time this Permit is granted but no FFA has been entered into, Grantor will provide Grantee with a copy of any FFA subsequently entered into along with any amendments to the FFA when they become effective.

18.3. If the Installation has been listed on the NPL at the time this Permit is granted and an FFA has been entered into, Grantee acknowledges that Grantor has provided it with a copy of the FFA, with current amendments; Grantor will provide Grantee with a copy of any subsequent amendments thereto.

18.4. Should any conflict arise between the terms of the FFA as it may be amended and the provisions of this Permit, the terms of the FFA shall govern.

19. Access for Restoration

19.1. Nothing in this Permit shall be interpreted as interfering with or otherwise limiting the right of Grantor and its duly authorized officers, employees, contractors of any tier, agents, and invitees to enter upon the Premises for the purposes enumerated in Condition 19.3 and for such other purposes as are consistent with the provisions of an FFA or required to implement the Installation Restoration Program (IRP) conducted under the provisions of 10 U.S.C. § 2701, et seq. Grantee shall provide reasonable assistance to Grantor to ensure Grantor's activities under this Condition 19 do not damage Grantee's property on the Premises.

19.2. The USEPA and State of Alaska, including their subordinate political units, and their duly authorized officers, employees, contractors of any tier, and agents may, upon reasonable notice to Grantee and with Grantor's consent, enter upon the Premises for the purposes enumerated in Condition 19.3 and for such other purposes as are consistent with the provisions of an FFA. Grantee shall provide reasonable assistance to USEPA and the State to ensure their activities under this Condition 19 do not damage Grantee's property on the Premises.

19.3. Purposes:

19.3.1. To conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, test-pitting, testing soil borings, and other activities related to the IRP or an FFA;

19.3.2. To inspect field activities of Grantor and its contractors of any tier in implementing the IRP or an FFA;

19.3.3. To conduct any test or survey required by the USEPA or the State relating to the implementation of an FFA or environmental conditions on the Premises or to verify any data submitted to the USEPA or the State by Grantor relating to such conditions; or,

19.3.4. To conduct, operate, maintain, or undertake any other response or remedial action as required under or necessitated by the IRP or an FFA, including, but not limited to, monitoring wells, pumping wells, and treatment facilities.

20. ENVIRONMENTAL BASELINE

20.0. An environmental baseline survey waiver (EBSW) has been prepared documenting the known history of the property with regard to the storage, release, or disposal of hazardous substances thereon; that EBS is attached hereto, or incorporated by reference, and made a part hereof as **EXHIBIT D**. Upon expiration, cancellation, revocation, or termination of this Permit, another EBS shall be prepared by Grantee, in accordance with Grantor's standards and requirements, which shall document the environmental condition of the property at the end of Grantee's use of the Premises. That EBS shall be attached hereto, or incorporated by reference, and made a part hereof as

EXHIBIT D-1. The findings of the two EBSs shall be used in settling factual aspects of claims for environmental restoration of the Premises.

CHANGES IN OWNERSHIP OR CONTROL

21. TRANSFER, ASSIGNMENT, LEASING, OR DISPOSAL

21.1. Grantee shall not transfer, permit, license, assign, lease, or dispose of in any way, including, but not limited to, voluntary or involuntary sale, merger, consolidation, receivership, or other means (all referred to in this Condition 21 as "transfer"), this Permit or any interest therein or any property on the Premises, or otherwise create any interest therein, without the prior written consent of said officer. Transfers may only be made to agencies or instrumentalities of the United States.

21.2. Any transfer by Grantee shall be subject to all of the terms and conditions of this Permit and shall terminate immediately upon the expiration, cancellation, revocation, or termination of this Permit, without any liability on the part of Grantor to Grantee or to any transferee. Under any transfer made, with or without consent, the transferee shall be deemed to have assumed all of the obligations of Grantee under this Permit. No transfer shall relieve Grantee of any of its obligations hereunder.

21.3. Grantee shall furnish said officer, for said officer's prior written consent, a copy of each transfer Grantee proposes to execute. Such consent by said officer may include the requirement to delete, add, or change provisions in the transfer instrument as Grantor shall deem necessary to protect its interests. Consent to or rejection of any transfer shall not be taken or construed to alter, diminish, or enlarge any of the rights or obligations of either of the Parties under this Permit, nor form a basis for any cause of action against or liability of Grantor.

21.4. Any transfer instrument must expressly provide that—(1) the transfer and transferee are subject to all of the terms and conditions of this Permit; (2) the transfer shall terminate with the expiration, cancellation, revocation, or termination of this Permit; and, (3) in case of any conflict between this Permit and the transfer instrument, this Permit shall govern. A copy of this Permit must be attached to the transfer instrument.

22. Other Grants of Access

22.0. This Permit is subject to all outstanding easements, rights-of-way, leases, permits, licenses, and uses for any purpose with respect to the Premises. Grantor shall have the right to grant additional easements, rights-of-way, leases, permits, and licenses, and make additional uses with respect to the Premises. However, any such additional easements, rights-of-way, leases, permits, licenses, or uses shall not be inconsistent with the Grantee's use of the Premises under this Permit.

23. Real Property Accountability

23.0. Grantor may transfer real property accountability for the Premises, or a part of the Premises, to another agency or instrumentality of the United States. In such event, the agency or instrumentality assuming real property accountability shall stand in the place of and become Grantor without altering, diminishing, or enlarging the rights and obligations of either Grantor or Grantee under this Permit.

24. Reporting

24.0. This Permit is not subject to 10 U.S.C. § 2662.

General Provisions

25. Compliance With Laws

25.0. Grantee shall comply with all applicable Federal, state, interstate, and local laws, regulations, and requirements. Grantor is not responsible for obtaining permits for Grantee nor for allowing Grantee to use permits obtained by Grantor.

26. Availability of Funds

26.0. The obligations of any Party to this Permit or of any transferee of the Permit shall be subject to the availability of appropriated funds, unless such Party or transferee is a non-appropriated fund instrumentality of the United States. No appropriated funds are obligated by this Permit.

27. AMENDMENTS

27.0. This Permit may only be modified or amended by the written agreement of the Parties, duly signed by their authorized representatives.

28. LIABILITY

28.0. Grantor is not responsible for loss of or damage to property or injury or death to persons which may arise from, or be attributable or incident to, the condition or state of repair of the Premises, due to its use or occupation by Grantee. As between Grantor and Grantee, Grantee assumes all risks of loss or damage to property and injury or death to persons, whether to its officers, employees, contractors of any tier, agents, invitees, or others, by reason of or incident to Grantee's use of the Premises, and its activities conducted under this Permit. Grantee shall, at its expense, pay any settlements of or judgments on claims arising out of its use of the Premises. Grantee shall, at its expense, either settle and pay any claims arising out of the use and occupancy of the Premises or retain administrative responsibility for any litigation resulting from such claims, including reimbursement of the Judgment Fund, 31 U.S.C. § 1304; provided, however, that Grantor or another agency of the Government may, as a matter of its internal policy, assume responsibility for certain claims of that agency's personnel while assigned or detailed to the Grantee, or otherwise present on the Premises.

29. INSURANCE

29.0. If Grantee is a non-appropriated fund instrumentality of the United States or is authorized to and does maintain insurance coverage, it shall continue to maintain insurance coverage of the types and in the amounts typically carried for its operations.

Grantee shall require its contractors of any tier performing work on the Premises to carry and maintain insurance coverage of the types and in the amounts specified by said officer.

30. Entire Agreement

30.0. It is expressly understood and agreed that this written instrument embodies the entire agreement between the Parties regarding the use of the Premises by the Grantee, and there are no understandings or agreements, verbal or otherwise, between the Parties except as expressly set forth herein.

31. Condition and Paragraph Headings

31.0. The headings contained in this Permit and its Attachments are to facilitate reference only and shall not in any way affect the construction or interpretation hereof.

32. Statutory and Regulatory References

32.0. Any reference to a statute or regulation in this Permit shall be interpreted as being a reference to the statute or regulation as it has been or may be amended from time to time.

33. Prior Permits

33.0. This Permit supercedes all prior permits and licenses, if any, to Grantee for the Premises, but does not terminate any obligations of Grantee under such prior permits or licenses that may by their terms survive the termination or expiration of such prior permits or licenses, except to the extent such obligations are inconsistent with this Permit.

This Permit supersedes Permit No. DACA85-4-98-19.

34. Reserved

34.0. Reserved.

IN WITNESS whereof, I have hereunto set my hand by authority of the Secretary of the Air Force, this 9th day of Nov, 2007.

THE UNITED STATES OF AMERICA,
by the Secretary of the Air Force

BY: _____
THOMAS L. TINSLEY
Brigadier General, USAF
Commander, 3rd Wing

This Permit is also executed by Grantee this 19th day of Sept, 2007.

DEPARTMENT OF THE ARMY
NATIONAL GUARD BUREAU

_____
VERONICA A. HIRIAMS
Chief, Real Estate Division
U. S. Army Corps of Engineers
Alaska District

EXHIBITS

EXHIBIT A—MAP OF PREMISES

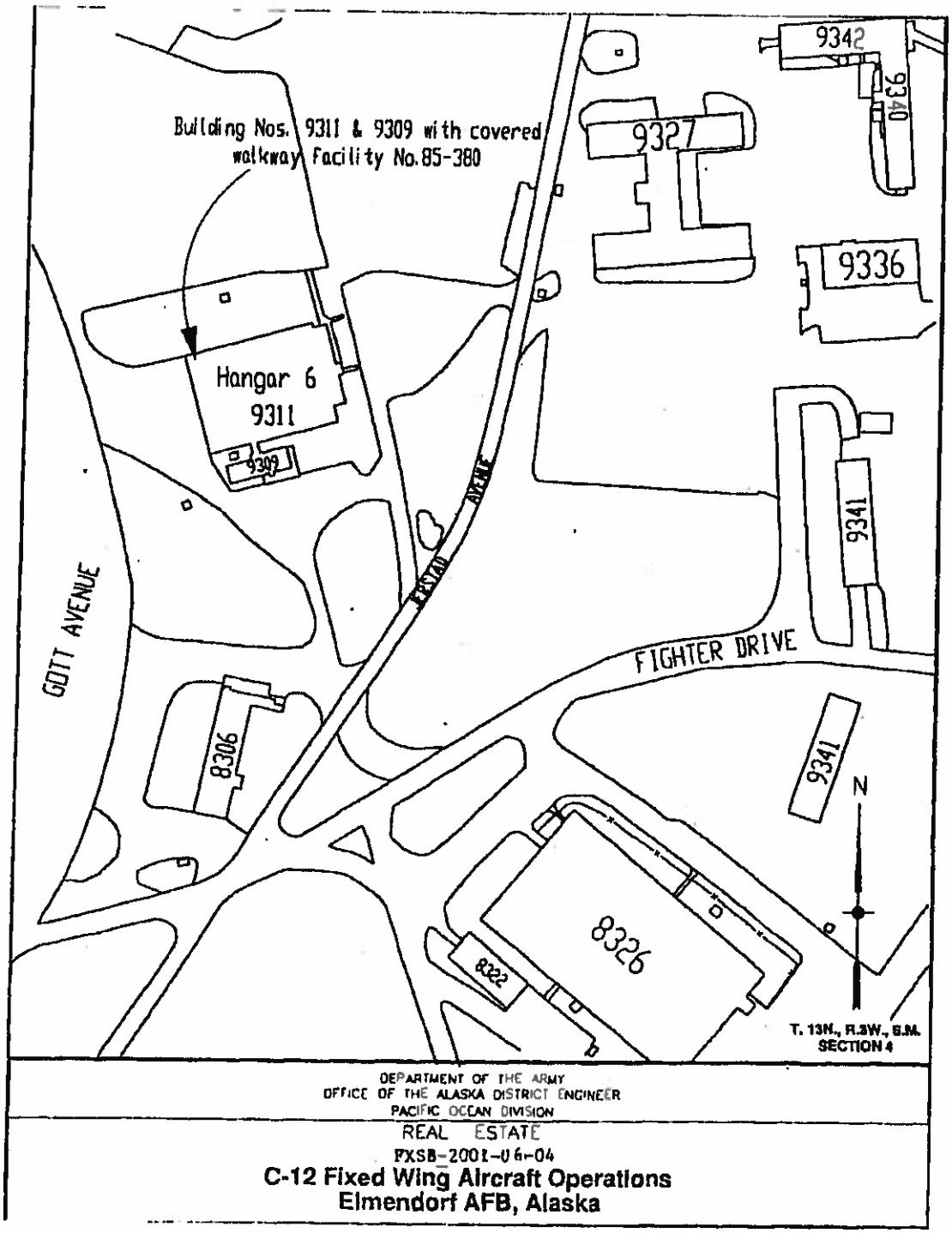
Building Nos. 9311 & 9309 with covered walkway Facility No.85-380
Hangar 6
9311
9309
9342
9340
9327
9336
9341
9341
8306
8322
8326
GOTT AVENUE
TEXAN AVENUE
FIGHTER DRIVE
N
T. 13N., R.3W., S.M.
SECTION 4
DEPARTMENT OF THE ARMY
OFFICE OF THE ALASKA DISTRICT ENGINEER
PACIFIC OCEAN DIVISION
REAL ESTATE
FXSB-2001-06-04
C-12 Fixed Wing Aircraft Operations
Elmendorf AFB, Alaska

EXHIBIT B—DESCRIPTION OF PREMISES

B.1. Non-restricted Access Areas:

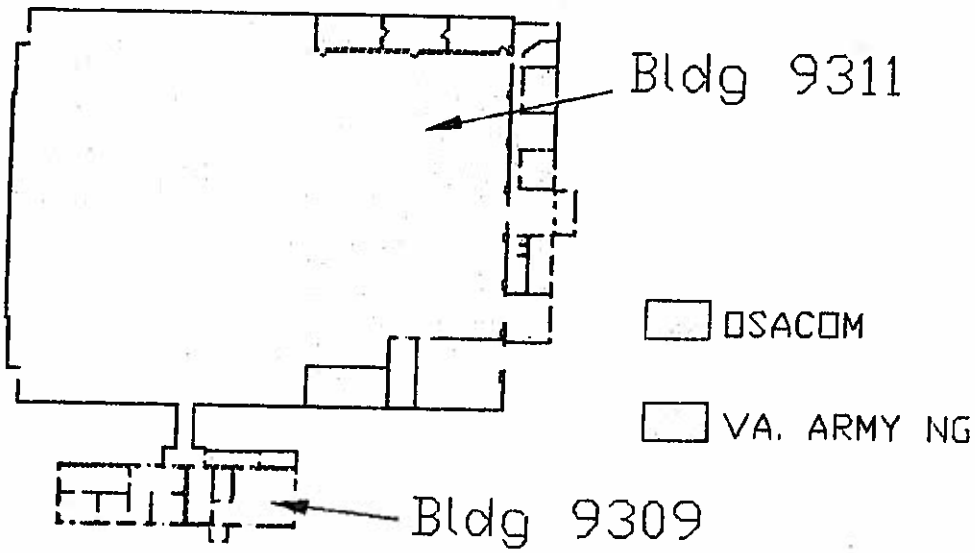

EXHIBIT B

EXHIBIT C—PHYSICAL CONDITION REPORT

JOINT SURVEY AND INSPECTION OF CONDITION OF GOVERNMENT LEASED PROPERTY

DATE OF SURVEY	REAL ESTATE INSTRUMENT NUMBER	NUMBER OF ATTACHMENTS
25-Jul-06	FXSB-2001-06-04	

ACTIVITY
U.S. Department of the Army, National Guard Bureau, Operational Support Airlift Agency, Operational Support Airlift Command

TOTAL LEASED BUILDING AREA
18,553 SF Total

DESCRIPTION AND LOCATION OF PROPERTY
Buildings 9309 (1,197 SF) Building 9311 - Hanger 8, (17,223 SF) and facility 85-380 - Covered walkway (133 SF) Jerstad Ave Elmendorf AFB AK 99506

	POOR	FAIR	NORMAL	GOOD	N/A	REMARKS
EXTERIOR CONDITION						
Roof	X	X				Leaks
Eave		X				
Downspout					X	
Walls		X				
Windows					X	N/A
Doors					X	
Fencing					X	
Lawn					X	
Shrubbery					X	
Trees					X	
Walks					X	
Driveways					X	
Garage					X	
Entrances					X	
Elevators					X	
Patios					X	
Sewage					X	
INTERIOR CONDITION						
Floor	X	X				SG
Floor Cvr			X			
Walls			X			
Ceiling	X	X				Leaks
Doors					X	
Windows					X	
Plumbing					X	
Elec Fix					X	
Heating					X	
Woodwork		X				
TANKS						
UG					X	
AG					X	

ADDRESS
ALASKA REGIONAL FLIGHT CENTER
85380
ELMENDORF AFB AK 99506

NAME, TITLE, AND SIGNATURE OF GRANTEE OR REPRESENTATIVE
William J Johnson
WILLIAM J JOHNSON
Facility Manager

ORGANIZATION
3rd Civil Engineer Squadron
Real Estate Management Office
5326 Arctic Warrior Drive

NAME, TITLE, AND SIGNATURE OF AF REPRESENTATIVE
Stephanie G. Kendrick
STEPHANIE G. KENDRICK
Realty Specialist

JOINT SURVEY AND INSPECTION OF CONDITION OF GOVERNMENT LEASED PROPERTY

DATE OF SURVEY	REAL ESTATE INSTRUMENT NUMBER	NUMBER OF ATTACH MENTS
25-Jul-06	FXSB-2001-06-04	

ACTIVITY
U.S. Department of the Army, National Guard Bureau, Operational Support Airlift Agency, Operational Support Airlift Command

TOTAL LEASED BUILDING AREA
18,553 SF Total

DESCRIPTION AND LOCATION OF PROPERTY
Buildings 9309 (1,197 SF) Building 9311 - Hangar 6 (17,223 SF) and facility 85-380 - Covered walkway (133 SF) Jorstad Ave. Elmendorf AFB AK 99506

EXTERIOR CONDITION	POOR	FAIR	NORMAL	GOOD	N/A	REMARKS
Roof			X			
Eave			X			
Downspout			X			
Walls		X				
Windows				X		
Doors				X		
Fencing					X	
Lawn					X	
Shrubbery					X	
Trees					X	
Walks			X			
Driveways			X			
Garage					X	
Entrances		X				
Elevators					X	
Patios					X	
Sewage			X			
INTERIOR CONDITION						
Floor				X		
Floor Cvr				X		
Walls		X				
Ceiling		X				Ceilings
Doors			X			
Windows		X		X		
Plumbing		X				old water lines in Bathroom
Elec Fix			X			
Heating		X				
Woodwork		X				
TANKS						
UG					X	
AG					X	

ADDRESS
ALASKA REGIONAL FLIGHT CENTER
9309 GOTT AVE
ELMENDORF AFB AK 99506

NAME, TITLE, AND SIGNATURE OF GRANTEE OR REPRESENTATIVE
William J Johnson
Facility Manager

ORGANIZATION
3rd Civil Engineer Squadron
Real Estate Management Office
6326 Arctic Warrior Drive

NAME, TITLE, AND SIGNATURE OF AF REPRESENTATIVE
STEPHANIE G. KENDRICK
Realty Specialist

JOINT SURVEY AND INSPECTION OF CONDITION OF GOVERNMENT LEASED PROPERTY

DATE OF SURVEY	REAL ESTATE INSTRUMENT NUMBER	NUMBER OF ATTACH MENTS
25-Jul-06	FXSB-2001-06-04	

ACTIVITY
U.S. Department of the Army, National Guard Bureau, Operational Support Airlift Agency, Operational Support Airlift Command

TOTAL LEASED BUILDING AREA
18,553 SF Total

DESCRIPTION AND LOCATION OF PROPERTY
Buildings 9309 (1,197 SF) Building 9311 - Hanger 6, (17,223 SF) and facility 85-380 - Covered walkway (133 SF) Jorstad Ave. Elmendorf AFB AK 99506

EXTERIOR CONDITION	POOR	FAIR	NORMAL	GOOD	N/A	REMARKS
Roof	X					
Eave		X				Leaks
Downspout					X	
Walls		X				
Windows					X	N/A
Doors					X	
Fencing					X	
Lawn					X	
Shrubbery					X	
Trees					X	
Walks					X	
Driveways					X	
Garage					X	
Entrances					X	
Elevators					X	
Patios					X	
Sewage					X	
INTERIOR CONDITION						
Floor	X	X				Str
Floor Cvr			X			
Walls			X			
Ceiling	X	X				Leaks
Doors					X	
Windows					X	
Plumbing					X	
Elec Fix					X	
Heating					X	
Woodwork		X				
TANKS						
UG					X	
AG					X	

ADDRESS
ALASKA REGIONAL FLIGHT CENTER
85380
ELMENDORF AFB AK 99506

NAME, TITLE, AND SIGNATURE OF GRANTEE OR REPRESENTATIVE
William J Johnson
WILLIAM J JOHNSON
Facility Manager

ORGANIZATION
3rd Civil Engineer Squadron
Real Estate Management Office
6326 Arctic Warrior Drive

NAME, TITLE, AND SIGNATURE OF AF REPRESENTATIVE
Stephanie G. Kendrick
STEPHANIE G. KENDRICK
Realty Specialist

EXHIBIT D—ENVIRONMENTAL BASELINE SURVEY

In accordance with Condition 20, the Environmental Baseline Survey (EBS) Waiver titled Department of the Army – National Guard Bureau Operational Support Airlift Agency – Operational Support Airlift Command, Permit DACA85-4-98-19, Elmendorf Air Force Base, Alaska, dated 10 Jun 2006, is hereby incorporated by this reference.

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

MAR 20 2007

3 CES/CERR
6326 Arctic Warrior Drive
Elmendorf AFB AK 99506-3240

U.S. Army Operational Support Airlift Command
Attn: Program and Budget Office
6970 Britten Drive, Suite 201
Fort Belvoir VA 22060-5133

Dear Sir,

This letter concerns your Permit DACA85-4-98-19 for the 1,197 SF of administrative space located in building 9309 17,223 SF of hanger space located in Bldg No. 9311, together with adjacent ramp space and parking space to maintain a fixed wing aircraft operation on Elmendorf AFB. The Permit expired on June 30, 2003.

Air Force acknowledges your desire to continue in occupancy. Your request was presented to and approved by our installation facilities board. While we are processing the new lease, let this letter serve to acknowledge that the terms of the previous document will govern the rights and obligations of you and the Air Force from that expiration date until the date on which the new document has been fully executed.

If this arrangement is agreeable to you, please sign this letter in the space below and return it in the self-addressed envelope at your earliest convenience. If you have any questions, please contact me at 552-3139.

Sincerely,

Laura Keiser
LAURA KEISER
Elmendorf Real Property Officer

Agreed to as above, inconsideration of the premises, and
intending to be legally bound this 22nd day of March 2007

OSACOM
By: Donna S. Scott
(authorized officer)

Enclosure
Self-addressed envelope

FAXED 3/22/07

SUPPORT AGREEMENT

1. AGREEMENT NUMBER (Provided by Supplier)	2. SUPERSEDED AGREEMENT NO. (If this replaces another agreement)	3. EFFECTIVE DATE (DDMMYYYY)	4. EXPIRATION DATE
FB5000-05188-168	FB5000-98190-168	07072005	INDEFINITE

5. SUPPLYING ACTIVITY	6. RECEIVING ACTIVITY
a. NAME AND ADDRESS 3 WG Attn: 3 LRS/LGRPP 15510 29TH Street Elmendorf AFB AK 99506 SUPPLIER POC: 3 LRS/LGRRP (Support Agreement) Voice: DSN (317) 551-7651 / 2584 Fax: DSN (317) 552-8654 E-mail: 3 lrs/supportagree@elmendorf.af.mil	b. NAME AND ADDRESS Operational Support Airlift Agency (OSAA) 6970 Britten Dr, Ste 201 Fort Belvoir VA 22060-5133 RECEIVER POC: Lisa Marshall Voice: DSN (312) 656-7012 Fax: Comm (703) 806-7109 E-mail:
b. MAJOR COMMAND PACIFIC AIR FORCE (PACAF)	b. MAJOR COMMAND Army National Guard Bureau

7. SUPPORT PROVIDED BY SUPPLIER

a. SUPPORT (Specify what, when, where, and how much)	b. BASIS FOR REIMBURSEMENT	c. ESTIMATED REIMBURSMENT
See Attachment 2, Page _4_	Total Est Reimbursement: Total Est Non-Reimbursement:	$29,168.62 $0.00

Additional Support Requirements Attached: YES

8. SUPPLYING COMPONENT		9. RECEIVING COMPONENT	
a. COMPTROLLER SIGNATURE John D. Galloway Sr. JOHN D. GALLOWAY SR, Lt Col, USAF	b. DATE SIGNED 11 Apr 05	a. COMPTROLLER SIGNATURE Donna S. Scott DONNA S. SCOTT Branch Chief, Budget	b. DATE SIGNED 16 Jun 05
c. APPROVING AUTHORITY		c. APPROVING AUTHORITY	
(1) Typed Name ROBERT M. DOUGLAS, Col, USAF		(1) Typed Name TIMOTHY R. DEHASS, LTC, AV, Commanding	
(2) Organization 3 MSG/CC	(3) Telephone Number DSN (317) 552-3004	(2) Organization Operational Support Airlift Command	(3) Telephone Number
(4) Signature	(5) Date Signed 7 Jul 05	(4) Signature TIMOTHY R. DEHASS, LTC, AV, Commanding	(5) Date Signed 16 Jun 05

10. TERMINATION (Complete only if agreement is terminated prior to scheduled expiration date.)

a. APPROVING AUTHORITY	b. DATE SIGNED	a. APPROVING AUTHORITY	b. DATE SIGNED

DD FORM 1144

11. GENERAL PROVISIONS (*Complete blank spaces and add additional general provisions as appropriate. e.g., exceptions to printed provisions, additional parties to this agreement, billing and reimbursement instructions.)*

a. The receiving components will provide the supplying component projections of requested support. *(Significant changes in the receiving component's support requirements should be submitted to the supplying component in a manner that will permit timely modification of resource requirements.)*

b. It is the responsibility of the supplying component to bring any required or requested change in support to the attention of (SEE BLOCK 6A) prior to changing or canceling support.

c. The component providing reimbursable support in this agreement will submit statements of costs to:
3 CPTS/FMFL 8517 20TH STREET ELMENDORF AFB, AK 99506-2400

d. All rates expressing the unit cost of services provided in this agreement are based on current rates, which may be subject to change for uncontrollable reasons, such as legislation, DoD directives, and commercial utility rate increases. The Receiver will be notified immediately of such rate changes that must be passed through to the support Receivers.

e. This agreement may be cancelled at any time by mutual consent of the parties concerned. This agreement may also be cancelled by either party upon giving at least 180 days written notice to the other party.

f. In case of mobilization or other emergency, this agreement will remain in force only within Supplier's capabilities. YES

g. This agreement has been certified by the following 3 WG agencies: Civil Engineer, Manpower, Security Forces, and Legal. There is no additional Manpower impact.

h. Support Agreement peculiarities:
(1) This agreement may be amended by negotiations at any time prior to expiration date listed, as changes in the operational assignment of the Receiver occurs, to include, authorized manning level. Or when cost experience indicates significant variances (+/-5%) from the estimates of cost to provide BOS to the Receiver.

i. Funding and Reimbursement Arrangements:
(1) Standard Form 1080 (Voucher for Transfer Between Appropriations and/or Fund) will be used. Each support category resource manager will prepare all billing documentation covering services provided by 3rd Wing. SF 1080, with billing documentation, will be forwarded to **3 CPTS/FMFL, Elmendorf AFB, AK 99506-2400,** for submission to **Attn: DFAS-Pacific/AIA, 477 Essex Street, Pearl Harbor, HI 96860-5806**.
(2) **DFAS-Pacific/AIA, 477 Essex Street, Pearl Harbor, HI 96860-5806** will submit monthly billings for reimbursement using SF 1080. The SF 1080 will be sent to the Local Receiver for verification/certification prior to being forwarded to Receiver's Comptroller on a monthly basis for payment. Final billings will be marked "final bill" so that remaining funds may be deobligated.
(3) The Receiver (XXX) will provide the Supplier (3 WG) with an annual Military Interdepartmental Purchase Request (MIPR) to cover estimated fiscal year charges.

j. References:
Department of Defense Instruction (DoDI) 4000.19 – 9 Aug 1995
DoDI 7000.14-R – 15 Nov 1992
Air Force Instruction (AFI) 25-201 – 1 Dec 1996
AFI 25-201, PACAF Supplement 1 – 31 Aug 1998

k. List of Attachments
Attachment 1 (3 WG Agency Certification, Page _3_)
Attachment 2 (Continuation of Support Provided by Supplier, Block 7, Page _4_)
Attachment 3 (Specific Provision, Pages _5-17_)
Attachment 4 (Funding Annex, Page _18_)
Attachment 5 (Utility Annex, Pages _19-20_)
Attachment 6 (Manpower Annex, Pages _21-22_)
Attachment 7 (Distribution Listing, Page _23_)

l. Purpose: To provide support to the Receiver (OSAA) as out-lined in the support agreement; 3 WG is the providing Supplier.

m. Mission: To support directed Operational Support Airlift Command (OSAA) flight missions.

ADDITIONAL GENERAL PROVISIONS ATTACHED: NO

12. SPECIFIC PROVISIONS *(As appropriate, e.g., location and size of occupied facilities, unique Supplier and Receiver responsibilities, conditions, requirements, quality standards, and criteria for measurement/reimbursement of unique requirements.)*

SEE ATTACHMENT 4, PAGE _5-17_

Manning Strength:
_12_ Military _0_ DoD Civilian _0_ Non-DoD Civilian

Building	Room	SF
9309		1197
9311		17,223
85-380		104 (covered walkway)
	Total: 18,524 SF	

ADDITIONAL SPECIFIC PROVISIONS ATTACHED: YES

DD FORM 1144

3rd Wing Agencies Certification

CIVIL ENGINEERING CERTIFICATION

I have reviewed this agreement for civil engineering functional areas of responsibility and certify that there is not an environmental impact.

DENNIS R. MATTSON, GM-14
Deputy Base Civil Engineer

MANPOWER CERTIFICATION

I have reviewed this agreement and there are no manpower impacts.

RICK JONES, DAF, GS-13
Flight Chief

SECURITY FORCES CERTIFICATION

I have reviewed this agreement and find there are no security impacts.

FEB 22 2005

MARK A. KING, 1Lt, USAF
Section Commander

STAFF JUDGE ADVOCATE CERTIFICATION

I have reviewed this agreement and find it to be legally sufficient.

SCOTT R. MARCHAND, GS-13, DAF
Chief, General Law

Support Category	Basis for Reimbursement	Estimated Reimbursement	Estimated Non-Reimbursement	Level of Service
A/C MAINT	Actual Costs	100% of total cost	0%	100%
AIRFIELD OPS	Actual Costs	100% of total cost	0%	100%
COMM	Estimated Costs	100% of total cost	0%	100%
COMMAND SPT	NONE	0%	0%	100%
COMMON INFRA	Actual Costs	100% of total cost	0%	100%
CUSTODIAL	Estimated Costs	100% of total cost	0%	100%
DISASTER	NONE	0%	0%	100%
ENVIRO	Actual Costs	100% of total cost	0%	100%
FAC ENGR SPT	Actual Costs	100% of total cost	0%	100%
FACIL CONSTR	Actual Costs	100% of total cost	0%	100%
FACIL REPAIR	Actual Costs	100% of total cost	0%	100%
FIRE	NONE	0%	0%	100%
MAIL SVCS	Actual Costs	100% of total cost	0%	100%
POLICE	NONE	0%	0%	100%
REFUSE	Estimated Costs	100% of total cost	0%	100%
SAFETY	NONE	0%	0%	100%
SAM	NONE	0%	0%	100%
SUPPLY	NONE	0%	0%	100%
UTILITIES	Estimated Costs	100% of total cost	0%	100%

A/C MAINT Aircraft Maintenance **(OPR: 3 EMS)**

Includes all aspects of aircraft maintenance (e.g., corrosion control, metals technology, Aircraft Ground Equipment (AGE), Non-destructive Inspection (NDI), repair and reclamation, structural repair, etc.) not previously addressed.

Supplier Will:

1. Battery Shop

Allow Receiver access to the Battery Shop upon completion of a safety briefing. Make available freezer space to allow Receiver storage of spare batteries therefore extending shelf life.

Receiver Will:

1. Battery Shop

Adhere to all shop safety practices and comply with Supplier's policies and procedures.

AIRFLD OPS Airfield Base Operations **(OPR: 3 OSS)**

Manage airfield support activities and facilities. Provide service for pre-flight planning and flight plan processing.

Supplier Will:

1. Manage airfield support activities and facilities in accordance with 3rd Wing Instruction 13-203, Airfield Policies and Procedures. Provide services for preflight planning and flight plan process.

Receiver Will:

1. Make requirements known to Supplier and comply with policies and procedures.

COMM Communication Services **(OPR: 3 CS)**

Includes dedicated communications services and telephone equipment. May also include leasing of communication equipment, lines, and special communications-electronics equipment services. (Customarily reimbursable)

Supplier Will:

1. Assist Receiver in preparation of AF Form 3215, Information Technology Requirements Document, in accordance with AFI 33-103 to request new or changed communications services. (SCX)

2. Telephone Services

   a. Provide official telephone service with access to Defense Switched Network (DSN), Federal Telephone System (FTS), leased lines, commercial telephone systems, and alterations or extensions of existing service IAW AFI 33-111. (SCMDP)

   b. Provide technical solutions for new and changed telephone requirements. (SCMDP)

   c. Provide copies of current telephone directories (3WG/PA)

   d. Maintain current base directory information. (SCMDP)

   e. Provide Telephone Control Officer Training. (SCX)

   f. Provide listing of toll calls to the Receiver's unit Telephone Control Officer (TCO). (SCX)

Receiver Will:

1. Submit all telephone requirements to 3 CS/SCX via AF Form 3215. Receiver will not install, remove, or relocate any telephone equipment IAW 33-111.

2. Telephone Services

   a. Designate, in a letter to 3 CS/SCX, a unit telephone control officer whose duties will include certifying telephone usage is for official purposes, coordinating telephone work orders for the Receiver, and controlling cable television equipment (if applicable).

   b. Fund telephone equipment and expendables listed in technical solutions to new or changed requirements. Equipment may include phone instruments, line cards, and necessary ancillary equipment.

   c. Provide list of offices and telephone numbers for inclusion in the base telephone directory.

g. Manage and submit monthly billing documents for refund of toll calls. (SCX)

h. Manage and submit monthly billing for installation, relocation and special equipment service charges. (SCX)

i. Provide cable television services on a cost reimbursable basis (SCX)

d. Log all toll calls on AF Form 1072

e. Certify official use of phone services on TCO-provided list of toll calls.

f. Reimburse Provider for toll calls by best means determined by Provider and Receiver budget activities.

3. Personal Wireless Communications Systems (PWCS) (encompasses all government-owned devices capable of transmitting or receiving radio-frequencies such as land mobile radios (LMR), cell phones, and pagers).

a. Provide technical solutions in response to new or changed PWCS requirements. (SCMEM)

b. Maintain database of all reportable PWCS devices used on base, IAW AFI 33-106

c. Will relocate any currently installed PWCS equipment being moved for mission requirements.

3. Designate, in a letter to 3 CS/SCMEM, unit PWCS Manager.

4. Low Power High Frequency (LPHF) radio, ground-to-ground and air-to-ground ATC Radio, and ATC Communication Services (SCM)

a. Provide official ground-to-ground radio, air-to-ground ATC radio, LPHF equipment, and ATC communication service IAW AFI 21-116 and applicable technical directives.

b. Provide technical solutions for new ground-to-ground radio, air-to-ground ATC radio, LPHF equipment, and ATC communication requirements.

c. Will relocate any currently maintained and installed ground-to-ground radio, air-to-ground ATC radio, LPHF equipment, and ATC communication equipment being moved for mission requirements if the work is within the capabilities of the servicing work center.

4. Submit PWCS requirements to 3 CS/SCX via Electronic CSRD. Receiver will not operate any government-owned device capable of receiving or transmitting radio frequencies for official purposes without coordination and approval IAW AFI s 33-118, 33-101, and Wing Instruction 33-101.

5. Provide public address system support for receiver's events IAW 3rd Wing Instruction 33-104.

5. For new PWCS installations, procure equipment and expendables as listed in technical solutions and reimburse labor costs as applicable.

6. N/A

6. Prior to obtaining any equipment capable of RF transmissions, approval must be given by Installation Frequency Manager for frequency coordination.

7. N/A	7. Submit all LPHF, ground-to-ground and air-to-ground ATC radio, and ATC communication equipment requirements to 3 CS/SCX via AF Form 3215. Receiver will not install, modify, remove, or relocate any ground-to-ground radio, air-to-ground ATC radio, or LPHF equipment IAW AFI 21-116 and applicable technical directives.
8. N/A	8. Fund radio equipment, expendables, and labor listed in technical solutions for new or changed requirements. Equipment may include, but is not limited to, radio transmitters, receivers, transmission line, equipment racks, and necessary ancillary equipment.
9. N/A	9. Coordinate all acquisition actions for any/all communications, security, or surveillance systems with 3 CS/SCX to ensure follow-on support. This includes providing as-built drawings to illustrate connecting cables (underground and above ground) and equipment installation locations.

COMMAND SPT Command Support **(OPR: 3 WG/XPX)**
Includes oversight and management provided by the installation commander and the command element office staff.

Supplier Will:
1. Provide for oversight and management provided by the installation commander and the command element office staff. Command Supplier personnel who support the Receiver unit. The Supplier's commander coordinates with the Receiver's commander on all matters that affect the Receiver. Provide command and control facilities and services for Receiver units. Provide commanders call materials and other internal information as required. The Supplier IG will accept and process non-Receiver related complaints or requests for assistance presented by Receiver personnel. Upon request, the Supplier IG will assist the Receiver parent command IG in conducting investigations and/or inquiries. The Supplier will limit inspections of the Receiver operations to customer service matters. Such inspections will be coordinated in advance of the visit with the Receiver parent command IG. Feedback will be provided to the Receiver parent command IG within 15 days following the visit.

Receiver Will:
1. Command Receiver personnel. The unit commander coordinates with the Supplier base or support commander in carrying out the Receiver mission. Receiver units must not take any action that adversely affects the inherent overall authority and responsibility of the Supplier or the Air Force image at the base, particularly in such areas as general military discipline, conduct and appearance. The Receiver observes pertinent publications issued by the Supplier to support the command responsibilities mentioned above. Support Supplier in discharging command and control responsibilities, including consolidation activities. Provide validated manpower augmentation as required by Supplier. Advise Supplier of current and anticipated requirements, for example, mobility requirements

COMMON INFRA Common Use Facility Construction, Operations, Maintenance, and Repair **(OPR: 3 CES)**
Includes construction, alteration, operation, maintenance, and repair of common use infrastructure (e.g., roads, grounds, surfaced areas, structures, real property and installed equipment). Also includes common benefit signs, energy consumption, snow removal, street cleaning, and installation beautification projects, as resources permit.

Supplier Will:
1. Provide for the operation, maintenance, repair and minor construction or alteration of common use infrastructure, roads, grounds, surfaced areas, structures, real property and installed equipment. Provide for common benefit signs, energy consumption and beautification projects. Provide for ice and snow removal IAW Elmendorf AFB Snow Removal Plan.

Receiver Will:
1. Comply with Supplier's policy and guidance. Inform Supplier of Receiver requirements.

a. Receiver will reimburse Supplier for actual cost of snow removal.

CUSTODIAL Custodial Services **(OPR: 3 CES)**

Includes janitorial and cleaning services for customer-occupied or customer-used facilities and areas.

Supplier Will:

1. Provide janitorial and cleaning services for offices and common use areas assigned to the Receiver IAW governing regulations, as resources permit. These services are to be equal to those of the Supplier's units. In accordance with AFI 65-601, if billing is less than $500 a year the amount bay be waived for the Air Force and other DoD components

Receiver Will:

1. Submit an AF Form 332, BCE Work Request, to Civil Engineering Zonal Maintenance shop to request custodial services. Identify on an AF Form 332 the cleaning services requested with a building map identifying the areas to be cleaned, area measurements, type of floor covering and frequency required plus other essential cleaning services.

DISASTER Readiness Program **(OPR: 3 CES)**

Includes operation of Readiness programs and related services, equipment and facility support for emergencies, disasters, and wartime operations.

Supplier Will:

1. Provide Readiness Program support to Receiver according to AFI 10-2501. Include the Receiver responsibilities in the installation Full Spectrum Threat Response (FSTR) plan. Upon request, provide staff assistance visits to monitor status of unit Readiness program. Provide command and control support during responses to emergency situations. Provide communications for on-scene emergency operations. Assign unit shelter space. Assist units with integrating response planning efforts and ensuring other plans include Readiness requirements IAW AFI 10-2501. Provide information updates as changes are made to the program. Brief senior representative and their staff with major Readiness Program responsibilities on the following program initiatives:

   a. Readiness policy, organization and responsibilities as they pertain to major peacetime accidents, natural disasters, enemy attack or terrorist threats.

   b. Status of Readiness Program initiatives.

Receiver Will:

1. Comply with AFI 10-2501, regarding associate unit responsibilities. As required:

   - Provide personnel for specialized teams.

   - Make personnel available for training.

   - Participate in Supplier exercises.

   - Budget, identify and procure organizational Readiness equipment requirements.

As a minimum, maintain a Readiness information book. Contact 3 CES Readiness Flight for specific information it will contain.

ENVIRO Environmental Planning, Auditing, and Monitoring (OPR: 3 CES)

Includes Planning, Auditing, and Monitoring of environmental activities.

Supplier Will:

1. Planning

Prior to implementation, consult with Receiver regarding local environmental plans and instructions that relate to Receiver's activities.

   a. Environmental Protection Committee (EPC)
   Offer Receiver the opportunity to participate in the installation EPC as a member or observer and on EPC subcommittees, as appropriate.

   b. Environmental Impact Analysis Process (EIAP)
   Administer the EIAP IAW AFI 32-7061 for all activities.

Receiver Will:

1. Planning

Provide timely review and response on any local environmental plans and instructions referred to. Receiver will, prior to implementation, coordinate it's local environmental plans and instructions with Supplier. Non-reimbursable.

   a. Environmental Protection Committee (EPC)
   Participate in the EPC and ensure that all relevant Receiver activities are briefed and coordinated with the EPC.

   b. Environmental Impact Analysis Process (EIAP)

c. Environmental Safety and Occupational Health Compliance Assessment Management Program (ESOHCAMP)
Include Receiver in ESOHCAMP evaluation, and forward the findings to the commander or civilian equivalent of the Receiver activity and to Receiver headquarters.

d. Hazardous and Non-Hazardous Waste Disposal, Sampling, and Management
Provide sampling or analysis support as available. The results of any sampling by Supplier will be provided to Receiver in a timely manner.

e. Training
Include Receiver's environmental training requirements in its training schedule. Supplier will notify Receiver of environmental training available on the installation and make such training available to Receiver.

2. Solid Waste and Hazardous/Non-Hazardous Waste

a. Solid Waste Handling and Disposal
Provide guidance and subject to capacity, handling services for solid waste, including recyclables, and compostables. Subject to capacity, Supplier will allow storage of Receiver generated waste in Supplier's facilities, and allow use of available Supplier contract for solid waste disposal.

b. Solid Waste Disposal
Subject to availability, provide to Receiver waste disposal services on an equal basis with waste generated and disposed of by Supplier.

c. Hazardous and Non-Hazardous Waste Disposal
Provide guidance for hazardous and non-hazardous waste management. Dispose of Receiver's hazardous and non-hazardous waste. Provide sampling services to Receiver. Provide hazardous waste training.

Request EIAP support and, upon identification of a proposed action, submit to Supplier Environmental Planning Function (EPF) an AF Form 813, in a timely manner. Reimbursable for actual costs, if support provision is requested by the Receiver or required by the Supplier.

c. Environmental Safety and Occupational Health Compliance Assessment Management Program (ESOHCAMP)
Cooperate with the performance of any environmental compliance assessment under the ESOHCAMP, including providing requested information (subject to security requirements), and will respond to and correct any noted deficiencies in a timely manner.

d. Hazardous Waste Disposal, Sampling , and Management
Manage and dispose of hazardous and non-hazardous waste in accordance with 3rd Wing Oplan 19-3. Dispose of hazardous waste (and non-hazardous wastes that cannot be landfilled, such as oil or soils contaminated with petroleum). Request from Supplier desired sampling and analysis to properly characterize a waste in a timely manner. Reimbursable for actual costs.

e. Training
Ensure personnel and contractors are properly trained IAW applicable statutes and regulations. Receiver will identify environmental training requirements to Supplier. Non-reimbursable

2. Solid Waste and Materials Management

a. Solid Waste Handling
Source separate, handle, store, and otherwise manage its solid wastes, including recyclables, and if directed, compostable materials, in a manner consistent with installation waste minimization policies and procedures. Enforce best management procedures that do not allow the pouring of grease or oil products into the plumbing, grease traps, or sanitary sewers. Receiver will maintain all plumbing fixtures and grease traps to prevent release of oils and grease products or waste to any drains or sanitary sewer system. Reimbursable, actual costs.

b. Solid Waste Disposal
Notify Supplier of the types and amounts of solid waste, including recyclables and if directed, compostable materials, it is likely to generate in sufficient time for Supplier to accommodate handling and disposal of such wastes. Reimbursable, actual costs.

3. Hazmat Operate a hazardous material management program, which may include a hazardous materials pharmacy and pollution prevention program.	3. HAZMAT Comply with 3rd Wing Oplan 19-3 and participate in Supplier's hazardous materials management program, to include pharmacy and pollution prevention programs Receiver will provide all information necessary to assist Supplier in determining storage and disposal requirements of any hazardous or non-hazardous materials under Receiver's control. Non-reimbursable
4. Pollution Prevention Operate a waste minimization program, and provide waste minimization guidance and assistance to Receiver.	4. Pollution Prevention Comply with 3rd Wing Oplan 19-3 and all Supplier policies and procedures for waste minimization.
5. Recycling Operate a recycling program and dispose of Receiver's recyclable materials on an equal basis with Suppliers' recyclable materials.	5. Recycling Participate in the installation's recycling program. Receiver will segregate recyclable materials, and if directed, compostable materials from other wastes, as necessary, to fully comply with the requirements of the recycling program. Participation in the Supplier's recycling program is mandatory for all Elmendorf AFB tenants. Reimbursable.
6. Permitting Apply for, maintain, and renew all required permits, and be the point of contact regarding all associated environmental actions.	6. Permitting In a timely manner, provide Supplier all necessary information and support required to obtain, maintain, or renew permits covering Receiver activities. Reimbursable for actual costs of obtaining a permit, if necessary, for compliance with air, water, or other discharges, and solid wastes.
7. Requirements Inform Receiver of all permit requirements Supplier knows to be relevant to Receiver's activities.	7. Requirements Not commence any activities until any environmental-required permits are formally approved (e.g., construction), and will immediately notify Supplier of any Receiver activity that may constitute a permit violation. Receiver will notify Supplier and obtain Supplier's prior approval for all new, modified, or decommissioned pollution sources, or regulated activities on the installation used by Receiver or its contractors. Examples include, but are not limited to, well closures, tank removals, and use of temporary sources such as generators. Reimbursable for actual costs of additional permitting for any pollution sources or regulated activities used by the Receiver or its contractors.
8. Clean Air Act Conformity Have ultimate authority to make final determinations regarding conformity with the Clean Air Act for activities on the installation. Supplier may request information from Receiver related to Receiver's activities to ensure compliance.	8. Clean Air Act Conformity Provide to Supplier, in advance and in a timely manner, any information that relates to Receiver's activities that might have an impact upon the installation's air conformity status. Receiver will provide Supplier with advance notice of any changes in operations or conditions that might result in increased air emissions in sufficient time to allow Supplier to obtain any necessary permits or permit modifications. Receiver will provide a timely and complete response to Supplier's requests for information. Reimbursable for actual cost of obtaining permit.
9. Environmental Restoration Program (ERP)	9. Environmental Restoration Program (ERP)

Manage the ERP, and provide adequate notification of any ERP activity affecting Receiver's activities.

a. Fully cooperate with the ERP, and notify Supplier in advance of any Receiver activities affecting the ERP. Non-reimbursable.

b. Comply with the land use controls identified in the following paragraphs:

(1) All environmental land use controls which are in force on Elmendorf AFB.

(2) Not use water from Elmendorf AFB's shallow aquifer for any purpose including, but not limited to, drinking, irrigation, fire control, dust control, or any other activity. It is understood that portions of the shallow aquifer are contaminated and may pose a health risk.

(3) No later than 31 December each year, the Receiver will provide a written report to 3 CES/CEVR, regarding their compliance with the prohibition on the use of the groundwater from the shallow aquifer.

(4) Not damage or interfere in any way with groundwater monitoring wells, remedial treatment systems or sampling efforts. Allow 3 CES/CEVR and their contractors' access, including but not limited to, vehicle access to existing monitoring wells for sampling and maintenance. Should the need arise, the Receiver will allow access for 3 CES/CEV and their contractors to close existing wells or install new monitoring wells, as required.

(5) Within five working days of discovery, the Receiver will provide 3 CES/CEVR with written notice of any failures to comply with the environmental land use controls identified in the above paragraphs.

10. Emergency Response
Provide emergency response support and necessary follow-up for incidents beyond Receiver's capabilities. Supplier will also notify the appropriate regulatory agencies and submit incident reports, as required, by law and regulation.

a. Supplier will notify regulatory agencies in the event of a spill. Supplier will assist Receiver in remediating any contamination associated with a spill.

10. Emergency Response
Immediately report all hazardous waste or hazardous material releases to the installation emergency response activity and fully cooperate with any emergency response IAW Supplier plans and directives. Reimburse Supplier for all charges related to spill reporting and remediation.

11. Exercises
Include Receiver in exercise scenarios, as appropriate.

11. Exercises
Participate in exercises conducted by Supplier which have been previously coordinated with the Receiver. Non-

reimbursable.

12. Enforcement Action
Notify the Receiver immediately of any enforcement actions, or notices to comply, taken by environmental regulators in which the violation may be attributed to the action or inaction of Receiver. Supplier will provide Receiver with a copy of the enforcement action, with all supporting documentation, and a synopsis of reasons for concluding that Receiver is responsible for the violation.

12. Enforcement Action
Provide Supplier with timely comments or positions on the propriety of any enforcement action, including civil fines and penalties. Reimburse supplier for all charges related to the enforcement action/fine.

13. Review
For fines or penalties attributable to Receiver, provide Receiver a reasonable opportunity, in relation to any payment deadline, to review and coordinate the proposed fine or penalty. Participate in preparing any response to the enforcement action involving Receiver.

13. Review
Assist Supplier, as needed, in all efforts to resolve enforcement actions, including payment of civil fines or penalties. In addition, Receiver will take appropriate action to correct the violation that led to or contributed to the enforcement action. Reimbursable for actual costs.

14. Coordination
For enforcement actions, fines, or penalties attributable to Receiver, coordinate with Receiver all strategies to resolve such enforcement actions, fines, or penalties, including negotiation and litigation, and will serve as the final decision-maker with respect to such efforts.

14. Coordination
Where resolution of enforcement actions, fines, or penalties involve implementation of Supplemental Environmental Projects (SEPs), provide Supplier with a list of all projects which may qualify as a SEP. Reimbursable for actual costs.

15. Payment
If a civil fine or penalty is being sought in connection with an alleged violation, Supplier will request that the regulatory agency provide a breakdown of the civil fine or penalty for each violation. Based upon the breakdown received or the enforcement policies of the relevant agencies. Supplier will identify to Receiver that portion of the civil fine or penalty it believes is attributable to violations by Receiver, along with a statement of reasons in support of that conclusion.

15. Payment
For all fines and penalties for which Receiver is determined to be responsible and which are paid directly by Supplier. Receiver shall promptly transfer funds to Supplier for payment of such fines or penalties. Reimbursable for actual costs.

FAC ENGR SPT Facilities & Real Property Spt - Engr Spt **(OPR: 3 CES)**
Provides for cradle-to-grave technical, design, and construction surveillance of operations and maintenance projects by contract and simplified acquisition of base engineering requirements (SABER) projects. Also included are the management and preparation of technical data, studies, evaluation of projects, and base community and comprehensive planning and programming.

Supplier Will:
1. Use existing facilities economically to meet real property requirements of all activities on an equitable basis as stated in AFI 32-9003 and 32-9005. Advise the Receiver that the real estate facility requirements of the Receiver will be satisfied by:

a. Assigning existing facilities; Including Receiver facility deficiencies in military construction programs (see AFI 32-1022).

b. Providing site and utility connections (see AFI 32-1061), on a reimbursable basis.

c. Maintaining real property accountability under AFI 32-9005.

Receiver Will:
1. Inform the Supplier of Receiver requirements and provide justification data necessary to support new construction, improvement, or modification projects, when not within the capability of the Receiver. Appoint a real property building manager for each building or facility assigned according to AFI 32-9005. Furnish name, office symbol, and telephone number Supplier, 3 CES/CEO. Do not alter or modify a real estate facility or structure, or remove or relocate real property installed equipment without approval from the Base Civil Engineer according to AFI 32-1031. Send AF Form(s) 332 to Supplier through the building manager for action after the Receiver commander or a designated representative validates it.

d. Submit reports for Receiver funded construction, improvements or, modifications that, on completion are located on the Supplier base.

2. Engineering Support
Provide engineering support to include planning, design and programming functions for the construction, fabrication and repair maintenance, and repair of facilities. Provide engineering studies and design. Plan and prepare cost estimates, detailed designs, plans and specifications for construction, maintenance, or repair projects to existing or proposed facilities. Prepare projects, including scope, cost, and justification for inclusion in annual military construction (MILCON) or operation and maintenance (O&M) programs, IAW Facilities Board priorities. Interpret plans and specifications and analyze general provisions of contract documents. Develop special engineering studies to support more efficient maintenance and operation of facilities and equipment. Investigate and prepare projects for utility plants and systems, pavements, structure and buildings in support of and under the direction of a professional engineer. Review and approve schedules and control work requirements for maintenance, repair and minor construction work performed by commercial contractors. Review work requirements and identify and recommend those suitable for contract accomplishment. Analyze utility systems to support computer systems equipment operation. Receiver facilities, subject to Supplier approval and specific Receiver funding, including repairs occasioned solely by Receivers' occupancy or use.

2. Engineering Support
Comply with Supplier's directives and policies to include architectural standards. Coordinate and provide requirements and justification for proposed projects. Defend and advocate for Supplier-funded projects to the Base Facilities Board. Submit plans to Supplier on proposed alterations/modifications. Participate in the review process for planned contract projects. For minor construction (<$750K), program and pay for design (A-E fees) and construction costs. For MILCON (new construction), program and fund through Receiver's higher headquarters. Space occupied in existing facilities will conform to Air Force Guidelines; excess space will be returned to the supplier for allocation to meet other needs.

FACIL CONSTR Facility Construction and Major Repair **(OPR: 3 CES)**
Includes minor construction, alterations, additions, and major repairs required to modernize, replace, expand or restore real property, as resources permit. Also, includes related planning and design.

Supplier Will:
1. Provide minor construction, alterations, additions, and major repairs required to modernize, replace, expand or restore real property as resources permit, on a reimbursable basis. All such work will conform to Supplier standards including architectural standards. Also includes related planning and design. Provide all normal cyclical maintenance and structural repairs of existing facilities. Support real estate facilities occupied by Receiver units by performing maintenance and repair and provide entomology management services and utilities, on a reimbursable basis. Provide for or arrange for project design, technical assistance, construction management, and completion of projects according to AFIs 32-1032, 32-1012, and 32-1023. Provide utilities for mobile units occupied by Receiver according to AFIs 32-1063 and 32-1061. Inspect facilities according to current directives. Process AF Form 332, BCE Work Request, for each action and identification of reimbursable elements. Perform maintenance and structural repairs of an emergency nature including service calls. Correct hazardous conditions as resource permit. Provide Receiver

Receiver Will:
1. Request support in compliance with Supplier's policies and guidance (AF Form 332). Building manager will maintain lawn, grass, and sidewalk areas adjacent to facilities. Finance real property maintenance activities according to AFI 32-1022. Assist the Supplier, as required, in assembling data to maintain real property accountability and submit real property reports according to Supplier's requirements. Inform Supplier of all Receiver's requirements. Reimburse for all work performed. Appoint an environmental POC and abide by all environmental protection regulations in effect at the Supplier's installation. When on site maintenance cannot be performed, i.e., winter and inclement weather, generator must be delivered to the Power Production Shop. Fund all construction work in excess of $200,000 (funded cost) IAW AFI 32-1022. Designate, in writing, individuals authorized access to Self Help Store. Attend all Installation Master Planning Board meetings. Reimburse for requirements that are special or peculiar to the operation of the Receiver based on work orders. Costs of initial repair, renovation, normal maintenance that has

with Supplier program for the prioritized system of correcting and/or reducing hazardous conditions in the work place as follows: Hazards assigned as Risk Assessment Code (RAC) of 1, 2 or, 3 shall be corrected as promptly as practical on a "worst first" basis with in house resources or by contract. Provide facility planning, engineering design, drafting and Provide minor construction improvements, alterations and modifications to specification reproduction services, inspection, job planning, estimating and budget planning for recurring contract procurement, military and minor construction. Work unable to be accomplished in house will, if requested and funded by Receiver, be accomplished by Architectural/Engineering or Engineering Services contract. Provide abatement and control measures directed against insects, rodents, weeds, fungi, etc., including but not limited to routine treatment of grounds, buildings and equipment. Support owner of real property similar equipment as defined in AFI 32-1031 with field or intermediate level maintenance when the equipment cannot be supported by the logistics community and the maintenance is an existing skill within civil engineering. Work will be accomplished on a reimbursable basis. Provide authorized Receiver personnel access to civil Engineering Self Help store. Invite the Receiver personnel to participate in the Installation Master Planning Board meetings. If Receiver is required to relocate to another building(s) or location(s) on the activity for the convenience of the Supplier, the condition and security features of the newly assigned building(s) or location(s) should be equal to or better then the vacated ones. Any related costs to move and/or upgrade newly assigned building(s) or location(s) will be the funding responsibility of the Receiver. Provide routine and cyclical maintenance and minor repairs required to preserve or restore real property so it may be used for its designated purpose, as resources permit.

been deferred, or modification of existing facilities and structures that would not otherwise be accomplished by the Supplier but are required by the prospective Receiver for sole use will be the Receiver's. Comply with Supplier's policies and procedures.

FIRE Fire Protection **(OPR: 3 CES)**

Includes all normal services related to fire prevention and protection operations, alert service, and rescue operations. Also, includes inspections for fire hazards, and related training programs.

Supplier Will:

1. Provide all normal services related to fire fighting operations, as required. Provide all normal services related to the development of fire regulations and programs. Assist functional manager or facility manager with their prevention programs. Provide fire prevention training for assigned personnel, as requested. Conduct fire inspections and forward reports, as required.

Receiver Will:

1. Comply with Supplier's fire prevention/protection directives, as required. Respond to fire inspections and reports, as necessary. Correct any deficiencies/hazards identified within Receiver capability. Snow removal around fire hydrants (minimum three feet) is a facility manager responsibility. Installation, maintenance, and replacement of fire extinguishers is a Receiver responsibility.

MAIL SVCS Mail Services **(OPR: 3 CS)**

Includes collecting, accepting, sorting, routing, and delivery of official and personal mail on DoD installations and in DoD-owned or DoD-leased facilities. (customarily non-reimbursable)

Supplier Will:

1. Accept, sort, route, and deliver Receiver's incoming and outgoing official mail and distribution. (SCBA)

Receiver Will:

1. Designate an activity distribution office (ADO) with a letter to 3 CS/SCBA. The letter will contain the unit, building

address and point of contact (primary and alternate). The letter must be signed by Receiver's unit commander or equivalent.

2. Deliver classified (SECRET and below) parcels to customer IAW DoD 4525.8-M/ USAF Supplement. (SCBA)

2. Coordinate ADO training before activating the ADO.

3. Provide administrative communications services IAW AFIs 33-119, 33-129, and 33-326. (SCBA)

3. Provision and operate the ADO to:

a. Provide internal distribution and collection to and from action offices

b. Dispatch outgoing communications to the base official mail center.

4. Coordinate with Receiver to designate an activity distribution office (ADO) (SCBA)

4. N/A

5. Provide ADO POC training IAW DoD 4525.8-M/USAF Supplement. (SCBA)

5. N/A

POL POL Fuels Services **(OPR: 3 LRS/LGRF)**

All fuels services provided by POL to include jet fuel, gasoline, and other fuel support.

Supplier Will:

1. Provide fuel support, as needed.

Receiver Will:

1. Reimburse for all fuel used.

POLICE Police Services **(OPR: 3 SFS)**

Includes maintaining law and order (e.g., enforcement of traffic laws, accident investigation, and criminal investigations), traffic management, vehicle decals, and vehicle pass services. Also, includes assistance with pre-trial and post-trial confinement of military personnel.

Supplier Will:

1. Maintain law and order, enforcement of traffic laws, accident investigation and criminal investigation, traffic management, vehicle decals and parking pass services. Provide police services as needed, IAW Air Force directives. Provide vehicle passes or decals, required by the installation for movement control of Receiver and contractor personnel. Provide physical security and survey inspection and recommendations in accordance with the appropriate directives. Investigate or refer to appropriate investigative agency, crimes and suspected crimes in Receiver activities, facilities or against Receiver personnel, property or equipment on the installation.

Receiver Will:

1. Be responsible for securing Receiver facilities. Provide personnel to secure Receiver facilities upon failure of the alarm systems until the alarm system has been repaired. Designate point of contact to work with Supplier staff on preservation of order and physical security and crime prevention matters. Comply with Supplier's policies and guidance. Respond to all reports, as required.

REFUSE Refuse Collection, Disposal and Recycling **(OPR: 3 CES)**

Includes collection, disposal, and recycling of trash and waste materials.

Supplier Will:

1. See Environmental provision.

Receiver Will:

1. Refuse and recycling responsibilities are incorporated in the Environmental provision.

SAFETY Safety **(OPR: 3 WG/SE)**

Includes operation of safety programs, educational support, and promotional efforts.

Supplier Will:	**Receiver Will:**
1. Provide safety services consistent with policy and goals of DoD Directive 1000.3, Occupational Health and Safety Policy for the DoD, DoD Instructions, DoD Occupational Safety and Health (OSH) Program, AFOSH Standards, and AFI 91- series publications, adequate to meet the needs of the Receiver. Include all Receiver personnel and family members in the Supplier safety program. Invite Receiver staff to Supplier sponsored Executive Safety Council meetings. Provide the local procedural guidance regarding safety and occupational health. Provide weapons safety services consistent with policies set forth in AFI 91-202 and AFM 91-201. Function as the Supplier weapons safety staff outlined in AFI 91-202, para. 10.1.2. Provide assistance in preparation and final approval of AF Form 2047, Explosive Facility License. Provide explosive site planning support.	1. Notify Supplier Safety Staff if requirements change. Notify Supplier safety prior to planning any construction or change of use of facilities within explosives clear zones. Provide requested assistance to Supplier Safety. Provide personal protective clothing and equipment for Receiver personnel. Provide necessary paperwork for the processing of claims. Provide light duty employment for the injured employees, when available. Appoint a representative to the Executive Safety Council . Comply with restrictions of AF Form 2047. Abide by restrictions of site plan.
2. OSHA Abatement Plans Include Receiver under the Occupational Safety and Health Act (OSHA) Program.	2. OSHA Abatement Plans Prepare the Abatement Plan. Forward OSHA related information to Supplier as required. Administer safety program IAW AFI 91-202.
3. Accident or Mishap Investigation Provide advice and assistance for accident or mishap investigations conducted by Receiver personnel. Investigate and analyze accidents that are classified as type A & B mishaps in accordance with DoD Instruction 6055.7, Mishap Investigation, Reporting, and Record Keeping. Assist Receiver in investigation and reporting of Receiver incurred ground mishaps. Provide supervision in explosive mishap investigations.	3. Accident or Mishap Investigation Request assistance as required for accident and mishap investigations. Investigate and report all Receiver incurred ground mishaps and furnish 3 WG/SE with a copy of the Receiver mishap report. Report actual or suspected explosive mishaps. Provide assistance to Supplier Safety, as required.
4. Accident Reports Maintain accident and mishap data on Receiver assigned or attached military personnel, and provide appropriate disposition as required by the applicable branch of service.	4. Accident Reports Comply with Supplier's directives and policies.
5. Safety Education, Training, and Awareness Provide Occupational Safety and Health training and educational support for Receiver personnel consistent with the requirements of Title 29, Code of Federal Regulations, Parts 1960.54, 1960.55, 1960.58, and 1960.59. Provide initial training and refresher training to unit weapons safety additional duty officers.	5. Safety Educations, Training, and Awareness Request safety training as required. Appoint unit representatives as the unit weapons safety additional duty officers. Receiver units will ensure representatives are scheduled to receive this training prior to their arrival at a remote base.
6. Workplace Inspection and Correction of Hazards Provide an annual Safety and Occupational Health inspection of facilities and equipment. Provide the Receiver with a written report of the results of the annual inspection, showing deviations from OSHA standards and any special instructions for the completion of the inspection report. Provide annual, monthly high interest and no notice spot inspections on facilities and program management. Perform Annual Ground	6. Workplace Inspection and Correction of Hazards Reply as required to inspection results and written reports. Conduct safety inspections as required by applicable directives. These include explosive safety inspections and all other inspections in secure areas. Provide copies of inspection reports to 3 WG/SE.

and Explosive Safety Inspections in all nonsecure areas.

SAM Support Agreement Manager **(OPR: 3 LRS/LGRT)**

Administer and maintain the wing support agreement program in accordance with governing directives.

Supplier Will:

1. Provide a single point of contact for all support agreements and Defense Regional Interservice Support (DRIS) agreements and interface for contact with all base agencies for the Receiver.

Receiver Will:

1. Provide the Supplier with complete requirements and use only the single point of contact for all support matters, unless otherwise authorized by the single point of contact.

SUPPLY Supply Services **(OPR: 3 LRS/LGSPP)**

Includes the provision of generally expendable, non-technical commodities, material, or equipment with the exception of administrative and housekeeping supplies, tools, and building materials (e.g., Chemical Warfare Defense Ensemble, hazardous commodities such as paints and insecticides, Individual Equipment items, common vehicle parts such as oil filters and car batteries, equipment, hardware, plumbing and electrical supplies)."

Supplier Will:

1. Perform Standard Base Supply System (SBSS) functions according to AFMAN 23-110, that includes all the related duties of backordering, issuing, and delivering of supplies to the Receiver. Maintain close liaison with all Receiver activities to provide technical assistance and guidance on supply matters as required. Notify Receiver of upcoming training classes and provide supply customer training in accordance with AFMAN 23-110, Vol. 2, Part 2, Chap 2, Section F, and Part 13, Chap 1. Issue Supply Asset Tracking System (SATS) Smart Cards to individuals authorized to accept supplies. Provide for issue and exchange of flight clothing and cold weather clothing as required.

Receiver Will:

1. Exercise proper supply discipline for the care, use, and safeguarding of public property per AFI 23-111. Provide the Supplier necessary data to load or update organization records that include the establishment of an organizational account for reimbursement. Enforce supply discipline in priority requisitioning according to AFMAN 23-110, Part 13, Chap 1. Work closely with the Supplier to resolve any supply problems. Appoint a primary and alternate equipment custodian, if needed. Ensure personnel attend required supply customer training classes.

UTILITIES Utilities **(OPR: 3 CES)**

Includes water, sewage, electricity, natural gas, and fuel oil services. Also, includes central generation and distribution of steam, chilled water, and compressed air.

Supplier Will:

1. Provide all normal services related to procurement, production, and, distribution of utilities including water systems, sewage systems, electric systems, boiler plants, heating systems, air conditioning and other utility services. Charge Receiver based on metered amount or a flat rate basis if there is no meter for estimated consumption IAW 32-1061.

Receiver Will:

1. Comply with Supplier's Energy and Conservation requirements, policies and procedures. Reimburse for utility consumption. Utility rates will be updated yearly.

Support Category	Basis for Reimbursement	Per Unit Cost	Prior FY Cost	Unit Factor	Estimated Reimbursement
A/C MAINT	Actual Costs	$0.00	No	1	$0.00
AIRFIELD OPS	Actual Costs	$0.00	No	1	$0.00
COMM	Estimated Costs	$350.00	No	1	$350.00
COMMAND SPT	NONE	$0.00	No	0	$0.00
COMMON INFRA	Actual Costs	$0.00	No	1	$0.00
CUSTODIAL	Estimated Costs	$5,050.82	No	1	$5,050.82
DISASTER	NONE	$0.00	No	0	$0.00
ENVIRO	Actual Costs	$0.00	No	1	$0.00
FAC ENGR SPT	Actual Costs	$0.00	No	1	$0.00
FACIL CONSTR	Actual Costs	$0.00	No	1	$0.00
FACIL REPAIR	Actual Costs	$0.00	No	1	$0.00
FIRE	NONE	$0.00	No	0	$0.00
MAIL SVCS	Actual Costs	$0.00	No	1	$0.00
POLICE	NONE	$0.00	No	0	$0.00
REFUSE	Estimated Costs	$196.69	No	1	$196.69
SAFETY	NONE	$0.00	No	0	$0.00
SAM	NONE	$0.00	No	0	$0.00
SUPPLY	NONE	$0.00	No	0	$0.00
UTILITIES	Estimated Costs	$23,571.11	No	1	$23,571.11
				Grand Total:	$29,168.62

Agency: **Operational Support Airlift Agency (OSAA)**

Support Agreement:		*FB5000-98190-168*	*Agency Type:*	*DOD*	Date:	01 31 05
Utility Rates (as of 1 October 2004):		Gas (MCF):	$3.36		Refuse Rate:	$3.86
Water (KGAL):	$0.92	Electric (MWH):	$54.30		Recycling Rate:	$1.91
Sewer (KGAL):	$0.91	Steam (MBTU):	$4.44		Steam Heat Hospital:	n/a

Building Number:	9309	FAC #:	1		*Service Contract Information:*	
Facility Information:		Gross Building SF:	1673		Cust Cost (total/mn/bldg):	$0.00
# of People:	5	Gross Leased SF:	1223		Recycle PU/MO:	0
HRS/Day:	12	BTU/SF/YR:	45000		Refuse PU/MO:	0
Days/Year:	261	Fac Code:	A1			
Energy Dist:	Heat: 0.4	Electric:	0.6		WF:	1
Fac Type:	Admin, Operations, Office, Police Stations (under 8000 SF)					

Use			Monthly Consumption:	Monthly Cost:	Annual Consumption:	Annual Cost:	
x	Electric:	(MWH)	*0.806*	*$43.78*	*9.675*	*$525.36*	
	Gas:	(MCF)	*0.000*	*$0.00*	*0.000*	*$0.00*	
x	Steam:	(MBTU)	*1.835*	*$8.15*	*22.014*	*$97.74*	
x	Water:	(KGAL)	*5.438*	*$5.00*	*65.250*	*$60.03*	
x	Sewer:	(KGAL)	*3.806*	*$3.46*	*45.675*	*$41.56*	
	Refuse:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Recycle:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Custodial:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
						Monthly:	$60.39
	Total Cost:					Annual:	$724.69

Building Number:	9311	FAC #:	2		*Service Contract Information:*	
Facility Information:		Gross Building SF:	23620		Cust Cost (total/mn/bldg):	$429.19
# of People:	18	Gross Leased SF:	23360		Recycle PU/MO:	0
HRS/Day:	12	BTU/SF/YR:	85000		Refuse PU/MO:	4.33
Days/Year:	261	Fac Code:	U1			
Energy Dist:	Heat: 0.4	Electric:	0.6		WF:	1
Fac Type:	Maintenance(Hangers,Tac Shops,Docks,Vehicle Facilities)Ceiling>10Ft					

Use			Monthly Consumption:	Monthly Cost:	Annual Consumption:	Annual Cost:	
x	Electric:	(MWH)	*29.069*	*$1,579.52*	*349.065*	*$18,954.25*	
	Gas:	(MCF)	*0.000*	*$0.00*	*0.000*	*$0.00*	
x	Steam:	(MBTU)	*66.187*	*$293.87*	*794.240*	*$3,526.43*	
x	Water:	(KGAL)	*19.575*	*$18.01*	*234.900*	*$216.11*	
x	Sewer:	(KGAL)	*13.703*	*$12.47*	*164.430*	*$149.63*	
x	Refuse:	(SERVICE)	*4.246*	*$16.39*	*50.957*	*$196.69*	
	Recycle:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
x	Custodial:	(SERVICE)	*0.981*	*$420.90*	*11.768*	*$5,050.82*	
						Monthly:	$2,341.16
	Total Cost:					Annual:	$28,093.93

Building Number:		FAC #:			*Service Contract Information:*	
Facility Information:		Gross Building SF:			Cust Cost (total/mn/bldg):	$0.00
# of People:		Gross Leased SF:			Recycle PU/MO:	0
HRS/Day:		BTU/SF/YR:	ıter Fac Type!!!		Refuse PU/MO:	0
Days/Year:		Fac Code:				
Energy Dist:	Heat: 0.4	Electric:	0.6		WF:	0
Fac Type:	Enter Fac Type!!!					

Use			Monthly Consumption:	Monthly Cost:	Annual Consumption:	Annual Cost:	

Usa			Consumption	Cost	Consumption	Cost	
	Electric:	(MWH)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Gas:	(MCF)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Steam:	(MBTU)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Water:	(KGAL)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Sewer:	(KGAL)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Refuse:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Recycle:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
	Custodial:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
						Monthly:	**$0.00**
	Total Cost:					**Annual:**	**$0.00**

Total Utility Costs for Agency:

		Monthly Consumption	Monthly Cost	Annual Consumption	Annual Cost	
Electric:	(MWH)	*29.895*	*$1,623.30*	*358.740*	*$19,479.60*	
Gas:	(MCF)	*0.000*	*$0.00*	*0.000*	*$0.00*	
Steam:	(MBTU)	*68.021*	*$302.01*	*816.254*	*$3,624.17*	
Water:	(KGAL)	*25.013*	*$23.01*	*300.150*	*$276.14*	
Sewer:	(KGAL)	*17.509*	*$15.93*	*210.105*	*$191.20*	
Refuse:	(SERVICE)	*4.246*	*$16.39*	*50.957*	*$196.69*	
Recycle:	(SERVICE)	*0.000*	*$0.00*	*0.000*	*$0.00*	
Custodial:	(SERVICE)	*0.981*	*$420.90*	*11.768*	*$5,050.82*	

Total Costs for: Operational Support Airlift Agency (OSAA) **Monthly:** **$2,401.55**
Annual: **$28,818.62**

Last Updated: 05-Mar-04
Reason Changed: Update Sq ft/number of people

AFI 32-1061 Dated: 15-Mar-02
ETL 94-4 Dated: 05-Dec-94
Rate Letter Dated: 30-Mar-04

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

22 Mar 2005

MEMORANDUM FOR 3 MSS/MOF

FROM: HQ PACAF/XPM
25 E St Ste F-313
Hickam AFB HI 96853-5417

SUBJECT: Manpower Assessment of Support Agreement (SA) #FB5000-XXXXX-168
Operational Support Airlift Agency (OSAA)

1. We have completed our manpower assessment of this support agreement, which supersedes FB5000-01275-168, 23 Oct 01. Our validation results in an impact of 39.74 monthly man-hours, which equates to .278 fractional manpower requirements. Utilizing current rounding guidance, this does not equate to a manpower impact. The attached Manpower Annex reflects specific man-hour impact in given categories of support.

2. Given that there is no manpower impact for services provided, your office is not required to maintain a Manpower Annex. To complete manpower certification, update block 11 of the affiliated DD form 1144 with the statement: "This support agreement has no manpower impact."

3. Please direct specific questions to Ms Laura Bennett, HQ PACAF/XPMR, DSN 315-449-4989, e-mail laura.bennett@hickam.af.mil.

/signed/
GREGORY D. PARSONS, Lt Col, USAF
Deputy Chief, Manpower & Organization Division
Directorate of Plans and Programs

Attachment:
Validated Manpower Annex

C:\Documents
and Settings\laura

cc:
HQ PACAF/XPMR

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

22 Mar 05

MEMORANDUM FOR HQ PACAF/XPM

FROM: 3 MSS/MOF

SUBJECT: Manpower Annex for Support Agreement #FB5000-XXXXX-168/Operational Support Airlift Agency (OSAA)

The local MOF has reviewed and certified support agreement #FB5000-XXXXX-168. This is a review of this SA that supersedes FB5000-01275-168, 23 Oct 01. This support agreement will have the following man-hour impact on the support categories below.

NOTE: Include only those support categories that apply

Category of Support	Impact (Man-Hours)	Total Manpower Impact	Computation Method
1. ADMINISTRATIVE SERVICES	0.8351	0.0056	SAMAG
4. AIRCRAFT MAINTENANCE	0.0100	0.0001	SAMAG
5. AIRFIELD BASE OPERATIONS	NA	NA	
15 COMMUNICATION SVCS	11.4590	0.0766	SAMAG
18 CONSOLIDATED COMMAND POST	NA	NA	
19 CUSTODIAL SERVICES	NA	NA	Contracted
21 DISASTER PREPAREDNESS	2.2519	0.0151	SAMAG
25 ENVIRONMENTAL CLEANUP	0.0191	0.0001	SAMAG
26 ENVIRONMENTAL COMPLIANCE	NA	NA	
27 EQUIPMENT MAINTENANCE, REPAIR, AND CALIBRATION	NA	NA	Contracted
29 FACILITY CONSTRUCTION AND MAJOR REPAIR	See Comment		
30 FACILITY CONSTRUCTION AND MINOR REPAIR	See Comment		
32 FIRE PROTECTION	NA	NA	
35 FUELS	18.8969	0.1263	SAMAG
44 MAIL SERVICE	NA	NA	Captured in 1.
52 POLICE SERVICES	7.7144	0.0516	SAMAG
56 REFUSE COLLECTION AND DISPOSAL	NA	NA	
58 SAFETY	0.4465	0.0030	SAMAG
70 UTILITIES	NA	NA	
TOTALS:	41.63	0.278	

(X) The above workload and manpower is properly described and quantified.
( ) Requires the transfer of _____ manpower authorizations. Existing Manpower Annex is included for support.
(X) Does not require transfer of manpower. Rationale: Does not exceed .5 FTE threshold.

Rick Jones, GS-13, DAF
Flight Chief, Manpower
DSN: 317-552-2163

3/25/05
(Date)

HHQ

HQ PACAF/LGRY - 1 cy
25 E ST STE H302
HICKAM AFB HI 96853-5427

DFAS-PC/AOFA - 1 cy
Bldg 77, Box 1392 Ford Island
Pearl Harbor HI 98690-7552

SUPPLIER

3 CES - 1 cy
3 CS - 1 cy
3 EMS - 1 cy
3 LRS/LGRT - 1 cy
/LGSPP - 1 cy
3 MSS/MOF - 1 cy
3 OSS - 1 cy
3 SFS - 1 cy
3 SVS - 1 cy
3 WG/JA - 1 cy
/SE - 1 cy
/XPX - 1 cy

RECEIVER

Operational Support Airlift Agency - 1 cy
(OSAA)
6970 Britten Dr, Ste 201
Fort Belvoir VA 22060-5133

SUPPORT AGREEMENT

1. AGREEMENT NUMBER (Provided by Supplier)	2. SUPERSEDED AGREEMENT NO. (If this replaces another agreement)	3. EFFECTIVE DATE (YYMMDD)	4. EXPIRATION DATE (May be "Indefinite")
W81MUX-04341-153	WC1SH3-97290-153		Indefinite

5. SUPPLYING ACTIVITY

a. NAME AND ADDRESS

U.S. Army Garrison, Alaska
ATTN: APVR-RRM-DRIS
600 Richardson Drive #6250
Fort Richardson, Alaska 99505-6250

b. MAJOR COMMAND

Installation Management Agency (IMA) (PARO)

6. RECEIVING ACTIVITY

a. NAME AND ADDRESS

Operational Support Airlift Command
6970 Britten Drive, Suite 201
Fort Belvoir, VA 22060-5133

b. MAJOR COMMAND

National Guard Bureau

7. SUPPORT PROVIDED BY SUPPLIER

a. SUPPORT (Specify what, when, where, and how much)	b. BASIS FOR REIMBURSEMENT	c. ESTIMATED REIMBURSEMENT
See attached Support Category and Program Directors Matrix beginning on page 3.		
59th Signal Battalion	Auto Eq Repair/Maint	Actual costs
	Postage Svc	Actual costs
Director of Logistics (DOL)	CIF	Actual costs
	Equip Maint Repair & Calibration	Actual costs
	Laundry/Dry Cleaning	Actual costs
	Supply Mgmt	Actual costs
	Transp Svc	Actual costs
Director of Public Works (DPW)	Fire Protection	Actual costs
	Housing Svc	Actual costs
	Grand Total:	Actual costs

ADDITIONAL SUPPORT REQUIREMENTS ATTACHED: [X] YES [ ] NO

8. SUPPLYING COMPONENT

a. COMPTROLLER SIGNATURE: ROBERT E. R. SPOO, DRM
b. DATE SIGNED: 24 May 04

c. APPROVING AUTHORITY
(1) TYPED NAME: DONNA G. BOLTZ, COL, MP, GARRISON COMMANDER
(2) ORGANIZATION: US Army Garrison Alaska
(3) TELEPHONE NUMBER: (907) 384-2175
(4) SIGNATURE:
(5) DATE SIGNED: 6 Oct 04

9. RECEIVING COMPONENT

a. Donna S. Scott
b. DATE SIGNED: 6 Oct 04

c. APPROVING AUTHORITY
(1) TYPED NAME: TIMOTHY R. DEHAAS, LTC, AV, Commanding
(2) ORGANIZATION: Operational Support Airlift Command
(3) TELEPHONE NUMBER: 703-806-7016
(4) SIGNATURE:
(5) DATE SIGNED: 15 Oct 2004

10. TERMINATION (Complete only when agreement is terminated prior to scheduled expiration date.)

a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED	a. APPROVING AUTHORITY SIGNATURE	b. DATE SIGNED

11. GENERAL PROVISIONS *(Complete blank spaces and add additional general provisions as appropriate: e.g., exceptions to printed provisions, additional parties to this agreement, billing and reimbursement instructions.)*

a. The receiving components will provide the supplying component projections of requested support. *(Significant changes in the receiving component's support requirements should be submitted to the supplying component in a manner that will permit timely modification of resource requirements.)*

b. It is the responsibility of the supplying component to bring any required or requested change in support to the attention of U.S. Army Garrison Alaska, Directorate of Resource Management, APRV-RRM-DRIS, 600 Richardson Drive #6250, Fort Richardson, Alaska 99505-6250 prior to changing or canceling support.

c. The component providing reimbursable support in this agreement will submit statements of costs to: Operational Support Airlift Command§970 Britten Drive, Suite 201, Fort Belvoir, VA 22060-5133.

d. All rates expressing the unit cost of services provided in this agreement are based on current rates which may be subject to change for uncontrollable reasons, such as legislation, DoD directives, and commercial utility rate increases. The receiver will be notified immediately of such rate changes that must be passed through to the support receivers.

e. This agreement may be cancelled at any time by mutual consent of the parties concerned. This agreement may also be cancelled by either party upon giving at least 180 days written notice to the other party.

f. In case of mobilization or other emergency, this agreement will remain in force only within supplier's capabilities.

ADDITIONAL SUPPORT REQUIREMENTS ATTACHED: [X] YES [ ] NO

12. SPECIFIC CONDITIONS *(As appropriate: e.g., location and size of occupied facilities, unique supplier and receiver responsibilities, conditions, requirements, quality standards, and criteria for measurement/reimbursement of unique requirements.)*

ATTACHMENTS TO ISA 153	DESCRIPTION	PAGE NO#
Attachment I	Support Category and Program Director Matrix	3
Attachment II	Standard Provisions	6
Attachment III	Distribution List	11
Attachment IV	Financial Provisions	12
Attachment V	Specific Provisions/Support Categories (Services)	17

ADDITIONAL SUPPORT PROVISIONS ATTACHED: [X] YES [ ] NO

PD	Responsible Activity and Support Category	SBC No.	Basis of Reimbursement	Reimbursable Cost	POC	Phone No.	ISA Page No.
AG	Adjutant General (AG)						
	Equal Opportunity	a93	Non-reimbursable		EO Advisor/FRA EO Advisor/FWA	384-2162 353-9234	17
	Mortuary Services	b04	Actual costs not applicable to open allotment	Actual Costs	Plans and Ops./FRA	384-2605	18
	Retired Affairs		Non-reimbursable		Retired Services/FRA	384-3500	19
DPTSM	Directorate of Plans, Training, Security and Mobilization (DPTSM)						
	Audio and Visual Information Support	a16	Customarily non-reimbursable		Photo/FRA Photo/FWA Graphics/FRA Graphics/FWA	384-7183 353-6268 384-7179 353-6208	20
	Disaster Preparedness	b16	Non-reimbursable		Plans Officer/FRA Plans Officer/FWA	384-2212 353-9973	22
DOL	Directorate of Logistics (DOL)						
	Central Issue Facility (CIF)	a25	Cost of lost, damaged, destroyed or non-returnable items (25% charge) GS-09 OT: $27.27/hr.	Actual Costs	Central Issue/FRA Central Issue/FWA	384 1828 353-6352	24
	Equipment Maintenance, Repair and Calibration (AMC)	a27	Actual cost for shop rates/parts or contractor cost Shop rate: $47.93/hr.	Actual Costs	Maintenance/FRA Maintenance/FWA	384-2641 353-1633	26
	Laundry and Dry Cleaning (Organizational Clothing and Individual Equipment)	a30	Piece/bulk prices based upon the type of item and the prevailing contract or in-house rate	Actual Costs	QM Laundry/FRA QM Laundry/FWA	384-1901 353-7648	27
	Laundry and Dry Cleaning (Personal Clothing)	a30	Prevailing contract or in-house rate	Actual Costs	QM Laundry/FRA QM Laundry/FWA	384-1901 353-7648	28
	Sewing (Personal Clothing)	a30	Prevailing contact or in house rate	Actual Costs	QM Laundry/FRA QM Laundry/FWA	384-1901 353-7648	29
	Supply Management	a26	Direct charges (for packing; includes civilian labor and supplies i.e., boxes, banding materials.) WG-06: $20.32/hr. GS-05: $12.34/hr.	Actual Costs	CIPBO/FRA CIPBO/FWA	384-7170 353-7796	30

PD	Responsible Activity and Support Category	SBC No.	Basis of Reimbursement	Reimbursable Cost	POC	Phone No.	ISA Page No.
DOL	Directorate of Logistics (cont)						
	Transportation Services:						
	a. Freight	a28	Civilian overtime labor GS-07 OT: $22.94/hr	Actual Costs	In/Out Bound/FRA	384-1808	31
	b. Passenger Travel	a28	Civilian overtime labor GS-07 OT: $22.94/hr.	Actual Costs	Travel/FRA	384-1810	31
	c. Personal Property Shipment	a28	Civilian overtime labor GS-07 OT: $22.94/hr.	Actual Costs	Transportation/FRA	384-1814	31
PAO	Public Affairs Office						
	Community Relations, News Media and Information Strategies	a84 a85 a86	Non-reimbursable	Actual Costs	PAO/FRA PAO/FWA	384-1542 353-6071	32
59th	DOIM/59th Signal Battalion						
	Mail Service	a17	Non-reimbursable		Mail/Distribution/FRA Mail/Distribution/FWA	384-0307 353-6898	33
	Postage Service (Mail)	a17	Actual cost	Actual Costs	Mail/Distribution/FRA Mail/Distribution/FWA	384-0307 353-6898	34
DPW	Directorate of Public Works						
	Fire Protection a. Routine b. Special requirements c. Maintenance of Fire Extinguishers (discharged for other than to put out fires)	a68	a. Non-reimbursable b. Partially reimbursable c. Actual cost when discharged for other than fire suppression		USAG-AK CMD Fire Chief Dispatcher Fire Prevention Fire Operations 'Fire Extinguisher	384-3473 353-6548 353-7470 384-3130 384-0774 552-4649 384-3473	35
	Housing Services	a50	Non-reimbursable		DPW Customer Service Housing/FRA Furnishings/FRA ADPW Customer Service PWA Housing/PWA Furnishings/PWA	384-3664/3620 384 0092 353-7870/ 7069 6225 353-7322	37

PD	Responsible Activity and Support Category	SSC No.	Basis of Reimbursement	Reimbursable Cost	POC	Phone No.	ISA Page No.
	Other Units/Program Directors (cont)						
PM	Police Services a. Law Enforcement Services b. Physical Security c. Vehicle/Weapons Registration	a77 a78	a. Non-reimbursable b. Special requirements c. Special requirements		Law Enforcement/PRA Law Enforcement/FWA	384-0825 353-7889	39
Chap	Chapel and Chaplain Services	a82	Non-reimbursable		Inst. Chaplain/PRA Inst. Chaplain/FWA	384-2124 353-9825	41
DCA	Army Community Services	a10	Non-reimbursable		ACS Director/PRA ACS Director/FWA	384-1502 353-6267	42
	Child and Youth Services	a11	Individual user fees	Actual Costs	Child/Youth Serv./PRA Child/Youth Serv./FWA	384-2031 353-9505	43
	Education Services	a14	Tuition cost and user fees	Actual Costs	Education Officer/PRA Education Officer/FWA	384-0970 353-7270	44
	Morale, Welfare and Recreation Activities	a13	Individual user fees	Actual Costs	CFAM/PRA CFAM/FWA	384-2053 353-7311	45
	Substance Abuse Program	a09	Non-reimbursable		ASAP/PRA ASAP/FWA	384-1418 353-1377	47
	Technical and Research Library	a14	Special purchases unique to Receiver requirements	Actual Costs	Librarian/PRA Librarian/FWA	384-0301 353-7297	48
	Transient Lodging Services	a51	Individual cash basis for guest housing or transient accommodations	Actual Costs	Lodging/PRA Lodging/FWA	384-0436 353-7726	49
EEO	Equal Employment Opportunity (EEO) Services	a92	Customarily non-reimbursable		EEO Office/PRA EEO Office/FWA	384-2080 353-9063	50
IG	Inspections, Investigations, and Compliant Assistance	a87-89	Non-reimbursable		Inspector General	384-0323	51
SJA	a. Administrative and Civil Law b. Claims Support and Legal Assistance (Soldiers/Dependents) c. Courts Martial Jurisdiction	a79-81	a. Non-reimbursable b. Non-reimbursable c. Actual Cost	Actual Costs	SJA	384-0420 353-6534	52

Standard Provisions

1. The purpose of this Interservice Support Agreement (ISA) is to establish guidelines and procedures for providing administrative and logistical support to Operational Support Airlift Agency (OSAA), hereafter referred to as the Receiver, by U.S. Army Garrison, Alaska (USAG-AK), hereafter referred to as the Supplier. The support addressed in this ISA is provided by USAG-AK command elements at Forts Richardson (FRA) or Wainwright (FWA), Alaska in coordination with, and subsequent to, the approval of the Receiver. The U.S. Army, Alaska (USARAK) support is covered under a separate agreement (WC1SH3-ISA 153 M).

2. USAG-AK shall provide requested support to other Department of Defense (DoD) activities when the head of the requesting activity determines it would be in the best interest of the U.S. Government, and USAG-AK determines capabilities exist to provide the support without jeopardizing assigned missions.

NOTE: **In accordance with the 10 Oct 02 Assistant Chief of Staff for Installation Management (ACSIM) Memorandum, Subject: Status of Army Reimbursable Policy (ARP) and the Army Baseline Services (ABS), in FY03 the ABS will not be the basis for establishing baseline services and reimbursable relationships. The OACSIM, Plans and Operations Division is leading a task force with HQDA staff functionals to refine or develop standards and metrics for each service. The Cost and Economic Analysis Center (CEAC) will develop the cost estimating relationships. Expect the OACSIM and the IMA to develop the implementation plan for incorporation into the POM 06-10. Due to the anticipated requirement to cross-level resources to meet these Common Level of Support (CLS) levels, the ability of USAG-AK to provide various services identified under the terms of this agreement may require revision/renegotiation.**

Force structure modifications have resulted in an increase of Army personnel assigned to FRA and FWA. Due to these changes and future projections the ability of USAG-AK to provide various services identified under the terms of this agreement may require revision/renegotiation.

3. This ISA is authorized and written in accordance with (IAW) Department of Defense Instruction (DoDI) 4000.19, Army Regulation (AR) 5-9, Defense Finance and Accounting Service-Indianapolis (DFAS-IN) Regulation 37-1 and USCINCPACINST 4000.2N. Any Pacific Area Regional Office (PARO) supplements to these Army regulations also apply.

4. Receiver's mission: Provide DoD Operational Support Airlift to ALCOM, USARAK, and other authorized agencies as needed to meet all peacetime contingencies or wartime missions.

Standard Provisions
(continued)

5. Review the Financial Provisions of this agreement annually, or as requested by either the Supplier or Receiver. Review the Specific Provisions triennially, or as requested by either the Supplier or Receiver. Forward all contested matters of support contained herein to respective higher headquarters for disposition and further direction.

6. Receiver will report all violations or suspected violations of security to the Directorate of Plans, Training, Security and Mobilization (DPTSM), Security Division at 384-2208. This responsibility includes incidents falling within the purview of DoD Regulation 5200.1-R, AR 380, AR 381 and AR 604 series.

7. Receiver personnel must abide by all post and installation regulations, directives, and policies, to include postal, fire, safety, security and similar administrative procedures. Receiver personnel are permitted use of post and installation facilities in accordance with applicable regulations.

8. Should the Receiver fail to accept full quantity of reimbursable support provided for herein, the Supplier will make reasonable efforts to absorb and/or redistribute excess supplies or services. If redistribution or absorption cannot be accomplished, the Receiver shall reimburse (the Supplier) for any losses incurred by the Supplier.

9. Any contracts initiated by the Receiver or Receiver agency which have potential impact on the maintenance, repair, and/or modification of any real property owned or controlled by USAG-AK must be reviewed by the Directorate of Public Works (DPW), then receive prior written approval of the Garrison Commander. (This provision includes contracts for utilities, refuse collection/disposal, and the renovation or alteration of the interior/exterior of assigned facilities, etc.) The Receiver or Receiver agency is responsible for all costs, expenses and damages resulting from such a contract unless the Garrison Commander provides prior written relief from such responsibility.

10. If the Receiver requires available service not addressed within this agreement, the Receiver may submit a DD Form 448, Military Interdepartmental Purchase Request (MIPR) to the applicable budget office of the organization providing such service. If service is required on a recurring basis (defined in general by USARPAC Regulation 5-1 as three times per year over two years or more), the Receiver will submit a written request to incorporate additional service(s) into this agreement. Submit request to U.S. Army Garrison, Alaska, Defense Regional Interservice Support (DRIS) Office, ATTN: APVR-RRM-DRIS, 724 Postal Service Loop #6250, Ft. Richardson, AK 99505-6250.

11. Services are provided during posted hours of operation. Services shall be equal to those provided to the Supplier's own military force

Standard Provisions
(continued)

and within established USAG-AK standards and guidelines. The Specific Provision narratives verified each Fiscal Year (FY) is the documented quality, quantity, frequency, and timeliness of a service. *NOTE:* Reserve Component (RC) priority of Morale, Welfare and Recreation (MWR) support is IAW AR 215-1.

12. Services offered by other agencies located within close proximity of USAG-AK Command elements include: printing by the Defense Automated Printing Service (DAPS), DFAS by the Defense Military Pay Office (DMPO), and medical services by the U.S. Army Medical Activity, Alaska (MEDDAC-AK).

13. This agreement will remain in effect during implementation of Operations Plans (OPLANS) to the best ability of the Supplier.

14. Receiver point of contact:

Operational Support Airlift Agency
6970 Britten Drive, Suite 201
Fort Belvoir, VA 22060-5133
Phone: (703) 656-7588/Fax: (703) 806-7109
AK Defense Service Network (DSN) Access Code: 312

15. Supplier point of contact:

U.S. Army Garrison Alaska
Director of Resource Management
ATTN: APVR-RRM-DRIS
724 Postal Service Loop #6250
Ft. Richardson, AK 99505-6250
Phone: (907) 384-7094/Fax: (907) 384-6122
AK Defense Service Network (DSN) Access Code: 317

NOTE: This support agreement was coordinated and prepared by Support Agreement Analyst: Richard Gaulke.

16. Commercial Activities Stipulations IAW AR 5-20, dated 1 October 1997. Support agreements with other Army, Navy, or Air Force installations or with other DoD activities are not governed by AR 5-20, with the following two exceptions: (1) A cost comparison study is required when a Support Agreement with another DoD activity would result in a change to or from contract performance; (2) pursuant to OMB Circular A-126, a cost comparison study shall be conducted before providing aviation services, as noted in Department of the Army (DA) Pamphlet (Pam) 5-20, Appendix C. USAG-AK command elements involved with the support outlined in this agreement have evaluated the support

and have determined that it DOES NOT result in a change to or from contract performance, therefore a cost competition study is not required.

17. **ENVIRONMENTAL INSTITUTIONAL CONTROLS (Administered thru DPW)** Ft. Wainwright (FWA) and Ft. Richardson (FRA) have been identified on the U.S. Environmental Protection Agency's National Priorities List as a Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) or "Superfund Sites" as enacted by Public Law 42 United States Code (USC) 1901 et seq. and defined by Title 40 of the Code of Federal Regulations (CFR), Part 300 et seq. All contiguous and non-contiguous acreage (Approximately 915,000 Acres at FWA and Approximately 62,000 Acres at FRA), are included in this designation and are being remediated under the DoD Defense Environmental Restoration Program (DERP).

a. In accordance with CERCLA, all known source areas of contamination on these installations have been or are currently under investigation to determine the type and extent of contamination. The acreage addressed in this document contains numerous source areas of known contamination, however, due to the nature and type of training conducted, there is a potential for unidentified contamination to exist within the corridors selected. Historical records indicate that the area now known as the Tanana Flats Training Area was part of an aircraft bombing and gunnery range. This opens the potential for contamination by unexploded ordnance (UXO). Prior to 1986, it was not uncommon for units to leave damaged equipment or empty and partially full drums of petroleum based products, i.e. fuels and lubricants, or chlorinated compounds i.e. solvents, pesticides, and clearing compounds in the training areas. The drums and damaged equipment were seldom retrieved from the field.

b. For this reason, all work involving the modification of facilities or excavation of any kind shall be coordinated via the USARAK "Excavation Clearance Request" a minimum of five working days prior to mobilization to the site. Coordination requirements are outlined on the permit.

c. In addition, if potentially contaminated soil or groundwater must be removed from the work site, it shall be containerized in United Nations approved, Performance Oriented Packaging (UN/POP) containers as specified in 49 CFR 178.500, Specifications and Maintenance of Packaging, labeled as non-regulated waste, sampled and analyzed for potential contamination, and moved to an approved storage area. The area shall be approved by the local Range Control and Public Works Environmental Office prior to usage. **NOTE: Soil and groundwater shall not be removed from any part of the**

installation without written authorization from a duly appointed USAG-AK representative.

d. If contaminated soils, drums, unexploded ordnance or unusual debris are found on or around the work site, the agency shall stop work immediately and notify the local Range Control Officer and Public Works Environmental Office. Work at this site will be suspended until Range Control clears the area. For this reason, contractors shall maintain communication with Range Control via two-way radios or portable telecommunication equipment while working in the training area. Purchase or rental of such equipment shall be the responsibility of the contractor conducting the work. The Agency shall coordinate all phases of construction with the Range Control Officer.

Distribution List

1 - PARO, ATTN: SFIM-PA-RM, Ft. Shafter, HI 96858-5520
1 - DFAS, Pacific Field Site, ATTN: DFAS-PC/AOAA, Pearl Harbor, HI 96860-7553

NOTE: Those activities both external to and within USAG-AK that require or are interested in either viewing or printing out this agreement refer to the Directorate of Resource Management (DRM) website at [https://intranet.ak.pac.army.mil/drm] and go to the DRIS web page. Anyone unable to access the website needs to provide their duty IPADDRESS via e-mail to the Support Agreement Manager (SAM). The SAM will then send the information through the DRM IMO to the 59th Signal BN who will then grant access to legitimate users. Contact the SAM at (907) 384-7094.

Financial Provisions

1. Mission-unique, above-base level of support (i.e. measurable direct incremental costs) is reimbursable and is charged IAW DA policies and DoD instructions throughout the duration of this agreement. Categories identified as "Customarily Non-reimbursable" (CN) are *generally* provided at no cost to the Receiver. However, the Supplier may charge the Receiver for incremental CN costs (i.e. special requirements, supplies/materials, and civilian overtime or over hire), which are directly attributable to the Receiver. *NOTE:* Currently and into the near future, numerous installation functions will be under A-76 studies, resulting in the possible conversion to contracts. If future services convert to contractual arrangements, charges identified within this agreement will be IAW applicable contract terms and costs.

2. Reimbursable charges are **"best estimates"** calculated through the effective date of this agreement. The reimbursement basis (unit charge) for all support categories is subject to annual review by the performing directorate. As such, annual charges to the Receiver are subject to revision, i.e., to reflect change in operation costs and/or inflationary conditions. *NOTE:* Although the DoDI requires that costs be reviewed annually to ensure continued accuracy of estimated reimbursements, limiting factors may preclude accomplishment. In such a case, inflation rates designated within the DoD Comptroller's Annual Inflation Guidance will be applied to any estimated costs within this agreement.

3. Billings for civilian labor are subject to additional charges to cover civilian personnel fringe benefits, plus an additional 25% for the Cost of Living Allowance (COLA) when General Schedule (GS) employees are utilized. Contract labor is charged at contract cost. Overtime labor must be authorized in advance and is charged at prevailing rates. *NOTE:* Current year (FY 05) fringe benefit charges = 25.3% (DoD rate) and 35.2% (others rate). The civilian personnel benefits rate fluctuates annually.

4. Support provided through contractual arrangements is charged at the contracted rate. Price for supplies is derived from standard price lists or equivalent guidance.

5. General procedures:

a. The Receiver will provide a MIPR (or mutually agreed upon documentation) to the Supplier for any required support. [See paragraph 8 (below) for select addresses.] The MIPR will reflect a complete accounting classification to be charged and it will include a point of contact and telephone number. The Receiver and Supplier will verify annually that a correct bill-to address is on record with DFAS.

Financial Provisions
(continued)

b. The Supplying activities will forward a DD Form 448-2 (Acceptance of MIPR) to the Receiver acknowledging a commitment to provide any requested support.

6. Billing procedures. DFAS Pacific Field Site, Pearl Harbor, HI will process billings at the close of each month. All bills will be processed by one of the following methods:

a. Operational Data Store (ODS): These customers are normally other Army fiscal stations, or non-Army federal activities who have furnished a billed Line of Accounting (LOA) but who do not have a Trading Partner Agreement (TPA) with DFAS Indianapolis, Central Disbursing, Agency Location Code (ALC) 5570. Self-reimbursement (no check drawn) collections will be processed via ODS input. Copies of bills for transactions appearing on the CSCFA-110 report TFO (Transactions for Others) will be mailed out weekly. [Transactions within Disbursing Station Symbol Number (DSSN) 5570 are considered for-self.]

b. Intra-Governmental Payment and Collection (IPAC): These customers are normally non-Army DoD or civilian agencies. Self-reimbursement (no check drawn) collections will be processed via IPAC for all federal agencies who have a TPA with ALC 5570 and who have furnished a billed LOA. The IPAC transaction will cite the MIPR number or other funding authority and billed LOA.

c. Mail-out: These customers are normally non-federal customers (e.g. state governments) or federal customers who have not furnished a billed LOA. Two copies of DA Form 1857, Statement of Account, will be furnished to the non-federal customers within five workdays after the close of each month. Remittance with one copy of DA Form 1857 is due 30 days after the bill date. For federal customers, the same procedure is applicable with an SF 1080 bill in lieu of a DA Form 1857.

d. Copies of bills with supporting documents will only be furnished to customers who fall into either the mail-out or ODS TFO categories. Other customers will not be routinely furnished copies of bills unless requested.

7. Receiver's RFC DODAAC: W90CF6; UIC: W36V19 Bill to DODAAC: W73A3B6

Receiver's bill-to address:

Operational Support Airlift Agency (OSAA)
ATTN: Budget Office
6970 Britten Drive, Suite 201
Fort Belvoir, VA 22060-5133

Financial Provisions
(continued)

8. Supplier's accounting office address:

Commander
Defense Finance and Accounting Service
Pacific Field Site
ATTN: DFAS-PC/AOAA
477 Essex Street, Box 1392
Pearl Harbor, HI 96860-5806

9. Submit MIPRs (or other mutually agreed upon non-DoD funding documents) to the supplying activity as follows:

ACTIVITY	CATEGORIES (SERVICES)	AMOUNT
U.S. Army Garrison Alaska 59th Signal Battalion	Automation Equipment, Repair/Maintenance	Actual Costs
ATTN: APSP-ASD	Postage Service	Actual Costs
600 Richardson Dr. #7100		
Ft. Richardson, AK 99505-7100		
	TOTAL ESTIMATED MIPR AMOUNT:	$ TBD
GARRISON ACTIVITY		
U.S. Army Garrison, Alaska	CIF (DPTR/DOL)	Actual Costs
Directorate of Resource Management	Equipment Maintenance, Repair and Calibration (DOL)	Actual Costs
ATTN: APVR-RRM-BB	Fire Protection (DPW)	Actual Costs
600 Richardson Dr. #6250 Ft. Richardson, AK 99505-6250	Housing Services (DPW)	Customarily Non-Reimb
	Laundry and Dry Cleaning (Organizational Clothing and Equipment) (DOL)	Actual Costs
	Laundry and Dry Cleaning (Personal Clothing) (DOL)	Actual Costs
	Supply Management (DOL)	Actual Costs
	Transportation Services (DOL)	Actual Costs
	Technical and Legal Libraries (DCA)	Actual Costs
	TOTAL ESTIMATED MIPR AMOUNT:	$Actual Costs

Financial Provisions
(continued)

10. Cost calculation:

Category: Fire Protection
Account: 131079.P
Recharging fire extinguisher is normally non-reimbursable. However, a charge will be incurred when fire extinguishers have been maliciously discharged. Charges are as follows per piece:

10 lb ABC Dry Chemical Fire Extinguishers:	Recharge	$20.00
	Nitrogen	1.25
	Hydro Test	15.00
	Gauges	5.00
	Hose	8.25
	Handle	5.00
5 lb ABC Dry Chemical Fire Extinguishers:	Recharge	$12.50
	Nitrogen	1.25
	Hydro Test	15.00
	Gauges:	5.00
	Hose	8.00
	Handle	5.00
5 lb Purple K Chemical Fire Extinguishers:	Recharge	$12.50
	Nitrogen	1.25
	Hydro Test	15.00
	Gauges:	5.00
	Hose	8.00
	Handle	5.00
20 lb ABC Dry Chemical Fire Extinguishers:	Recharge	$30.00
	Nitrogen	1.25
	Hydro Test	15.00
	Gauges:	5.00
	Hose	11.00
	Handle	5.00

NOTE 1:
a. Perform hydro test if extinguisher is over 6/12 years old.
b. Replace gauges if broken.
c. Six-year inspection will require fee payment.
d. Twelve-year inspection on air cylinders and cart foam extinguishers will require a fee.
NOTE 2: All existing fire extinguishers, which are 6 years old, must be taken to the Fire and Emergency Services Extinguisher Shop, discharged, inspected internally and recharged.

TOTAL ESTIMATED COST: $TBD

Financial Provisions
(continued)

10. Cost calculations (continued):

Category: Housing and Lodging
Account: 190000.00 (FRA and FWA), Family Housing
131096.9A (FRA), Furnishings Management Office
131096.9A (FWA), Furnishings Management Office
Customarily non-reimbursable.
TOTAL ESTIMATED COST: $TBD

Adjutant General

EQUAL OPPORTUNITY

SUPPLIER WILL: Provide Equal Opportunity (EO) education, counseling, and guidance. Provide EO complaint channel (in support of military personnel) for complaints that include personal discrimination, institutional and systemic discrimination, sexual harassment and human relation incidents. Provide service IAW local command, DA and DoD policies and regulations.

RECEIVER WILL: Present problems (that are not solved at unit level) through applicable unit EO representative to the USAG-AK EO Office for further assistance. Ensure unit EO representatives are trained IAW local command, DA and DoD policies and regulations.

POC: FRA, EO Advisor 384-2162
PWA, EO Advisor 353-9234

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Adjutant General

MORTUARY SERVICES

SUPPLIER WILL: Provide memorial affairs services. Provide, through a shared contract with the Air Force, mortuary services, i.e., recovery, identification, care, and disposition of deceased personnel.

RECEIVER WILL: Assist and provide documentation as requested by Supplier. Comply with installation directives.

POC: FRA, G1 Plans and Operations 384-2605

BASIS FOR REIMBURSEMENT: Reimbursable; actual costs not applicable to Open Allotment.

Adjutant General

RETIRED AFFAIRS

SUPPLIER WILL: Provide retired affairs services, to include interface between retirees and active duty members. Provide assistance in pre-retirement processing including briefing soldiers and their families on the benefits and entitlements to include legal assistance availability, medical and dental programs/services available, assistance available for post service employment and other areas peculiar to the needs of the local retired community. Provide individual Survivor Benefit Plan counseling and assistance with preparation of DD Form 2656 (Data for Retired Pay). Provide services IAW applicable DoD, DA and local command regulations.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, Retirement Services Officer 384-3500

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Directorate of Plans, Training, Security and Mobilization
AUDIO AND VISUAL INFORMATION SERVICES

SUPPLIER WILL: Provide (IAW AR 25-1, 350-38, and DA Pam 25-91):

a. Photographic support including processing of black and white, color slide, and color print film, studio portrait photography, including DA photos, chain of command, and passport photos, copying, slide library, and loan of self help cameras.

b. Graphics services including self help facilities and supplies for manual graphics, illustrator support, and computer graphics support.

c. Video-graphic support consisting of self-help video cameras, on base CCTV support (if available), 1/2" VHS videotape, and audiocassette duplication, limited film editing, and, on a cost reimbursable basis, limited video production.

d. Training aids, devices, and simulator fabrication, such as terrain boards, models, and displays are on a cost reimbursable basis only.

e. Full visual information and training support loan/issue library services. *NOTE:* Categories of equipment available for temporary loan are visual information, such as TV sets, video projectors, and public address sets, training devices, such as resuscitation mannequins and dummy weapons, Multiple Integrated Laser Engagement Systems (MILES), and visual information media, such as videotapes. Available for issue are Graphic Training Aids (GTA). The Training Support Center (TSC) can arrange for the purchase and permanent loan of visual information equipment, media and training aids on a cost reimbursable basis. Fund certification is required at time of request for support. TSC provides organizational level maintenance on TSC equipment.

NOTE: Instruction, advice, and consultation services are available through the Directorate of Plans, Training and Mobilization (DPTSM). Presentation support is limited to the loan of audio-visual equipment.

RECEIVER WILL: Complete a USARAK Form FL 105, Delegation of Authority to receive TSC Lending Property authorizing designated personnel to receive loan items. (Any additional paperwork will be completed at TSC.)

Comply with TSC policies and procedures.

Directorate of Plans, Training, Security and Mobilization
AUDIO AND VISUAL INFORMATION SERVICES
(continued)

POC: FRA, Photo Support 384-7183
FRA, Graphics Support 384-7179
FWA, Photo Support 353-6268
FWA, Graphics Support 353-6208

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable (see Financial Provisions, paragraph 1).

Directorate of Plans, Training, Security and Mobilization
DISASTER PREPAREDNESS

SUPPLIER WILL: Provide a program to minimize the loss of operational capability caused by enemy attacks, major accidents, and natural disasters. Provide security-related planning and inspections IAW USARAK OPLAN 5645 (Combating Terrorism) for on post Receivers. Integrate disaster planning, training, and resource employment into a single program. Protect DoD resources from the effects of enemy attack, and restore primary mission assets following an attack. Minimize the effects of major accidents and natural disasters, and restore primary mission assets following them. Support civil authorities during major accidents and disasters. Protect the public. Mitigate public health and safety concerns in the event of major accidents or incidents involving DoD resources.

Provide all personnel with the best available physical protection from the effects of war or natural disaster (earthquakes, floods, hurricanes, volcanic eruption, or tornadoes). *NOTE:* The facility must provide shelter protection against wartime, nuclear, biological, chemical, and peacetime disasters while maintaining mission capability.

Provide emergency heat and/or water upon occurrence of power/heat loss resulting from harsh winter conditions (-40 degrees Fahrenheit or colder).

Provide an effective system to quickly disseminate disaster information to affected personnel. *NOTE:* The installation warning system must be designed for operation during disaster conditions.

Provide support to the Receiver in the event of a disaster. Establish command and control. Notify and update populace. Protect facilities, materiel, and people. Coordinate with local authorities. Maintain command and control. Clear access routes. Implement firefighting, search and rescue, casualty care, preventive medicine, damage control, casualty assistance, and mission impact assessment. Implement remains recovery, identification, and disposition. Establish displaced persons registry. Cordon hazardous areas. Restore critical assets. Restore primary mission capability. Request help when necessary. Reassess the situation. Assess stocks of food and water. Implement rumor control, sanitation control, and medical treatment, etc.

Ensure alarm signals are compatible with local systems.

RECEIVER WILL: Comply with Supplier's regulations and directives.

NOTE 1: As a fundamental prerequisite for an effective disaster response capability, personnel assigned disaster preparedness program responsibilities will be scheduled for formal courses as soon as possible. They will be involved in on-the-job training to develop

Directorate of Plans, Training, Security and Mobilization
DISASTER PREPAREDNESS
(continued)

functional expertise. The disaster preparedness staff will determine refresher training frequency and duration.

NOTE 2: In the event of a disaster, notify personnel in the most expeditious method available. If standardized alarm signals are used, a 3-5 minute steady tone on sirens, horns, or other devices is an attention or alert warning. People should listen to local radio, television, or public address announcements for emergency information. A 3-5 minute wavering tone on sirens or a series of short blasts on horns (or other devices) is an attack or fallout arrival warning. People should take cover and other protective actions immediately.

NOTE 3: This program includes policies and procedures for plans and operations during pre, trans, and post periods. It includes procedures for responding to peacetime disasters and for helping civil authorities during civil emergencies and during President declared and undeclared peacetime natural disasters. The program also includes requirements for disaster preparedness training, materiel, and exercises.

NOTE 4: All personnel are required to participate in the Disaster Preparedness Program.

POC: FRA, Plans Officer 384-2212
FWA, Plans Officer 353-9756

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Director of Logistics

CENTRAL ISSUE FACILITY

SUPPLIER WILL: Provide (upon request) a list of available Organizational Clothing and Individual Equipment (OCIE). Review for approval all requests for OCIE submitted by the Receiver's representative. Provide OCIE (by hand receipt) to authorized individuals as requested by the Receiver.

Schedule issue/return dates. Conduct a reconciliation of hand receipt items upon return of OCIE, identifying those items, which will be charged to the Receiver. Provide billing information to the Directorate of Resource Management (DRM), Program Budget Division (PBD), 384-0696, for those items chargeable to the Receiver.

Accountability of OCIE is controlled by AR 710-2, Inventory Management Supply Policy Below Wholesale Level, DA Pam 710-2-1, Using Unit Supply System (Manual Procedures) and AR 735-5, Policies and Procedures for Property Accountability.

NOTE 1: A 10% reimbursable sustainment charge will be levied to defray the cost of OCIE replenishment (except non-returnable items) due to normal fair wear and tear.

NOTE 2: Non-returnable items (i.e. socks, next to body items, etc.) are reimbursed at 100% of the item cost.

NOTE 3: OCIE lost, damaged or destroyed will be accounted for IAW AR 735-5 and DA Pam 735-5, Survey Officer's Guide.

RECEIVER WILL: Reimburse Supplier for lost, damaged or destroyed OCIE items that were not reimbursed by the responsible individual. Submit funding documents to the DRM PBD. Request current rate/cost of items from the supporting Central Issue Facility (CIF).

Establish and maintain documents that authorize and identify the Receiver's representative (DA Form 1687, Notice of Delegation of Authority - Receipt for Supplies and Assumption of Command letter). Submit to the supporting CIF a list of Receiver personnel to receive OCIE.

Individuals will coordinate with the supporting CIF for issue and turn in. Sign for release of OCIE from the supporting CIF. Be responsible for issued OCIE returns. Conduct reconciliation of OCIE items with the supporting CIF to ascertain whether charges will be made to the Receiver.

Provide receipt for Organizational OCIE issued from the CIF using the computerized DA Form 3645.

Directorate of Logistics

CENTRAL ISSUE FACILITY
(continued)

IAW AR 710-2, unit commanders will provide the CIF with annual requirements (number of personnel) for OCIE support.

IAW DA Pam 710-2-1, unit commanders will conduct reconciliation of OCIE records against personnel losses. This reconciliation is conducted quarterly (at a minimum) to determine if soldiers have departed without clearing the OCIE issue point.

In-process and out-process the CIF by appointment only. Accomplish direct exchange transactions on a first-come, first-serve basis. Coordinate and schedule mass transactions through the CIF. True emergencies are handled on a case-by-case basis.

Turn in clothing and equipment to the CIF no later than five working days prior to peacetime Permanent Change of Station (PCS).

POC: FRA, CIF 384-2801/7031 (Primary Support Point)
FWA, CIF 353-6352
FRA, DRM PBD 384-0696

BASIS FOR REIMBURSEMENT: Reimbursable; cost of items lost, damaged, destroyed and non-returnable items IAW AR 735-5 and DA Pam 735-5.

Directorate of Logistics

EQUIPMENT MAINTENANCE, REPAIR AND CALIBRATIONS
(Army Materiel Command)

SUPPLIER WILL: Provide maintenance and repair of equipment utilized by the Receiver. *NOTE:* Repairs are generally performed by qualified in-house personnel or through contractual arrangements.

Provide calibration service through a separate agreement between Ft. Richardson and the Army Materiel Command (AMC).

RECEIVER WILL: Initiate and submit to appropriate office work requests (DA Form 2407 - hard copy or computer generated) citing the last three digits of ISA number.

Provide Signature Cards (DA Form 1687) to appropriate maintenance offices identifying the names of personnel authorized to submit work requests.

Provide equipment density lists to each appropriate office. Update the list as equipment changes occur.

Deliver items needing repair to the designated maintenance facility on Ft. Richardson or Ft. Wainwright.

Report maintenance complaints (untimely service or poor quality work) to the Chief, Maintenance, DOL.

Submit MIPRs to the DOL Budget Office when requesting reimbursable work performance.

Comply with Supplier's regulations and directives.

POC: FRA, Maintenance Branch 384-2641
FWA, Maintenance Branch 353-1633
FWA, Quality Assurance 353-1631

BASIS FOR REIMBURSEMENT: Reimbursable; actual cost of shop rates/parts or contract cost.

Directorate of Logistics

LAUNDRY AND DRY CLEANING
(Organizational Clothing and Individual Equipment)

SUPPLIER WILL: Provide laundry and dry cleaning services for Organizational Clothing and Equipment (OCIE), government property and personal articles of military personnel.

Provide bulk laundry and dry cleaning services for OCIE to authorized Receiver personnel, within capability.

Provide over the counter laundry and dry cleaning services to authorized Receiver personnel for OCIE.

Conform to special laundry and dry cleaning instructions (within capabilities) when given prior notice by the Receiver. *NOTE:* The Supplier reserves the right to refuse items needing special care or handling.

RECEIVER WILL: Submit an original with two copies of DA Form 1687 (Notice of Delegation of Authority - Receipt for Supplies) to the laundry contractor for each bulk submission. Ensure that the unit commander signs DA Form 1687.

Complete DA Form 1974 (Laundry List) and/or DA Form 2707 (Dry Cleaning List) for each bulk submission.

Instruct authorized Receiver personnel on procedures for turn-in of OCIE to the Quartermaster (QM) Post Laundry at Ft. Richardson and Ft. Wainwright. Instruct authorized Receiver personnel on procedures for turn-in of items for sewing of insignia as outlined in AR 710-2. *NOTE:* Authorized soldiers must fill out USARAK Form 367 (TA-50 Clothing and Equipment Cleaning Records) at the QM Post Laundry to identify items requiring service. Soldier must present valid military identification card.

Notify Supplier in writing of any special care instructions for new or special articles to be laundered or dry-cleaned. Submit special care instructions prior to submitting items for service. *NOTE:* An increase in cost may be assessed on items needing special care or handling.

Comply with local policies and procedures.

POC: FRA, QM Post Laundry 384-1901
FWA, QM Post Laundry 353-7648
BASIS FOR REIMBURSEMENT: Reimbursable; piece/bulk prices based upon type of item and the prevailing contract or in-house rate.

Directorate of Logistics

LAUNDRY AND DRY CLEANING
(Personal Clothing)

SUPPLIER WILL: Provide over-the-counter laundry and dry cleaning services to authorized Receiver personnel on a cash and carry basis. Provide services IAW AR 210-130, Laundry and Dry Cleaning Operations.

Provide sewing services to authorized Receiver personnel.

Provide the above support as requested and within capabilities.

RECEIVER WILL: Instruct Receiver personnel on turn-in procedures for those items requiring sewing of insignias as outlined in AR 710-2.

Provide (in writing to the Supplier) special care instructions for articles requiring special laundry or dry cleaning considerations. Submit special care instructions prior to submitting item(s) for service. *NOTE:* An increase in cost may be assessed on items requiring special care or handling.

Establish an account at the Quartermaster laundry when applicable.

Comply with Supplier's regulations and directives.

POC: FRA, QM Post Laundry 384-1901
FWA, QM Post Laundry 353-7648

BASIS FOR REIMBURSEMENT: Reimbursable; based on the prevailing laundry contract or in-house rate.

Directorate of Logistics

SEWING
(Personal Clothing)

SUPPLIER WILL: Provide satisfactory and economical sewing services for personal articles of military personnel and their family members.

Provide sewing services for required government property.

Provide services IAW AR 210-130, Laundry and Dry Cleaning Operations.

Provide the above services as requested and within capabilities.

RECEIVER WILL: Instruct Receiver personnel on turn-in procedures for items needing sewing of insignia (as outlined in AR 700-84).

Establish an account at the Quartermaster laundry when applicable.

Comply with Supplier's regulations and directives.

POC: FRA, QM Post Laundry 384-1901
FWA, QM Post Laundry 353-7648

BASIS FOR REIMBURSEMENT: Reimbursable; prices based on the prevailing contract or in-house rate.

Directorate of Logistics

SUPPLY MANAGEMENT

SUPPLIER WILL: Provide customer assistance. Process all authorized supply requisitions for expendable, durable and non-expendable supplies/equipment. Process all receipt transactions for all depot receipts. Maintain Delegation of Authority records.

RECEIVER WILL: Ensure all maintenance documentation is provided when turning in property book items. Ensure turn-in appointment is not scheduled until document numbers are provided from the Consolidated Installation Property Book Office (CIPBO) or other authorized Property Book Office. For Automatic Data Processing Equipment (ADPE), ensure proper disposition is provided from the Directorate of Information Management (DOIM). Ensure lateral transfer property is not conducted without prior approval from the accountable officer (Property Book Officer). For Report of Survey actions, ensure that a survey number is provided. As a minimum, have on hand the following publications: AR 710-2, DA Pam 710-2-1, DA Pam 710-2-2 and AR 735-5.

Comply with Supplier's regulations and directives.

POC: FRA, SSA 384-2801
FWA, SSA 353-6577

BASIS FOR REIMBURSEMENT: Reimbursable; direct charges (for packing include civilian labor and supplies i.e., boxes, banding materials).

Directorate of Logistics

TRANSPORTATION SERVICES
(Passenger, Personal Property and Freight)

SUPPLIER WILL: Provide complete passenger travel service IAW appropriate regulations.

Provide movement of personal property to include privately owned vehicles IAW appropriate regulations.

Provide freight movement services on request IAW appropriate regulations.

RECEIVER WILL: Provide travel orders for all official travel. Ensure that travel orders reflect proper destination, special entitlements and chargeable fund code.

Furnish appropriate documentation for shipping/receiving of freight. Provide funding documentation as appropriate.

Comply with Supplier's guidance and directives. Comply with related directives and instructions. Furnish appropriate documentation to ship/receive personal property.

POC: FRA, Passenger Travel 384-1831
FWA, Passenger Travel 353-1150
FRA, Freight Office 384-1897
FWA, Freight Office 353-1133

BASIS FOR REIMBURSEMENT: Reimbursable; civilian overtime labor costs.

Public Affairs Office

COMMUNITY RELATIONS, NEWS MEDIA AND INFORMATION STRATEGIES

SUPPLIER WILL: Provide command information support to include the weekly command newspaper, the Army in Alaska unofficial installation guide, and post maps of Forts Richardson and Wainwright.

Support Receiver's community relation efforts, subject to operation requirements. (This includes, but is not limited to open house programs and public affairs activities.)

Provide media relations support of events and actions that affect both the Supplier and the Receiver.

Provide services IAW Department of Defense Directive 5410.18.

NOTE: The Commanding General and the Public Affairs Officer are the only clearing authorities for release of unclassified information to the news media and general public, to include interviews, speeches, photographs, news releases and other materials. Additionally, soldiers and DA civilian employees desiring to seek publication of their military-related photographs/manuscripts/tapes are required to submit these materials to the Public Affairs Office for review prior to coordination with or submission to a media outlet.

RECEIVER WILL: Provide information and newsworthy items to the installation Public Affairs Officer.

Support the Supplier's community relations program.

Comply with Supplier's regulations and directives.

POC: FRA, Public Affairs Office 384-1542
FWA, Public Affairs Office 353-6071

BASIS FOR REIMBURSEMENT: Non-reimbursable.

DOIM/59th Signal Battalion

MAIL SERVICE

SUPPLIER WILL: Provide acceptance, metering, sorting and routing of incoming and outgoing official mail and distribution (on post only).

Provide briefing and instruction on duties and responsibilities of Mail Control Officer.

Provide personal mail services and postal redirect/post locator and inspection and establishment of unit mailrooms.

RECEIVER WILL: Comply with applicable regulations and directives.

POC: FRA, Mail and Distribution Br. 384-0491
FWA, Mail and Distribution Br. 353-6586

BASIS FOR REIMBURSEMENT: Non-reimbursable.

DOIM/59th Signal Battalion

POSTAGE SERVICE
(Mail)

SUPPLIER WILL: Provide postage.

RECEIVER WILL: Comply with applicable regulations and procedures.

POC: FRA, Mail and Distribution Br. 384-0491
FWA, Mail and Distribution Br. 353-6586

BASIS FOR REIMBURSEMENT: Reimbursable; actual cost.

Directorate Public Works

FIRE PROTECTION

SUPPLIER WILL: Provide fire protection for buildings assigned to the Receiver. *NOTE:* Fire and Emergency Services (F&ES) must meet the requirements of AR 420-90, Facility Engineer Fire and Emergency Services and DoDI.6055.6, Fire and Emergency Services Program as they relate to response criteria.

Provide emergency care by qualified Emergency Medical Technicians (EMTs).

Provide a fire protection program. Provide fire prevention and protection services to include the ability to handle structural and chemical firefighting.

Provide hazardous material mitigation support.

Conduct fire inspections and safety classes.

Maintain fire extinguishers, alarm systems and fire protection systems. Requisition and distribute fire extinguishers installed in real property. Determine reason for extinguisher discharge when used for other than to suppress fires.

Perform fire-fighting responsibilities using recommended response times and procedures. Review work orders and projects involving fire and life safety issues. Conduct inspections as required by regulation. Remove hazardous materials using recognized procedures. Provide a monthly inspection at high hazard facilities. Provide quarterly, semi-annual or annual inspections of administrative/shop/warehouse type facilities.

Provide/perform Aircraft Rescue and Fire Fighting (ARFF) responsibilities using recommended response times and procedures as required for emergencies. *NOTE:* ARFF support for activities occurring off the installation and the cantonment area in support of training exercises of Receiver units is considered an enhanced level of service, and such service will be provided on a reimbursable basis.

Maintain and repair firefighting equipment and components within available resources.

Provide for the supply of firefighting equipment as required.

RECEIVER WILL: Alert immediately all personnel in the building when first discovering fire. Report any fire-related occurrence to F&ES by dialing 911. Make every effort to extinguish the fire with available personnel while exercising reasonable and prudent care.

Provide Material Safety Data Sheets (MSDS) and a site safety location plan to F&ES citing all hazardous materials used/stored in assigned facilities. Furnish the exact location of these materials.

Appoint a unit fire marshal and building fire warden. Attend fire

Directorate Public Works

FIRE PROTECTION
(continued)

prevention lectures. Participate in Supplier conducted fire suppression and training programs.

Prepare evacuation plans.

Submit work requests for maintenance and inspection of fire alarms, sprinkler systems, and portable fire extinguishers IAW Supplier directives. Reimburse Supplier for 6-year inspection of fire extinguishers, 12-year hydro-static test and inspection on air cylinders and cart foam extinguishers.

Deliver fire extinguishers after every use to F&ES for inspection, test, reseal, and recharge. Reimburse Supplier if fire extinguishers were discharged for other than to suppress fires.

Request assistance regarding fire prevention and emergency services from the Fire Chief.

Comply with applicable DA, DoD, USAG-AK and Supplier installation fire regulations and directives.

Provide notification and obtain written approval from the DPW POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility assignment of real property (storage, administrative, latrine, etc.). Contact any/all of the following POCs with any changes: (1) DPW Real Property Accountable Officer (384-3000/3524/353-6043/7134), (2) DPW Master Planning (384-3004/3519 and 353-6043) or (3) DPW ISA Coordinator (384-0913/2559).

POC: USAG-AK Command Fire Chief 384-3473/353-6548
Dispatcher 353-7470

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable; partially reimbursable (special requirements); actual cost for maintenance of fire extinguishers (actual cost when discharged for other than fire suppression).

Directorate of Public Works

HOUSING SERVICES

SUPPLIER WILL: Provide family housing, off-post housing referral services and furnishings support to authorized personnel. Provide Officer Quarters (OQ) and Senior Enlisted Quarters (SEQ) and Unaccompanied Personnel Housing (UPH) accommodations for authorized unmarried/unaccompanied personnel attached or assigned to Forts Richardson and Wainwright. Provide housing services on the same basis and standards as provided to other authorized personnel IAW AR 210-50 and the command's housing policy.

Operate, maintain and administer USAG-AK's Family Housing Program.

Provide Unaccompanied Personnel Housing (UPH) E-7 and above at Ft. Wainwright in furnished single bedroom apartments for single personnel. (All furnishings, appliances, utilities and services are provided.)

Provide adequate family housing to eligible families based on rank and family size. (All utilities and services are provided.)

Provide "loaner sets" (minimum essentials for day-to-day living) at no charge to customers moving in and out of family housing while waiting for pickup/delivery of personal household goods IAW AR 210-50 and the Command's Housing Policies.

Manage housing from waiting list and expect Receivers to find temporary off-post housing while awaiting on-post housing.

RECEIVER WILL: Instruct incoming personnel to report to the Housing Division for on and off-post housing. Ensure Receiver personnel provide a copy of their PCS orders, DD Fomr 1747, Housing Application, and a valid Identification Card (ID) card upon arrival.

Ensure appropriate deductions are made from military pay, if applicable, for any unpaid debt incurred while residing on Fort Wainwright. (This condition applies to Green ID cardholders.)

Ensure installation residents are subject to applicable post policies, AR 210-50, PARO and USAG-AK policies and supplements or changes thereto.

Reimburse Supplier for the rent (at fair market value for the area) and utilities (based on the established rate) when authorized civilians occupy family housing units.

Provide each housing office with the demographics of Receiver personnel requiring housing support. Update this data with the DPW Housing Division as changes occur.

Directorate of Public Works

HOUSING SERVICES
(continued)

Provide notification and obtain written approval from the DPW POCs prior to making any changes in personnel, additions, or deletions to this agreement. This includes gross square footage and facility

assignment of real property (storage, administration, latrine, etc.). Contact any/all of the following POCs with any changes: (1) DPW Real Property Accountable Officer (384-3000/3524/353-6043/7134), (2) DPW Master Planning (384-3004/3519 and 353-6043) or (3) DPW ISA Coordinator (384-0913/2559).

POC: FWA, Family Housing 353-1655/1666
FWA, Furnishings Management 353-7322/6002

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable.

Provost Marshal

POLICE SERVICES
(Law Enforcement, Physical Security
and Vehicle/Weapon Registration)

SUPPLIER WILL: Provide police services to maintain order and to enforce laws or regulations. Control vehicular and pedestrian traffic. Investigate criminal activity IAW regulations or other appropriate directives.

Conduct physical security/crime prevention inspections IAW USARAK Regulation 190-1 (Physical Security).

Provide privately owned vehicle decals and registration.

All persons (soldiers and civilians) desiring to carry, transport and/or store weapons on USAG-AK posts must register the weapon(s) on USARAK Form 877 (Registration of Privately Owned Firearms) at the Military Police (MP) desk. USARAK Form 277 (Weapons Registration Record) must be carried whenever the weapon is carried or transported on a USAG-AK post. Personnel residing on USAG-AK posts and desiring to store weapons in their unit arms room, Bachelor Officer's Quarters (BOQs), Bachelor Enlisted Quarters (BEQs), or on-post family quarters must register the weapon within three working days of arrival or within three working days of acquiring the firearm(s). The procedures that personnel will follow are:

a. Complete USARAK Form 877 in triplicate.

b. Privates through staff sergeants will have their commander verify the information and sign USARAK Form 877.

c. Sergeants first class and above may sign their own USARAK Form 877 and register their firearms; however, they must also obtain written permission to store firearms in BOQs, BEQs, or on-post family quarters.

d. USARAK Form 877 (not the firearms(s)) will be taken to the Provost Marshal (PM) weapons registration office.

(1) The white copy is maintained by the PM.

(2) The yellow copy is provided to the owner.

(3) The pink copy is sent to the unit commander to be filed in the unit arms room and retained until one year after expiration term of service/permanent change of station or the firearm(s) is sold or transferred to another individual. The new owner must register the firearm using the procedures beginning with paragraph "a" above and the previous owner must ensure the weapon is deregistered immediately upon transfer.

Provost Marshal

POLICE SERVICES
(Law Enforcement, Physical Security
and Vehicle/Weapon Registration)
(continued)

e. While at the PM weapons registration office, USARAK Form 277 will be completed and provided to the registrant and will be carried whenever the registered firearm is carried or transported on the installation.

f. Authorized war trophy will be registered as stated above.

RECEIVER WILL: Secure own equipment IAW AR 190-11 through 190-51 and USARAK Regulation 190-1 (Physical Security Program).

Designate a Receiver point of contact for matters concerning the preservation of order, physical security and crime prevention.

Apprise Supplier of relevant information concerning serious incident reports.

Comply with Supplier regulations on law and order, physical security and crime prevention related to occupancy of the installation.

POC: FRA, Law Enforcement 384-0825
FWA, Law Enforcement 353-9011

BASIS FOR REIMBURSEMENT: Reimbursable; Receiver requested special security, to include equipment modifications and upgrades that are above the Army's regulatory requirement for USAG-AK to provide.

Chaplain

CHAPEL AND CHAPLAIN SERVICES

SUPPLIER WILL: Provide pastoral and religious needs for all faiths within the military community. Provide support for worship and religious observance, religious education, pastoral care, visitation ministry, spiritual growth, lay ministry, stewardship, and social concerns. (Includes, but is not limited to: Child, youth and adult education, religious/moral counseling, baptisms, marriages, burials, and referrals to other religious centers for appropriate rites or ceremonies.)

RECEIVER WILL: Comply with the Supplier's directives pertaining to this service.

POC: FRA, USAG-AK Chaplain 384-2124
FRA, Installation Chaplain 384-1468
FWA, Installation Chaplain 353-9825/9826

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Directorate of Community Activities

ARMY COMMUNITY SERVICES

SUPPLIER WILL: Provide prevention programs and services to enhance family readiness. Strengthen the coping abilities of Army families. Provide programs and services, to include crisis intervention, referral and follow-up, financial assistance, food locker, budget counseling/classes, relocation assistance, employment assistance, career planning, skill development workshops, family advocacy, and parenting/marriage enrichment classes. Provide assistance for special needs families, volunteer management and deployment assistance.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, Director 384-1502
FWA, Director 353-6267

BASIS FOR REIMBURSEMENT: Non-reimbursable; routine.

Directorate of Community Activities

CHILD AND YOUTH SERVICES

SUPPLIER WILL: Provide quality daycare service for children of authorized personnel: Active duty military, including National Guard and Army Reserve personnel; DoD civilian employees; and contract employees. Supervise Family Child Care (FCC) homes. Provide special community programs through Supplemental Programs and Services (SPS). Provide centralized registration and training through SPS, to include teen baby-sitting and volunteer training. Furnish hot meals at least twice a day plus snacks. Sponsor a program to support the morale of parents by providing a comprehensive, year-round activities program that offers developmental activity schedules that are based on the children's age and developmental level. Plan daily programs for all ages of children, regardless of the time in care. *NOTE:* Programs include full day, hourly care, part day preschool, toddler time, and outreach programs, such as "Romp 'N Stomp."

Provide off-site and on-site activities through a youth center which offers programs for young people in grades 1-12, to include a game room, dance studio, craft and activity room, snack bar area, gym and basketball court. (Off-site programs include scheduled day camps with field trips as well as before and after school programs.) Offer classes, which could include piano, guitar, karate, gymnastics and tumbling, ballet, jazz dance, and drafts.

Establish a sports program that could include baseball, softball, basketball, volleyball, soccer, wrestling, track, swimming, football, and cheerleading.

Provide employment, computer and homework tutoring, and outreach services.

Provide structured activities to youth (grades K-6), which support the health, interpersonal, knowledge, reasoning, creative, vocational, and self-awareness skills necessary to be successful in today's world. *NOTE:* Program includes before and after school care, full day, vacation, and summer camp activities. Activities may include recreational games, sports, instruction, arts and crafts, free choice play, and outdoor activities.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, Child and Youth Services 384-2031
FWA, Child and Youth Services 353-9505

BASIS FOR REIMBURSEMENT: Reimbursable; individual user fees.

Directorate of Community Activities

EDUCATION SERVICES

SUPPLIER WILL: Provide career counseling for all military personnel, their adult family members, DA civilians, and other personnel authorized under AR 621-5. Ensure all personnel are aware of entitlements, programs, and services available. Provide educational information. Discuss career options. Assist in planning personal and professional education goals. Provide other information and assistance as required.

Plan, process, organize, and control facilities, supplies, and equipment required to support individual and group training/education. Forecast training and education requirements. Inform personnel of available military educational opportunities (through on/off post civilian institutions), tuition assistance, commissioning programs, professional military education programs, and other programs enumerated in AR 621-5. Advise personnel on education services provided through other activities and agencies.

Advise individuals on military education goals. Research and advise individuals concerning their past education records. Evaluate and secure credit for military experience and other non-traditional forms of credit. Complete tuition assistance and VA forms. Affiliate with a Service Members Opportunity College (SOC). Assist applicants in enrolling in distance learning courses or degree programs. Prepare local college registration applications, financial aid, transcript requests and other related services. Brief incoming personnel on available education programs and services. Brief outgoing personnel on Veterans Affairs (VA) benefits.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, Education Officer 384-0970
FWA, Education Officer 353-7270

BASIS FOR REIMBURSEMENT: Reimbursable; tuition and/or user fees.

Directorate of Community Activities

MORALE, WELFARE AND RECREATION ACTIVITIES
(For DoD Personnel)

SUPPLIER WILL: Provide access to recreational facilities, which could include a gymnasium or a fitness center. Provide an athletic department that offers year-round team sports. *NOTE:* If possible, the fitness center should be equipped with a nautilus room, free-weights and exercise rooms, dry saunas, steam rooms, showers, volleyball, basketball, exercise bicycles, rowing machines, racquetball courts, and a pool. Outdoor programs could include golf, softball, tennis, soccer, and flag football.

Provide access to low-cost rental equipment, to include basketballs, softballs, badminton, volleyball and horseshoe equipment, pop-up and utility campers, tents, sleeping bags, stoves, lanterns, coolers, backpacks, and other camping essentials.

Make available special adventure outings and tours open to all installation personnel.

Provide access to recreational and general reference library services.

Furnish brochures, maps, guides, and information on tourist areas, parks, bus, train, and airline schedules.

Provide access to arts and crafts equipment, classes, and discount supplies for craft activities such as ceramics, woodworking, framing, needlework, airbrushing, drawing, oil and watercolor painting, and other activities. Provide automotive instruction and machinery to assist in repairs.

Provide access to facilities, which could include a golf course and skeet/trap range. Maintain a listing of available entertainment facilities, community and recreational clubs, campgrounds and marinas, including locations, membership requirements and fees.

Provide vehicle and trailer storage for military personnel assigned and residing on USAG-AK installations if available.

NOTE: Reserve Component (RC) priority of Morale, Welfare and Recreation (MWR) support is IAW AR 215-1.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, Community Family and Activities Manager 384-2053
FWA, Community Family and Activities Manager 353-7311

BASIS FOR REIMBURSEMENT: Reimbursable; individual user fees.

Directorate of Community Activities

MORALE, WELFARE AND RECREATION ACTIVITIES
(For Non-DoD Personnel)

SUPPLIER WILL: Provide access to a golf course, skeet/trap range, community and recreational clubs and skiing.

RECEIVER WILL: Comply with Supplier's regulations and directives.

POC: FRA, DCA 384-2017
FWA, DCA 353-7615

BASIS FOR REIMBURSEMENT: Reimbursable; individual user fees.

Directorate of Community Activities

SUBSTANCE ABUSE PROGRAM

SUPPLIER WILL: Make available drug and alcohol abuse counselors to authorized personnel for discussion, guidance, and assistance in arresting alcohol and drug misuse and abuse affecting job performance and/or personal conduct problems. Operate substance abuse program IAW AR 600-85, DA Pam 600-85, local command and PARO supplements. Identify and rehabilitate substance abusers who have been recognized by the chain of command for continued service within the armed forces. Provide nonresidential outpatient counseling, commander consultation and substance abuse prevention education. Preserve the health of employees by providing appropriate short-termed counseling, awareness education, prevention education and civilian treatment referral services through the Employee Assistance Program.

NOTE 1: This service is available to all active duty personnel and to the extent available, to U.S. Army Family Members, retirees, DA and DoD Civilians and non-appropriated fund personnel.

NOTE 2: The requirement for certification of DoD substance abuse counselors shall include sufficient knowledge and skills related to the core tasks required of rehabilitative personnel followed by an instructional course pertaining to substance abuse rehabilitation. Outpatient counseling shall be IAW DoDI 1010.6.

NOTE 3: It is the DoD policy to discipline and/or discharge drug traffickers and those substance abusers who cannot or will not be rehabilitated IAW appropriate laws, regulations and instructions. Disciplinary actions are not the purview of the Army Substance Abuse Program (ASAP) or its staff members.

NOTE 4: The extent of ASAP services to be provided will support the manpower activity as defined in Attachment IV, Financial Provisions, paragraph 10.

RECEIVER WILL: Comply with all regulations and Supplier's policies in support of the installation ASAP. Coordinate any disciplinary actions with the respective employee's chain of command.

POC:

FRA,	ASAP Prev. Education/Employee Assist. Prog.	384-1418
FRA,	ASAP Rehabilitative Outpatient Counseling	384-7368
FWA,	ASAP Prev. Education/Employee Assist. Prog.	353-1377
FWA,	ASAP Rehabilitative Outpatient Counseling	353-9872

BASIS FOR REIMBURSEMENT: Non reimbursable; routine.

Directorate of Community Activities

TECHNICAL AND RESEARCH LIBRARY

SUPPLIER WILL: Provide a Technical Information Center containing reference and research material. *NOTE:* This includes such items as Army publications, DoD publications, Codes of Federal Regulations, and Federal Acquisition Regulations.

Make available government documents, technical reports, DoD publications, books, periodicals, and other printed material. *NOTE:* If an office requires repeated use or access to a specific material, the technical information center can purchase the material. Once purchased, the Supplier will charge the Receiver for the cost of the material, then permanently loan the material to the Receiver.

Purchase and maintain publications that are used in the accomplishment of the Receiver's mission requirements.

RECEIVER WILL: Maintain publications in current and usable condition.

Request special purchases during normal business hours.

Comply with Supplier's regulations and directives.

POC: FRA, Military Occupational Specialty Library 384-0301
FWA, Military Occupational Specialty Library 353-7297

BASIS FOR REIMBURSEMENT: Reimbursable; special purchases unique to Receiver requirements.

Directorate of Community Activities

TRANSIENT LODGING SERVICES

SUPPLIER WILL: Provide temporary duty lodging for authorized Receiver personnel when in official travel status. Provide off-post lodging referral service if on-post lodging is not available for dates required.

Submit, if required, a DD Form 139 (Pay Adjustment Authorization) to the Receiver's Finance and Accounting Office for collection of any unpaid lodging charges. *NOTE:* This process directly charges a debtor's pay account, and only applies to military service members.

RECEIVER WILL: Call the Lodging Office at applicable military post for reservations. Ensure that Receiver personnel provide a copy of their TDY orders and a valid ID card upon arrival. Ensure that availability or non-availability of government quarters is cited on TDY orders. Make hotel accommodations if government quarters are not available. *NOTE:* Reimbursement is required on an individual cash basis for government quarters provided.

Ensure appropriate deductions are made from military pay for any unpaid debt accrued while residing on Forts Richardson or Wainwright.

Ensure residents of Forts Richardson and Wainwright are subject to applicable post policies, AR 210-50, PARO and local command policies and supplements or changes thereto.

POC: FRA, Lodging Office 384-0436
FWA, Lodging Office 353-7726

BASIS FOR REIMBURSEMENT: Reimbursable; individual cash basis for guest housing or transient accommodations.

Equal Employment Opportunity Office

EQUAL EMPLOYMENT OPPORTUNITY SERVICES

SUPPLIER WILL: Provide necessary Equal Employment Opportunity (EEO) services, to include counseling, complaint processing, technical assistance, and training to civilian personnel.

Provide notification regarding meetings of EEO Special Emphasis Program Committee sessions and other EEO sponsored meetings.

RECEIVER WILL: Promote and adhere to all EEO policies established by the Supplier.

Comply with AR 690 series, local policies and procedures, and all other applicable statutes, rules, and regulations.

POC: FRA, EEO 384-2080/2109/2034
FWA, EEO 353-9063

BASIS FOR REIMBURSEMENT: Customarily non-reimbursable (see Financial Provisions, paragraph 1).

Inspector General Office

INSPECTIONS, INVESTIGATIONS AND COMPLAINT ASSISTANCE

SUPPLIER WILL: Provide Inspector General (IG) support and assistance to Receiver personnel on issues presented to U.S. Army Alaska (USARAK) IG IAW AR 20-1.

Conduct inspections as directed by Commanding General, USARAK. Assist with conduct of investigation IAW all applicable DoD, DA and Supplier regulations, as requested.

RECEIVER WILL: Present complaints/issues to USARAK IG for processing and resolution.

Perform general inspections of the element IAW AR 20-1 and Supplier's regulations and policies. Coordinate all other investigative matters with USARAK.

POC: FRA, Assistant Inspector General 384-0323
FWA, Inspector General 353-6204

BASIS FOR REIMBURSEMENT: Non-reimbursable.

Staff Judge Advocate

ADMINISTRATIVE AND CIVIL LAW

SUPPLIER WILL: As appropriate and/or as otherwise authorized, provide advice on matters pertaining to property utilization, environmental issues, procurement and contracting, and personnel matters.

Provide services within established legal standards and guidelines which are equal to those provided to the Supplier's own personnel.

NOTE: Administrative and civil law support is only applicable to Army activities.

RECEIVER WILL: Comply with applicable regulations and directives.

POC: FRA, SJA 384-0420/0400
FWA, SJA 353-6500

BASIS FOR REIMBURSEMENT: Non-reimbursable.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS, 673D AIR BASE WING
JOINT BASE ELMENDORF-RICHARDSON, ALASKA

2 JUN 17

MEMORANDUM FOR 3 MXG/CC

FROM: 673 CES/CC

SUBJECT: Decision for Space Assignment

1. On 10 May 2017, the 673d ABW/CC and the Facility Utilization Board Voting Members approved your space request.

2. Buildings 9311 and 9309, Hangar 6, are now permanently assigned to the 3 MXG and AKARNG, for the use of C-12 admin functions, maintenance, and storage.

3. The space assignment is valid as of 10 May 2017 and will only encompass the space outlined above. Furniture that is currently in place may be utilized.

4. Process to move into new space.

a. Contact 773 CES/CEOS Customer Service via phone 552-3627 or in person at building 6326 for your specific procedures to complete this action. They will assist with keys, needed service contracts, designating a facility manager, and any future work requests for the facility.

b. Notify 673 CES/CEIAP at 384-1734 when your move is complete and you have designated a facility manager.

5. If there are any questions or concerns please contact Mr. Dan Collins at 384-3038.

JOSEPH COOK, Lt Col, USAF
Commander

cc:
773 CES/CEOS Customer Service
673 CES/CENP Asset Management/Space Allocation
673 CES/CEIAR Asset Management/Real Property

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

OFFICE OF THE ASSISTANT SECRETARY

2 Aug 12

MEMORANDUM FOR 673 CES/CC

FROM: AFRPA/DR
2261 Hughes Ave., Ste. 121
Lackland AFB, TX 78236-9821

SUBJECT: Approval and Execution of 25-year License to the State of Alaska, Joint Base Elmendorf-Richardson (JBER), AK

Your request to enter into a 25-year License with the State of Alaska, Department of Military Affairs (DMVA) for approximately nine hundred (900) acres of land located within the JBER, AK, boundaries for use as training and support of the Alaska National Guard is approved and executed. The Grantee will obtain written authorization from the Commander, JBER to allow use of JBER controlled property for other than traditional Alaska National Guard (AKNG) mission requirements at Camp Carroll, Camp Denali, and Brant Army Airfield.

The point of contact for this action is Ms. Cathy Ward, (210) 395-9480/DSN 969-9480, or by e-mail at catherine.ward@us.af.mil.

Robert M. Moore

ROBERT M. MOORE
Director

cc:
State of Alaska, DMVA
HQ PACAF/A7A
ARNG-ILI-E
673 CES/CEAOR

License No. USAF-PAF-HJZH-3-12-01
Supersedes DACA85-3-02-73

DEPARTMENT OF THE AIR FORCE

LICENSE

TO THE STATE OF ALASKA

TO USE PROPERTY LOCATED

ON

JOINT BASE ELMENDORF RICHARDSON (JBER)

ALASKA

DEPARTMENT OF THE AIR FORCE GRANT OF LICENSE TO THE STATE OF ALASKA FOR PROPERTY LOCATED ON JOINT BASE ELMENDORF RICHARDSON, AK

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License No. USAF-PAF-HJZH-3-12-01
Supersedes DACA85-3-02-73

DEPARTMENT OF THE AIR FORCE

LICENSE

TO THE STATE OF ALASKA

TO USE PROPERTY LOCATED

ON

JOINT BASE ELMENDORF RICHARDSON (JBER)

ALASKA

PREAMBLE

THE SECRETARY OF THE AIR FORCE, hereinafter referred to as "Grantor", acting under the authority of 10 U.S.C. §§ 18231, hereby grants to **The State of Alaska** a nonexclusive license to use and occupy for training and support of the Alaska National Guard certain land and improvements comprising a portion or Fort Richardson, Alaska known as Camp Carroll containing approximately 134 acres; Camp Denali, containing approximately 270.88 acres; and Bryant Army Airfield containing approximately 500 acres including Building Nos. 47430, 47431, 47433, 47434, 47435, 47436, 47438, and 48000, EXCEPTING Building Nos. 48010 (Fire Station) and 47-645 (59th Signal Battalion training building); hereinafter referred to as the premises, as shown in Exhibits A, B, and C, attached hereto and made a part hereof .

THIS LICENSE is granted subject to the following conditions:

BASIC TERMS

1. TERM

1.0. This License is granted for a term of twenty-five (25) years and shall be effective beginning on 3 Aug 2012 and shall remain in effect until 2 Aug 2037, unless sooner terminated by Grantor but revocable at will by the Secretary. The obligations of Grantee (excluding those of Condition 2), including those regarding remediation of environmental damage and removal of structures, facilities, and equipment installed by Grantee, shall remain in effect after the termination of this License unless otherwise agreed to by the Parties.

2. CONSIDERATION AND COSTS

2.0. The use, operation, and occupation of the Premises pursuant to this License shall be without cost or expense to the Department of the Air Force and shall be under the general supervision of the Commander, Joint Base Elmendorf Richardson (JBER), or his delegated representative, hereinafter referred to as "said officer", and subject to such rules and regulations as may be prescribed from time to time by said officer.

3. CORRESPONDENCE

3.0. All notices, requests, and correspondence to be given pursuant to this license shall be addressed, if to the Grantee, to the State of Alaska Department of Military and Veteran's Affairs, ATTN: AKNG-AEN-R, P.O. Box 5800, Fort Richardson, Alaska 99505-0800; and if to USAF, to Commander, JBER, Alaska ATTN: APVR-MESB, 730 Quartermaster Road #6500, Fort Richardson, Alaska 99505-6500; and if to the District Engineer, to District Engineer, Attention: Chief, Real Estate Division, U.S. Army Engineer District, Alaska, P.O. Box 6898, Elmendorf AFB, Alaska 99506-6898; or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when enclosed in a properly

sealed envelope addressed as aforesaid, and deposited, postage prepaid, in a post office regularly maintained by the United States Postal Service.

4. ACCESS

4.1. The use and occupancy of the premises shall be without cost to the regular establishment of the military Departments of the Department of Defense and shall be under the general supervision of the commander, Joint Base Elmendorf Richardson (JBER), or his delegated representative, hereinafter referred to as "said officer", and subject to such rules and regulations as may be prescribed from time to time by said officer.

4.2. In accepting the rights, privileges, and obligations established hereunder, Grantee recognizes that the Installation serves the national defense and that Grantor will not permit the Grantee to interfere with the Installation's military mission. This Installation is an operating military installation which is closed to the public and is subject to the provisions of the Internal Security Act of 1950, 50 U.S.C. § 797, and of 18 U.S.C. § 1382. Access to the Installation is subject to the control of its commanding officer and is governed by such regulations and orders as have been lawfully promulgated or approved by the Secretary of Defense or by any designated military commander. Any access granted to Grantee, its officers, employees, contractors of any tier, agents, and invitees is subject to such regulations and orders. This License is subject to all regulations and orders currently promulgated or which may be promulgated by lawful authority as well as all other conditions contained in this License. Violation of any such regulations, orders, or conditions may result in the termination of this License. Such regulations and orders may, by way of example and not by way of limitation, include restrictions on who may enter, how many may enter at any one time, when they may enter, and what areas of the Installation they may visit, as well as requirements for background investigations, including those for security clearances, of those entering. Grantee is responsible for the actions of its officers, employees, contractors of any tier, agents, and invitees while on the Installation and acting under this License.

4.3. In the event all or any portion of the Premises shall be needed by the United States or in the event the presence of Grantee's property shall be considered detrimental to

governmental activities, Grantee shall, from time-to-time and at Grantee's expense, upon notice to do so, and as often as so notified, remove or relocate its property to such other location or locations on the Premises (or substitute land of Grantor which shall then become part of the Premises) as may be designated by said officer, and in the event Grantee's property shall not be removed or relocated within thirty (30) days after any aforesaid notice, the United States may cause the same to be done at the expense of the Grantee.

5. TERMINATION

5.0. This License may be terminated at will by the Grantor and such termination shall not create any liability on the part of Grantor for Grantee's costs, anticipated profits or fees, and costs of construction, installation, maintenance, upgrade, and removal of facilities, or any other costs, profits, or fees, and any such costs and anticipated profits or fees will not be recoverable from Grantor. This license may also be terminated by the Grantee at any time by giving the Grantor at lease thirty (30) days' notice in writing.

6. RESERVED

6.0. Reserved.

OPERATION OF THE PREMISES

7. CONDITION OF PREMISES

7.0. Grantee has inspected and knows the condition of the Premises. Subject to Condition 15, the Premises are granted in an "as is, where is" condition without any warranty, representation, or obligation on the part of Grantor to make any alterations, repairs, improvements, or corrections to defects whether patent or latent. At such times and for such part of the Premises as said officer may determine, the Parties will sign a Physical Condition Report to reflect the condition of the Premises prior to the Premises being disturbed by the activities of Grantee. Such Report shall be used to indicate the condition of the Premises prior to their being disturbed in order to compare them with the Premises subsequent to the activities of Grantee to ensure Grantee has returned the Premises to the condition required by this License.

8. PROTECTION OF PREMISES

8.0. As regards the Grantee's use of the Premises and its property on the Premises, Grantee shall, at all times, protect, repair, and maintain the Premises in good order and condition at its own expense and without cost or expense to Grantor. Grantee shall exercise due diligence in protecting the Premises against damage or destruction by fire, vandalism, theft, weather, or other causes related to Grantee's activities. Any property on the Premises damaged or destroyed by Grantee incident to the exercise of the rights and privileges herein granted shall be promptly repaired or replaced by Grantee to the satisfaction of said officer.

9. AIR FORCE PROPERTY

9.0. Any interference with the use of or damage to property under control of the Department of the Air Force, incident to the exercise of the rights and privileges herein granted shall be promptly corrected by Grantee to the satisfaction of said officer. If Grantee fails to promptly repair or replace any such property after being notified to do so by said officer, said officer may repair or replace such property and Grantee shall be liable for the costs of such repair or replacement.

10. RESTORATION OF PREMISES

10.0. On or before (or, in the case of abandonment, after) the date of expiration of this License or its termination by the Grantor, Grantee shall vacate the Premises, remove its property therefrom, (except those permanent additions, alterations, and improvements which have become property of the Government under provision of the condition of the condition on IMPROVEMENTS AND ALTERATIONS) and restore the Premises to their original condition without expense to the United States. Such restoration shall include, if applicable, removal of contamination caused by Grantee.

11. ALTERATION OF PREMISES

11.0. No additions to or alterations of the Premises shall be made without the prior written approval of said officer.

12. Costs of Services

12.0. The Grantee shall pay the cost as determined by the officer having immediate jurisdiction over the premises, of producing and/or supplying any utilities or other services furnished by the Government or through Government-owned facilities for the use of the Grantee, including the Grantees proportionate share of the cost of operation and maintenance of the Government-owned facilities by which such utilities or services are produced and supplied. The Government shall be under no obligation to furnish utilities or services. Payment shall be made in the manner prescribed by the officer having such jurisdiction.

Environment

13. Environmental Compliance

13.1. In its activities under this License, Grantee shall comply with all applicable environmental requirements, and in particular those requirements concerning the protection and enhancement of environmental quality, pollution control and abatement, safe drinking water, and solid and hazardous waste. Responsibility for compliance with such requirements rests exclusively with Grantee, including liability for any fines, penalties, or other similar enforcement costs.

13.2. Within the limits of their respective legal powers, the parties to this license shall protect the premises against pollution of its air, ground, and water. The Grantee shall comply with any laws, regulations, conditions, or instructions affecting the activity hereby authorized if and when issued by the Environmental Protection Agency, or any Federal, State, interstate or local governmental agency having jurisdiction to abate or prevent pollution. The disposal of any toxic or hazardous material within the premises is specifically prohibited. Such regulations, condition, or instructions in effect or prescribed by said Environmental Protection Agency, or Federal, state, interstate or local governmental agency are hereby made a condition of this license. The Grantee shall not discharge waste or effluent from the premises in such a manner that the discharge will contaminate streams or other bodies of water or otherwise become a public nuisance.

13.3. The Grantee will use all reasonable means available to protect the environment and natural resources, and where damage nonetheless occurs from the Grantee's activities, the Grantee shall be liable to restore the damaged resources.

13.4. The Grantee must obtain approval in writing from said officer before any pesticides or herbicides are applied to the premises.

13.5. Fort Richardson (FRA) has been identified on the U.S. Environmental Protection Agency's National Priorities List as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site or "Superfund" site as enacted by Title 42, United States Code (U.S.C.), Sections l90l et seq., and further requirements of Title 40, Code of Federal Regulations (CFR), Part 300 et seq. All contiguous and non-contiguous acreage are included in this designation and are being remediated under the DOD Defense Environmental Restoration Program (DERP). In accordance with CERCLA, all known source areas of contamination on these installations have been or are currently under investigation to determine the type and extent of contamination.

13.6. The acreage addressed in this document contains numerous source areas of known contamination; however, due to the nature and type of training conducted, there is a potential for unidentified contamination to exist within these identified boundaries. All training range areas have a potential for contamination by unexploded ordnance (UXO).

13.7. Prior to 1986, it was not uncommon for units to leave damaged equipment or empty and partially full drums of petroleum based products; i.e., fuels and lubricants; or chlorinated compounds; i.e., solvents, pesticides, and clearing compounds in the training areas; and damaged equipment was seldom retrieved from the field.

13.8. For this reason, all work involving the modification of facilities or excavation of any kind shall be coordinated via the JBER "work clearance permit" a minimum of five (5)

working days prior to mobilization to the site. Coordination requirements are outlined on the permit.

13.9. In addition, if soil or groundwater must be removed from the work site, it shall be containerized in United Nations approved Performance Oriented Packaging (UN/POP) containers as specified in 49 CFR 178.500, Specifications and Maintenance of Packaging, labeled as non-regulated waste, sampled and analyzed for potential contamination, and moved to an approved storage area. The area shall be approved by the local Range Control and Public Works Environmental Office prior to usage. **NOTE: Soil and groundwater shall not be removed from any part of the installation without written authorization from a duly appointed JBER representative.**

13.10. If contaminated soils, drums, UXO, or unusual debris are found on or around the work site, the agency shall stop work immediately and notify the local Range Control Officer and Public Works Environmental Office. Work at this site will be suspended until the area is cleared by Range Control. For this reason, all Grantees shall maintain communication with Range Control via two-way radios or portable telecommunication equipment while working in the training areas. Purchase or rental of such equipment shall be the responsibility of the contactor conducting the work. The Agency shall coordinate all phases of construction with the Range Control Officer.

14. RESERVED

14.0. Reserved

15. SAFETY AND HAZARDOUS WASTE DISPOSAL

15.1. Grantee, at its expense, shall comply with all applicable laws on occupational safety and health, the handling and storage of hazardous materials, and the proper handling and disposal of hazardous wastes and hazardous substances generated by its activities. Responsibility for the costs of proper handling and disposal of hazardous wastes and hazardous

substances discovered on the Premises is governed by applicable law. The terms hazardous materials, hazardous wastes, and hazardous substances are as defined in the Federal Water Pollution Control Act, the CERCLA, the Solid Waste Disposal Act, the Clean Air Act, and the Toxic Substances Control Act, and their implementing regulations, as they have been or may be amended from time to time.

15.2. Any UXO, as that term is defined in Title 10, United States Code, discovered on the Premises by Grantee is the responsibility of Grantor and will not be disturbed by Grantee but, upon discovery, shall be immediately reported to said officer.

16. Historic Preservation

16.0. Grantee shall not remove or disturb, or cause or permit to be removed or disturbed, any historical, archaeological, architectural, or other cultural artifacts, relics, vestiges, remains, or objects of antiquity. In the event such items are discovered on the Premises, Grantee shall cease its activities at the site and immediately notify said officer and protect the site and the material from further disturbance until said officer gives clearance to proceed. Any costs resulting from this delay shall be the responsibility of Grantee.

17. Reserved

17.0. Reserved.

18. Reserved

18.0. Reserved.

19. Reserved

19.0. Reserved.

CHANGES IN OWNERSHIP OR CONTROL

20. TRANSFER, ASSIGNMENT, LEASING, OR DISPOSAL

20.1. Grantee shall not transfer, permit, license, assign, lease, or dispose of in any way, including, but not limited to, voluntary or involuntary sale, merger, consolidation, receivership, or other means (all referred to in this Condition 20 as "transfer"), this License or any interest therein or any property on the Premises, or otherwise create any interest therein.

20.2. The Grantee shall not transfer or assign this license or any interest in the premises. The Grantee is not authorized to enter into use agreements for any property under the control of the Commander, JBER.

20.3. The Grantee will obtain written authorization from the Commander, JBER, to allow use of JBER controlled property for other than traditional Alaska National Guard (AKNG) mission requirements at Camp Carroll, Camp Denali, and Brant Army Airfield. Grantee shall submit all requests for non AKNG use in writing to the Commander, JBER, for consideration.

21. LIENS AND MORTGAGES

21.0. Grantee shall not engage in any financing or other transaction creating any mortgage upon the Premises, place or suffer to be placed upon the Premises any lien or other encumbrance, or suffer any levy or attachment to be made on Grantee's interest in the Premises under this License. On the date of the execution or filing of record of any such mortgage, encumbrance, or lien, regardless of whether or when it is foreclosed or otherwise enforced, this License shall terminate without further action by Grantor.

22. OTHER GRANTS OF ACCESS

22.0. This License is subject to all outstanding easements, rights-of-way, leases, permits, licenses, and uses for any purpose with respect to the Premises. Grantor shall have the right to grant additional easements, rights-of-way, leases, permits, and licenses, and make additional uses with respect to the Premises without regard to this License.

23. RESERVED

23.0. Reserved.

24. REPORTING

24.0. This License is not subject to Title 10 U.S.C. § 2662.

GENERAL PROVISIONS

25. COMPLIANCE WITH LAWS

25.0. Grantee shall comply with all applicable Federal, state, interstate, and local laws, regulations, and requirements. This may include the need for Grantee to obtain permits to engage in its activity. Grantor is not responsible for obtaining permits for Grantee nor for allowing Grantee to use permits obtained by Grantor.

26. AVAILABILITY OF FUNDS

26.0. The obligations of Grantor under this License shall be subject to the availability of appropriated funds. No appropriated funds are obligated by this License.

27. AMENDMENTS

27.0. This License may only be modified or amended by the written agreement of the Parties, duly signed by their authorized representatives.

28. LIABILITY

28.0. Grantor shall not be responsible for damage to property or injuries to persons which may arise from, or be attributable or incident to, the condition or state of repair of the Premises, due to its use and occupation by Grantee. Grantee agrees that it assumes all risks of loss or damage to property and injury or death to persons, whether to its officers, employees, contractors of any tier, agents, invitees, or others, by reason of or incident to Grantee's use of

the Premises, and its activities conducted under this License. Grantee shall, at its expense, pay any settlements of or judgments on claims arising out of its use of the Premises.

29. INSURANCE

29.0. During the entire period this License shall be in effect, the Grantee, at no expense to the Grantor, shall carry and maintain and require contractors and private organizations on the property to procure and maintain adequate insurance.

30. ENTIRE AGREEMENT

30.0. It is expressly understood and agreed that this written instrument embodies the entire agreement between the Parties regarding the use of the Premises by the Grantee, and there are no understandings or agreements, verbal or otherwise, between the Parties except as expressly set forth herein.

31. CONDITION AND PARAGRAPH HEADINGS

31.0. The headings contained in this License, its Attachments, and Exhibits are to facilitate reference only and shall not in any way affect the construction or interpretation hereof.

IN WITNESS whereof, I have hereunto set my hand by authority of the Secretary of the Air Force, this 3rd day of August, 2012.

THE UNITED STATES OF AMERICA,
by the Secretary of the Air Force

BY: Robert M. Moore
ROBERT M. MOORE
Director, Air Force Real Property Agency

This License is also executed by Grantee this 4th day of August, 2012.

STATE OF ALASKA
DEPARTMENT OF MILITARY
AND VETERANS AFFAIRS

Thomas H. Katkus

MG THOMAS H. KATKUS
The Adjutant General, Commissioner of
Alaska Department of Veteran Affairs

EXHIBITS

EXHIBIT "A"----------Map of Camp Denali
EXHIBIT "B"----------Map of Bryant Field
EXHIBIT "C"----------Map of Camp Carroll
EXHIBIT "D"----------AF Form 813

FIRST AMENDMENT
TO
DEPARTMENT OF THE AIR FORCE LICENSE
TO THE STATE OF ALASKA
TO USE PROPERTY LOCATED
ON
JOINT BASE ELMENDORF RICHARDSON (JBER)
ALASKA

THIS FIRST AMENDMENT TO THE DEPARTMENT OF THE AIR FORCE LICENSE ("**Amendment**") is made as of 6 August 2012, between UNITED STATES OF AMERICA, ACTING BY AND THROUGH THE SECRETARY OF THE AIR FORCE ("Grantor") and THE STATE OF ALASKA, ACTING BY AND THROUGH ITS DEPARTMENT OF MILITARY AND VETERAN'S AFFAIRS ("**Grantee**").

RECITALS

WHEREAS, the Grantor granted to the Grantee, a license, License No. USAF-PAF-HJZH-3-12-01 (as amended, supplemented or otherwise modified, the "**License**") to use and occupy for training and support of the Alaska National Guard, certain land and improvements, comprising a portion of Joint Base Elmendorf Richardson, Alaska ("**JBER**") known as Camp Carroll, containing approximately 134 acres; Camp Denali, containing approximately 270.88 acres; and Bryant Army Airfield containing approximately 500 acres including Building Nos. 47430, 47431, 47433, 47435, 47436, and 48000, EXCEPTING Building Nos. 48010 (Fire Station) and 47-645 (59th Signal Battalion training building); and

WHEREAS, it has been determined to be in the best interest of all parties to amend said License;

NOW THEREFORE, the License is hereby amended in the following particulars, but in no others:

1. The entirety of the text of Paragraphs 20.1 and 20.2 are deleted.

2. The following text shall be inserted into Paragraph 20:

"20.1 The Grantee shall not transfer, permit, license, or assign this License or any interest therein or any property on the Premises, or otherwise create any interest therein; *provided however*, that the Grantor may provide written consent for the Grantee to allow another federal or State of Alaska agency to use and/or occupy portions of the Premises subject to the following terms and conditions.

"20.1.1 Any request by Grantee to allow another federal or State of Alaska agency to use and/or occupy portions of the Premises shall be submitted to the JBER Commander in writing and include: (i) a written certification by the Grantee of its satisfaction of the coordination and approval requirements of 10 U.S.C. §18235 (such coordination and approval shall be the sole responsibility of the Grantee and any proposed occupant), (ii) a written certification by the Grantee that any proposed arrangement to allow another federal or State of Alaska agency the use and/or occupancy of the Premises has been determined to be compliant with applicable federal, state and local law and policy, including but not limited to OMB Circular A-11 (collectively, "**Law and Policy**"), and (iii) full details of the proposed terms under which another federal or state entity will use and/or occupy portions of the Premises. The JBER Commander shall have thirty (30) days, or such longer period as may be reasonably necessary, in which to review and provide Grantee a written decision.

"20.1.2 The parties acknowledge and agree that the Grantee and any federal or State of Alaska agency permitted the use and/or occupancy of portions of the Premises by the Grantor pursuant to this Paragraph 20 shall be solely responsible for compliance with Law and Policy and shall, to the extent permitted by law, hold the Grantor harmless from any liability arising out of, claimed on account of or predicated in any way upon a failure to comply with Law and Policy."

3. The License, as modified by this Amendment, shall continue in full force and effect.

THIS AMENDMENT is not subject to Title 10 United States Code § 2662, as amended.

IN WITNESS WHEREOF, the Grantor and Grantee have caused this Amendment to be executed by their duly authorized representatives this 6TH day of AUGUST, 2012.

[Signatures on Following Pages]

THE UNITED STATES OF AMERICA
By the Secretary of the Air Force

BY: Robert M. Moore
ROBERT M. MOORE
Director, Air Force Real Property Agency

STATE OF ALASKA
DEPARTMENT OF MILITARY
AND VETERANS AFFAIRS

Thomas H Katkus

MG THOMAS H. KATKUS
The Adjutant General, Commissioner of Alaska
Department of Veterans Affairs

6Aug12

Fort Richardson

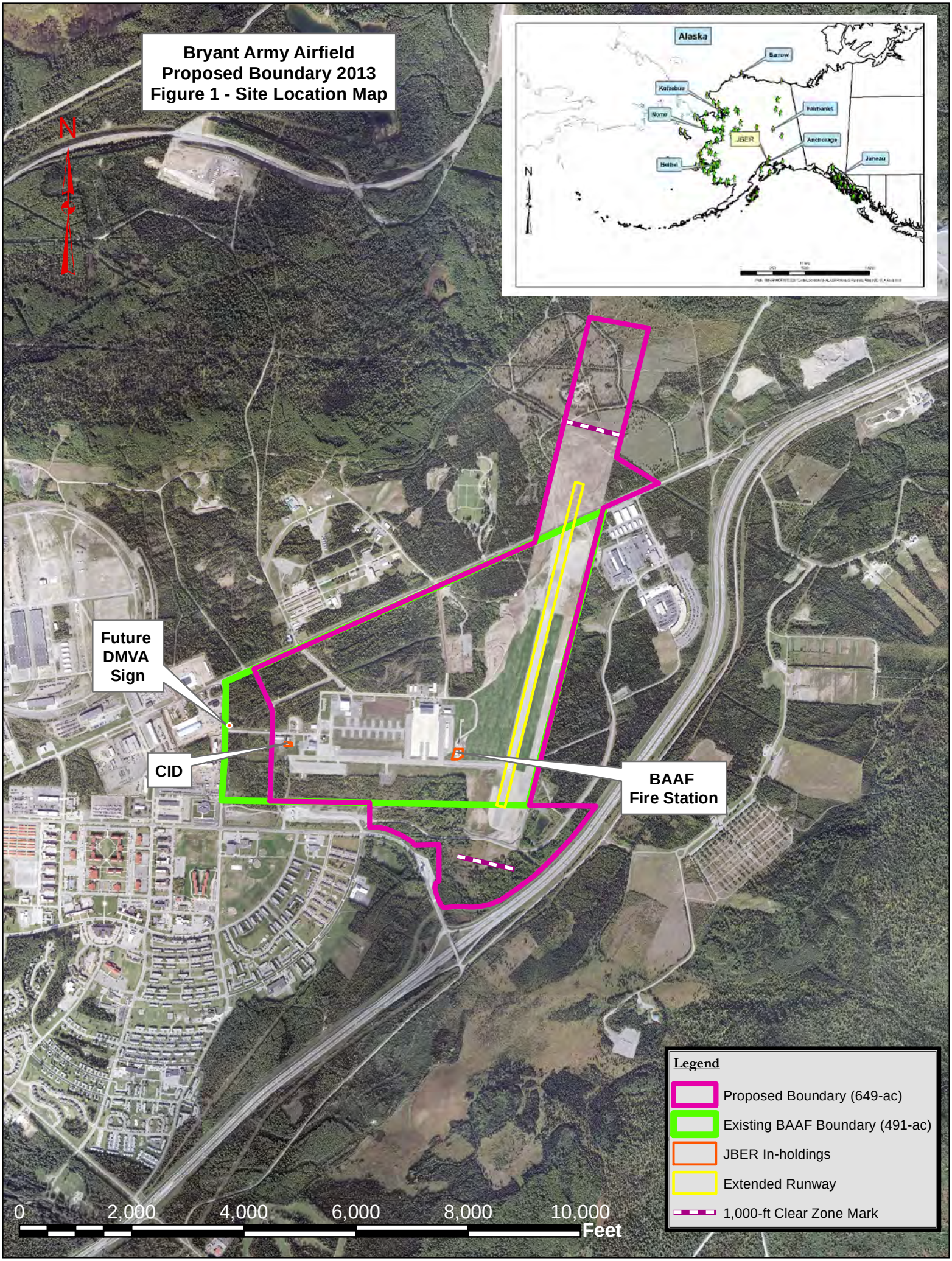
Well #1 bldg 35610

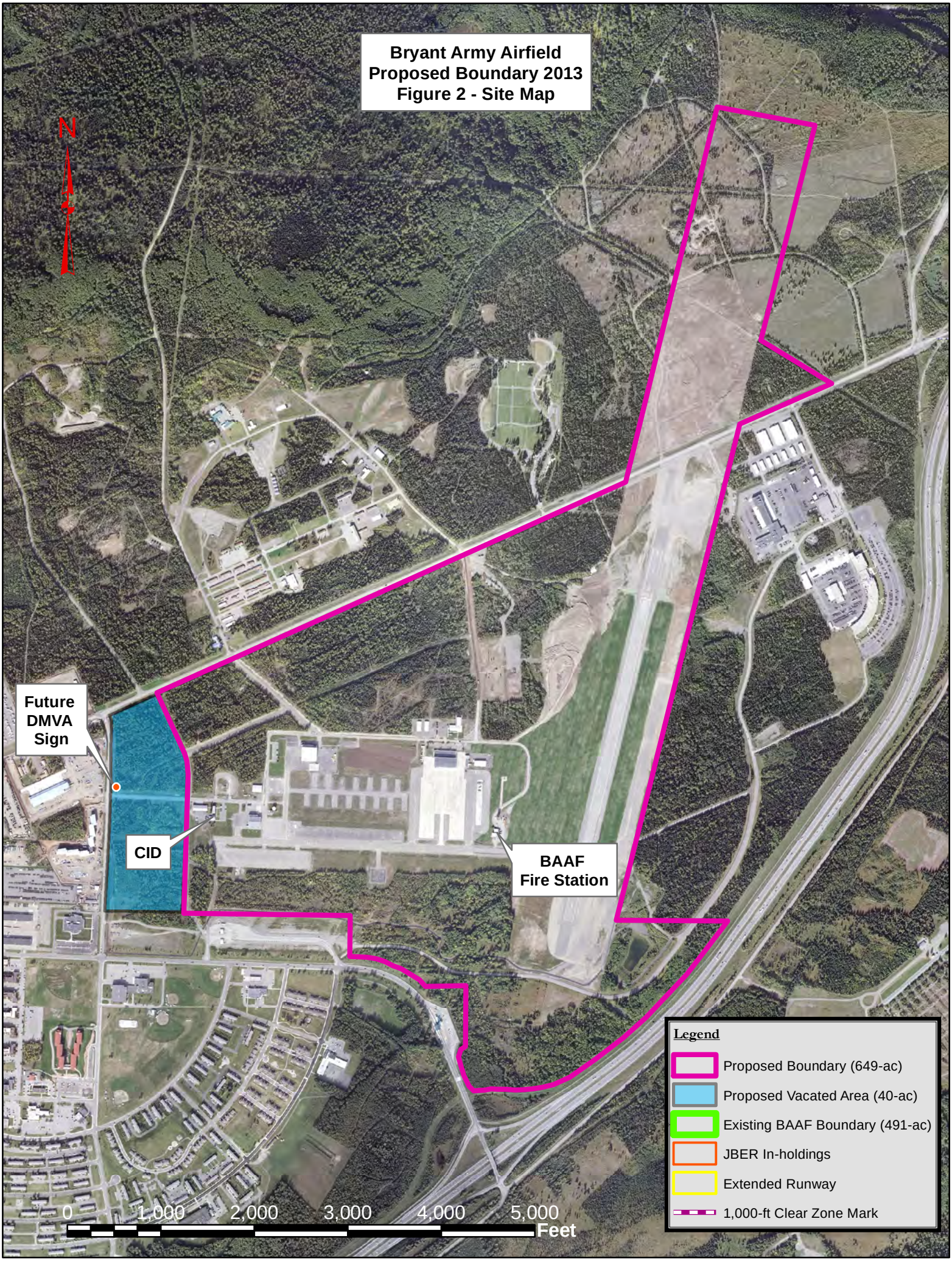
Well #2 bldg 35620

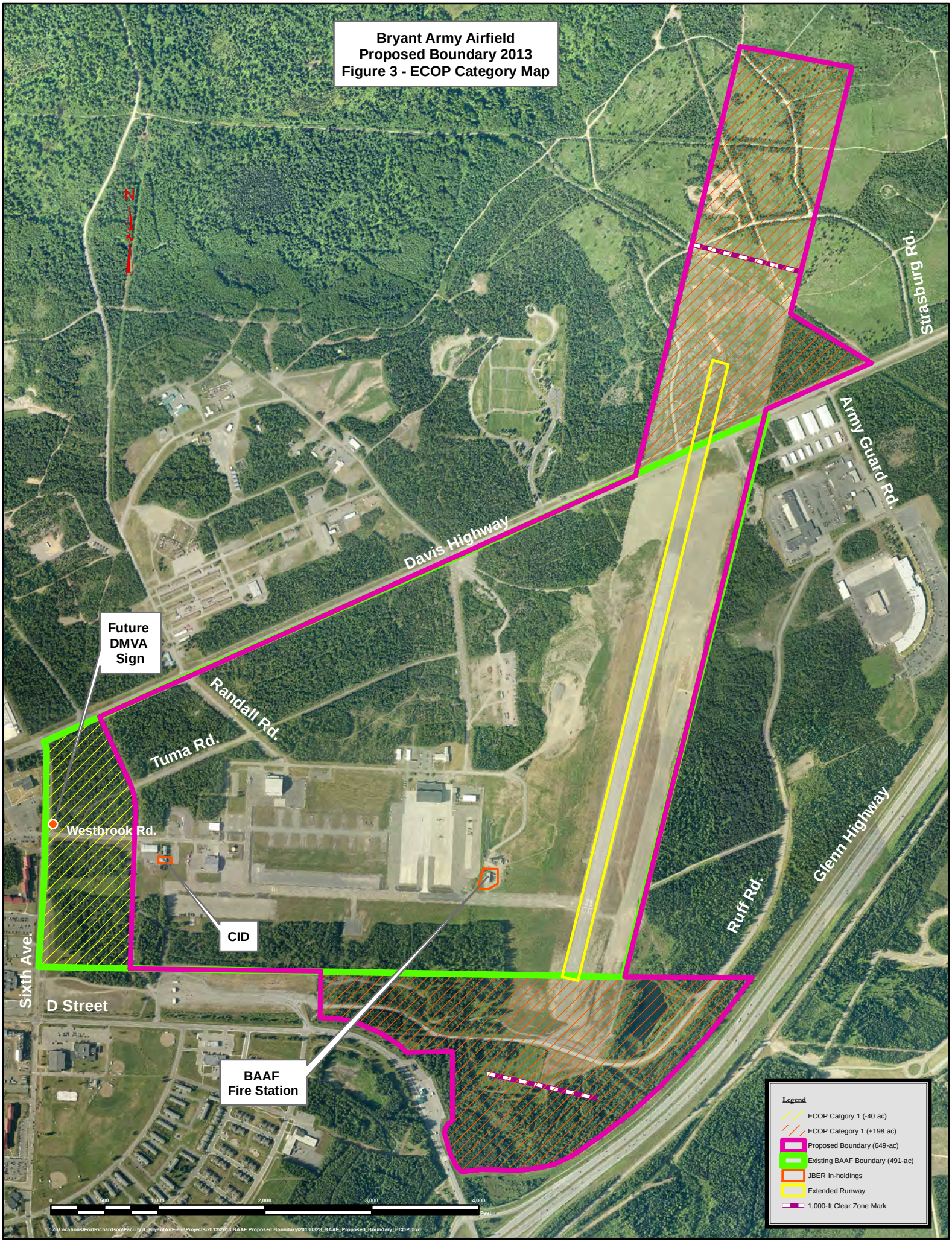
Well #3 bldg 35630

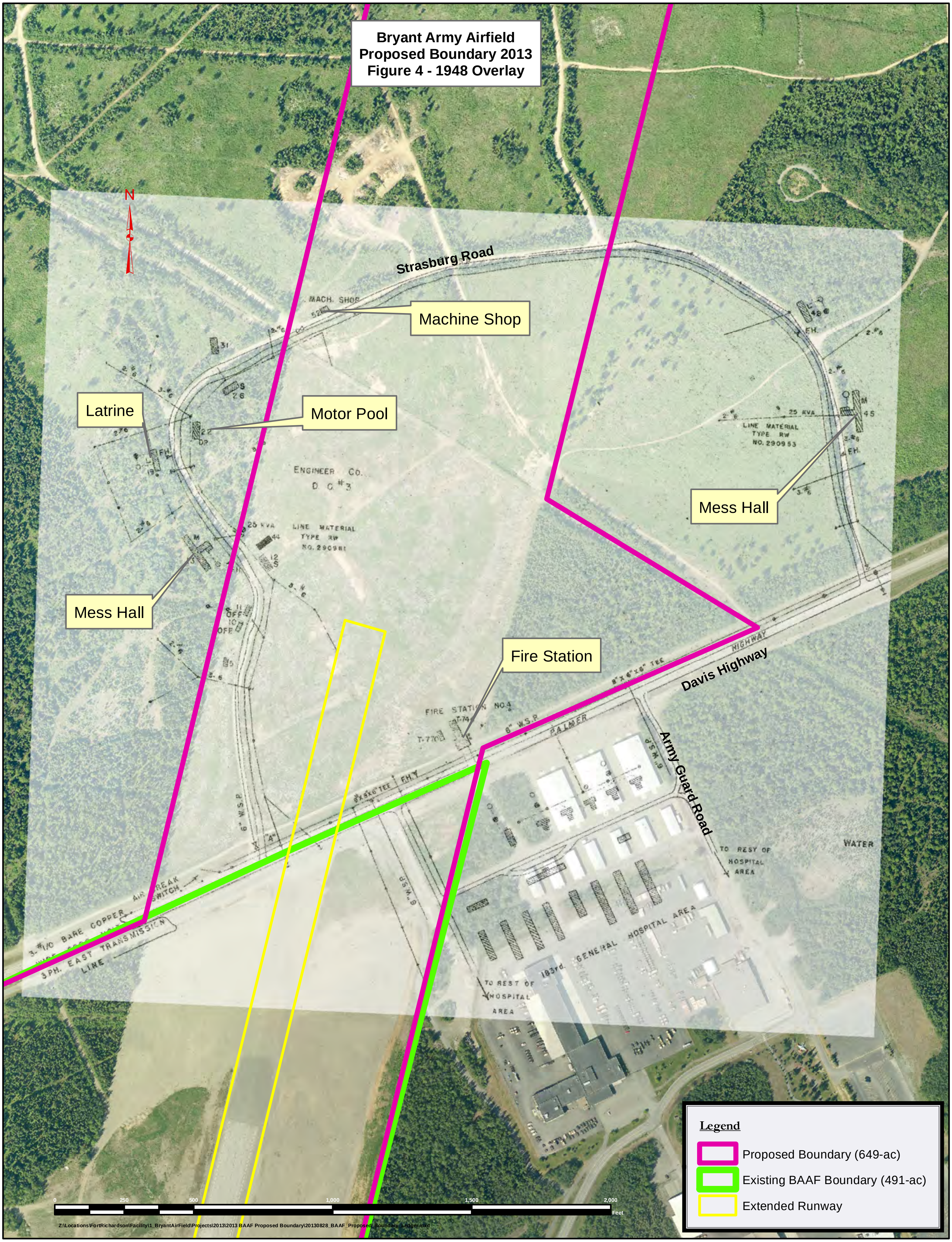
APPENDIX A

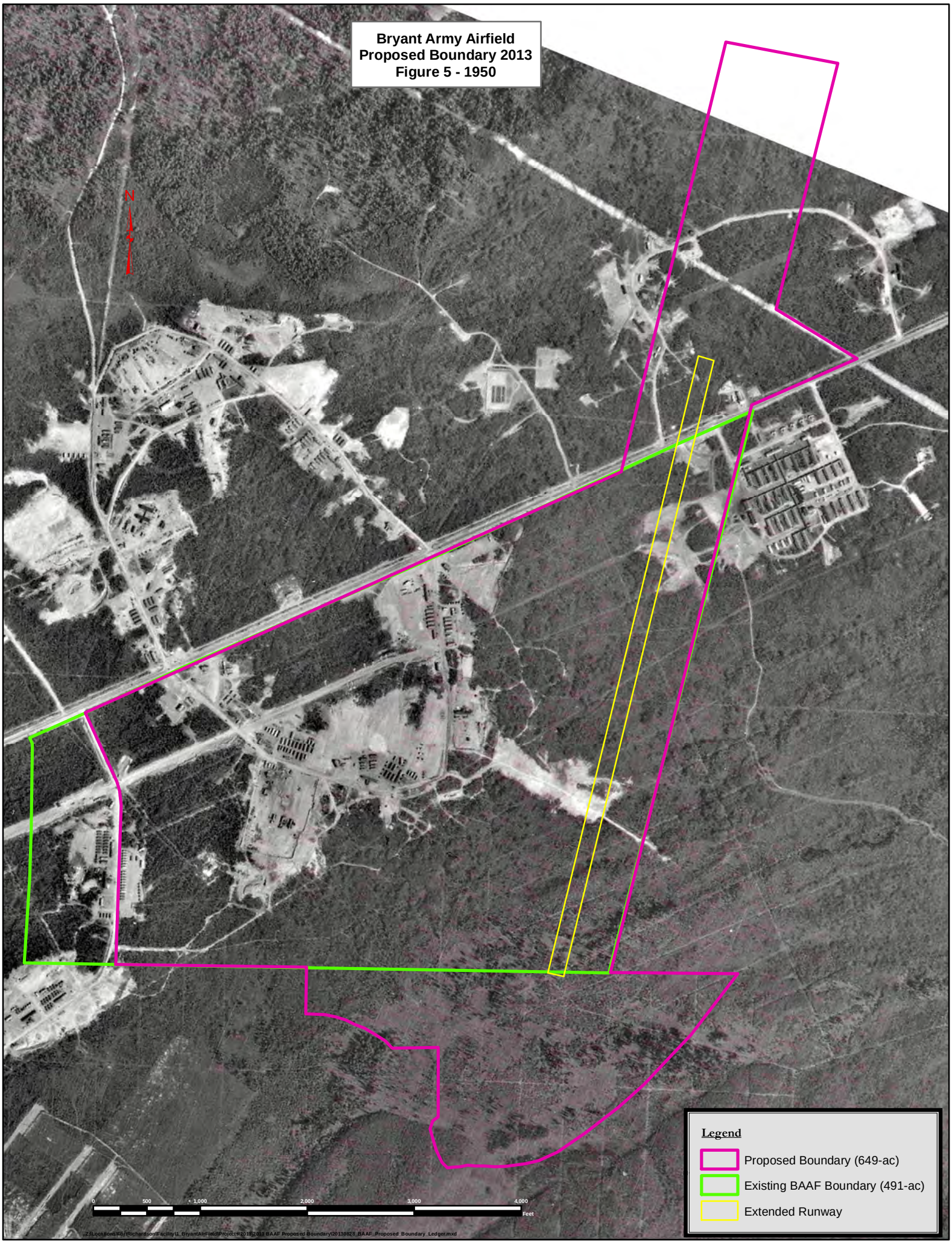
Figures 1-9


Bryant Army Airfield
Proposed Boundary 2013
Figure 1 - Site Location Map
N
Alaska
Barrow
Kotzebue
Nome
Bethel
JBER
Fairbanks
Anchorage
Juneau
N
Future
DMVA
Sign
CID
BAAF
Fire Station
Legend
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
JBER In-holdings
Extended Runway
1,000-ft Clear Zone Mark
0
2,000
4,000
6,000
8,000
10,000
Feet


Bryant Army Airfield
Proposed Boundary 2013
Figure 2 - Site Map
N
Future DMVA Sign
CID
BAAF Fire Station
Legend
Proposed Boundary (649-ac)
Proposed Vacated Area (40-ac)
Existing BAAF Boundary (491-ac)
JBER In-holdings
Extended Runway
1,000-ft Clear Zone Mark
0
1,000
2,000
3,000
4,000
5,000
Feet


Bryant Army Airfield
Proposed Boundary 2013
Figure 3 - ECOP Category Map
N
Strasburg Rd.
Army Guard Rd.
Davis Highway
Future DMVA Sign
Randall Rd.
Tuma Rd.
Westbrook Rd.
CID
Sixth Ave.
D Street
BAAF Fire Station
Ruff Rd.
Glenn Highway
Legend
ECOP Catgory 1 (-40 ac)
ECOP Category 1 (+198 ac)
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
JBER In-holdings
Extended Runway
1,000-ft Clear Zone Mark
0
500
1,000
2,000
3,000
4,000
Feet
Z:\Locations\FortRichardson\Facility\a_BryantAirField\Projects\2013\2013 BAAF Proposed Boundary\20130828_BAAF_Proposed_Boundary_ECOP.mxd


Bryant Army Airfield
Proposed Boundary 2013
Figure 4 - 1948 Overlay
N
Strasburg Road
Machine Shop
Latrine
Motor Pool
Mess Hall
Mess Hall
Fire Station
Davis Highway
Army Guard Road
MACH. SHOP
ENGINEER CO.
D. C. #3
LINE MATERIAL
TYPE RW
NO. 290981
LINE MATERIAL
TYPE RW
NO. 290953
25 KVA
FIRE STATION NO.4
HIGHWAY
PALMER
TO REST OF HOSPITAL AREA
183rd. GENERAL HOSPITAL AREA
WATER
3PH. EAST TRANSMISSION LINE
Legend
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
Extended Runway
0
250
500
1,000
1,500
2,000
Feet


Bryant Army Airfield
Proposed Boundary 2013
Figure 5 - 1950
N
Legend
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
Extended Runway
0
500
1,000
2,000
3,000
4,000
Feet
Z:\LocalBoss\Fort\Richardson\Facility\1_BryantAirField\Project\2013\2013 BAAF Proposed Boundary\20130828_BAAF_Proposed_Boundary_Ledger.mxd


Bryant Army Airfield
Proposed Boundary 2013
Figure 6 - 1964 & 1965 Mosaic
N
Legend
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
Extended Runway
0
500
1,000
2,000
3,000
4,000
Feet
Z:\Locations\FortRichardson\Facility\1_BryantAirField\Projects\2013\2013 BAAF Proposed Boundary\20130828_BAAF_Proposed_Boundary_Ledger.mxd

Bryant Army Airfield
Proposed Boundary 2013
Figure 7 - 1985

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Bryant Army Airfield
Proposed Boundary 2013
Figure 8 - 1995

Legend

- Proposed Boundary (649-ac)
- Existing BAAF Boundary (491-ac)
- Extended Runway

0 500 1,000 2,000 3,000 4,000
Feet

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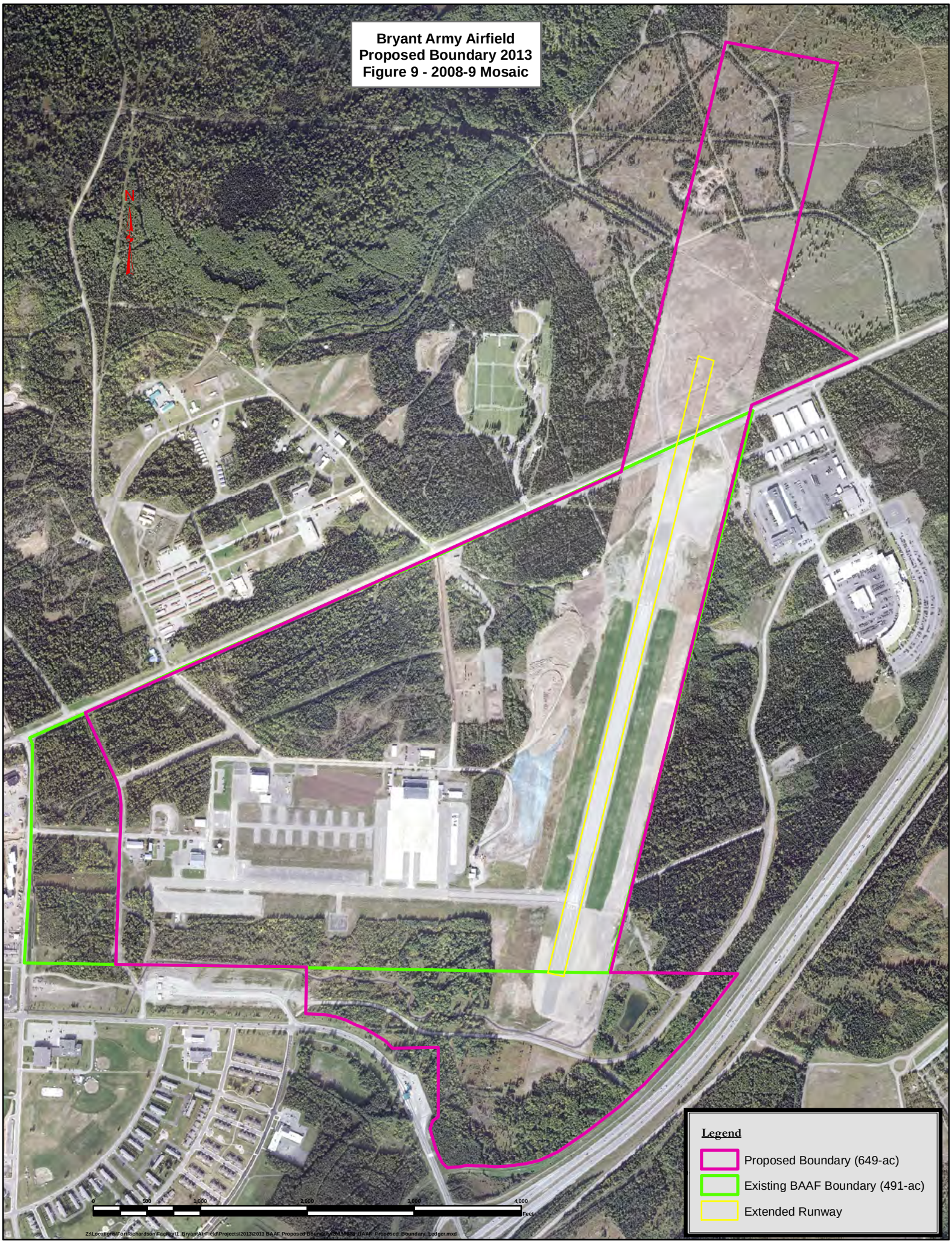
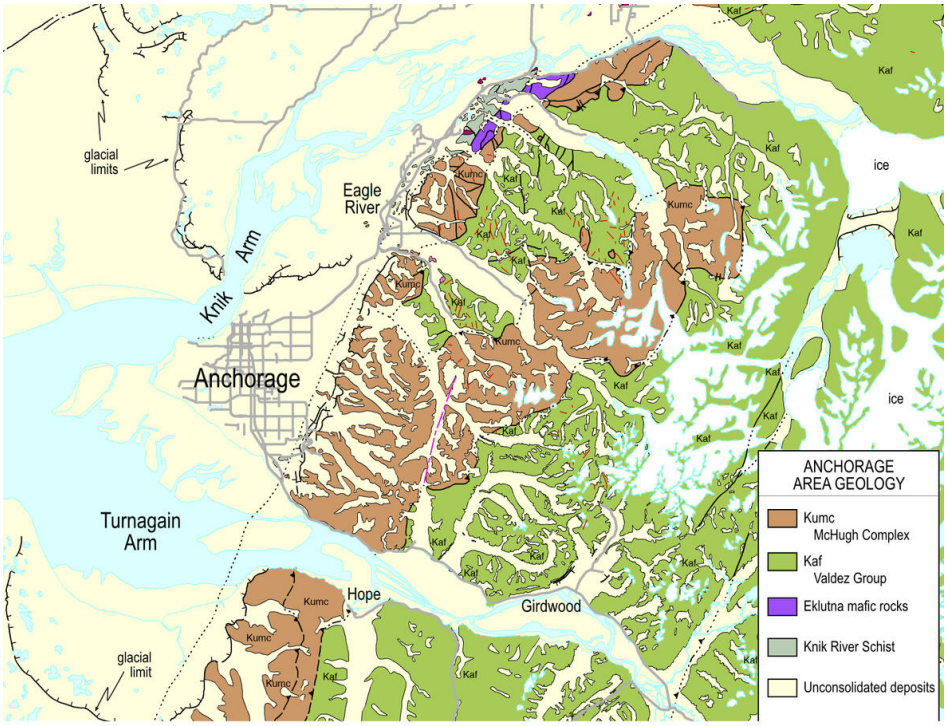

Bryant Army Airfield
Proposed Boundary 2013
Figure 9 - 2008-9 Mosaic
N
Legend
Proposed Boundary (649-ac)
Existing BAAF Boundary (491-ac)
Extended Runway
0
500
1,000
2,000
3,000
4,000
Feet
Z:\Locations\FortRichardson\Facility\1_BryantAirField\Projects\2013\2013 BAAF Proposed Boundary\MXDs\BAAF_Proposed_Boundary_Ledger.mxd

USGS
science for a changing world

Detailed Geologic Map View of Anchorage, AK



(Public domain.)

Detailed Description

This map detail, of the Anchorage area, shows the city spread out on a plain of loose glacial deposits shown in yellow, and the bedrock making up the hillsides of Anchorage shown in green and brown. The rocks shown in green, called the Valdez Group, are sedimentary rocks formed in a trench 65 to 75 million years ago from thousands of undersea debris flows similar to the modern Aleutian trench where oceanic crust dives under continental crust (a subduction zone). The rocks shown in brown on the map are a chaotic mix of rock types called the McHugh Complex that were also formed about the same time, adjacent to this ancient subduction zone. Some time after deposition of the Valdez Group, hot fluids formed gold-bearing quartz veins; the veins were mined starting in the 1890's. The rocks were pushed up, and attached (accreted) to North America through plate tectonic forces in the past 65 million years. The dotted line passing through the east side of Anchorage is the approximate trace of the Border Ranges Fault system, the boundary between the accreted rocks and the rest of the continent.

Details

Image Dimensions: 1599 x 1247

Photographer

USGS

Explore More Science

geologic maps

Surficial Geology of Anchorage and Vicinity Alaska

GEOLOGICAL SURVEY BULLETIN 1093

Surficial Geology of Anchorage and Vicinity Alaska

By ROBERT D. MILLER *and* ERNEST DOBROVOLNY

GEOLOGICAL SURVEY BULLETIN 1093

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1959

UNITED STATES DEPARTMENT OF THE INTERIOR

FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

The U.S. Geological Survey Library has cataloged this publication as follows:

Miller, Robert David, 1922-
Surficial geology of Anchorage and vicinity, Alaska, by Robert D. Miller and Ernest Dobrovolny. Washington, U.S. Govt. Print. Off., 1959.

v, 129 p. illus., map, diagrs., tables. 24 cm. (U.S. Geological Survey. Bulletin 1093)
Part of illustrative matter folded in pocket.
Bibliography: p. 122–125.

1. Geology—Alaska—Anchorage area. I. Dobrovolny, Ernest, 1912– joint author. II. Title. (Series)

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C.

CONTENTS

ILLUSTRATIONS

[Plates 1–3, 5, 6, and 9 are in pocket]

TABLES

SURFICIAL GEOLOGY OF ANCHORAGE AND VICINITY, ALASKA

By ROBERT D. MILLER and ERNEST DOBROVOLNY

ABSTRACT

Anchorage and vicinity cover parts of three quadrangles, the Anchorage *A*–8, Anchorage *B*–8, and Tyonek *A*–1. Knik Arm bounds the area on the northwest, Turnagain Arm bounds the area on the south, and the Chugach Mountains bound the area on the east.

The highest point in the area is 4,301 feet above mean sea level, just east of McHugh Peak in the southeastern part of the area. The altitude of the lowlands south of Anchorage ranges between 100 and 150 feet. Two areas of higher altitudes are the highland between Point Campbell and Point Woronzof where the altitude ranges between 150 and 300 feet, and the Elmendorf Moraine north of Anchorage where the altitude averages between 250 and 300 feet.

Argillite, graywacke, and chert, as well as altered acidic and basic igneous rocks, constitute the greater part of the pre-Cretaceous(?) rocks in the Anchorage area. Metamorphosed limestone crops out in several small areas along Turnagain Arm.

Surficial deposits in the Anchorage area are divisible into four main groups—pre-Wisconsin, Wisconsin, Pleistocene or Recent, and Recent. They represent deposits of at least 3 of the 5 glaciers that invaded the Anchorage area, as well as lacustrine and alluvial deposits consequent with or subsequent to the advances.

The oldest pre-Wisconsin deposits consist of till, outwash, and silt deposited by the Eklutna glacier, and are exposed only in one area north of the Eagle River Flats along the bluff of Knik Arm.

Sorted and unsorted drift of the youngest pre-Wisconsin glaciation, the Knik glaciation, form deposits of advance outwash, lateral moraine, ground moraine, pitted outwash, and glaciofluvial and ice-contact deposits. An extensive blue-gray clay of lacustrine or estuarine origin, herein named the Bootlegger Cove clay, and delta and prodelta deposits of silt, sand, and gravel constitute ponded fluvial-lacustrine deposits. The Bootlegger Cove clay is extensive along Knik Arm where it separates the Knik from the overlying Naptowne glacial deposits. Alluvial deposits form the floor of abandoned melt-water channels in the ground moraine.

Sorted and unsorted drift of the glaciation of Wisconsin age, the Naptowne glaciation, form advance outwash, ground moraine, end moraine, ice-contact deposits separated into sequences of kame fields and kame terraces, outwash, and pitted outwash. Alluvial deposits cover the floor of abandoned melt-water channels that cut into Wisconsin deposits and into pre-Wisconsin deposits exposed south of the area covered by the Wisconsin deposits. Eolian silt prob-

ably derived from the outwash of Wisconsin age covers older deposits in the vicinity of the International Airport.

Various undifferentiated glacial deposits as well as alluvial-fan deposits may be Pleistocene or Recent deposits. The undifferentiated morainal deposits and undifferentiated glacial drift, for the most part restricted to the mountain valleys and cirques, may include deposits that range from pre-Wisconsin to Recent in age. Certain alluvial fans were formed during the late Pleistocene, whereas others were formed during the Recent epoch. Deposits of unequivocal Recent age include peat and muskeg, which started to accumulate in swamps over 5,000 years ago and are still accumulating, dune sand, modern-channel and flood-plain alluvium, estuarine silt, and thin loess (not mapped) that blankets most other deposits.

Five glaciations are recognized in the Anchorage area; (1) the Mount Susitna glaciation that overrode Mount Susitna about 35 miles northwest of Anchorage and left scattered boulders on some of the high-level surfaces of the Chugach Mountains, (2) the Caribou Hills glaciation that smoothed the spurs of the Chugach Mountains at altitudes of about 2,200 to 2,800 feet east of Anchorage, (3) the Eklutna glaciation that covered the lowland in the Anchorage area, and (4) the Knik and Matanuska lobes of the Knik glaciation which covered the Anchorage area; a warmer interval is inferred from the environmental requirements of fossils in peat that separates the Knik glacial deposits from (5) deposits related to the Naptowne glacial advance of Wisconsin age. Fluctuation of the Naptowne glacier is suggested by till that overlies the Bootlegger Cove clay and underlies the Naptowne advance outwash and till of the Naptowne ground moraine, and by the presence of ice-contact features in the Wisconsin glacial deposits beyond the end moraine of the Wisconsin glacier.

The outwash on which Anchorage is built, and which flanks the south boundary of the end moraine, had its source in the Eagle River valley.

Age and depositional relationships of the moraines and other drift in the mountain valleys and cirques are not established.

Postglacial activities in the Anchorage area are confined mostly to erosion—as represented by undercutting of sea-bluffs, landslides or slumps and flows, and downcutting into consolidated as well as unconsolidated materials along modern stream courses—and to eolian deposition—as represented by an overall thin cover of loess and by sand dunes.

Materials suitable for brick, for subbase course, base course, surfacing, and coarse aggregate, for crushed aggregate usable in bituminous mats, fill, and ballast, for soil binder, and for agricultural lime are found in the Anchorage area in varying amounts.

Foundation conditions range from excellent to poor. Some deposits are subject to varying degrees of frost heaving. In general, the finer grained till, silt, and glaciofluvial deposits are more susceptible to heaving than are coarser grained outwash and alluvial deposits.

INTRODUCTION

The Cook Inlet area was explored by Capt. James Cook in June 1778 when he sailed up what is today Cook Inlet. Portlock and Jeremiah Dixon visited Cook Inlet in 1786; George Vancouver explored Knik and Turnagain Arms in 1794.

Except for sporadic prospecting for gold (the first gold was mined in Alaska on the Kenai Peninsula in 1848–50) the Knik–

Turnagain region aroused little interest until gold-bearing placer deposits were discovered south of Turnagain Arm at Anchor Point on the Kenai Peninsula. Between 1896 and 1898 many claims were staked along the north side of Turnagain Arm. W. C. Mendenhall, who was attached to an Army expedition in 1898, first mentioned the Knik–Turnagain Arm area in a U.S. Geological Survey publication (1900) but S. R. Capps (1916, 1940) made the earliest geological investigations around Anchorage. Martin (1906), Brooks (1906, 1923), Park (1933), Smith (1939), and Trainer (1953) described the geology of areas close to or in part overlapping the Anchorage area. Other reports that discuss the geology of the Anchorage area have been written by Karlstrom (1950) and by Péwé and others (1953).

Anchorage was founded in 1915 as a construction center for the Alaska Railroad. Today a modern city, Anchorage continues to undergo the most rapid expansion of any community in Alaska. Exceptional population growth and industrial activity since 1940 led to the selection in 1949 of the Anchorage area for geologic study.

LOCATION AND ACCESSIBILITY

The area mapped is bounded on the northwest by Knik Arm, on the south by Turnagain Arm, and on the east by the Chugach Mountains. The eastern boundary coincides with the 149°37′30″ meridian. Almost all of the Anchorage *A*–8 quadrangle, all the area south of the Knik Arm in the *B*–8 quadrangle, and the land area in the Tyonek *A*–1 quadrangle between Point Woronzof and Point Campbell are within the project.

Anchorage is served by the Alaska Railroad and by scheduled and charter airlines at the International Airport and Merrill Field. The principal paved highways traversing the area are the Glenn Highway extending north from Anchorage and the Seward-Anchorage Highway extending south. Most of the maintained roads are graveled. Industrial and urban expansion is rapidly extending outward from Anchorage, and newly (1956) constructed section-line and homestead roads continuously increase accessibility. Much of the area north of the Eagle River and in the mountain area is reached by trail or jeep road.

PRESENT INVESTIGATION

In the summer of 1949 surficial deposits were examined along roads, streams, excavations, and sea cliffs, and in traverses throughout most of the lowland. Reconnaissance traverses were made along the front of the Chugach Mountain Range, along bedrock ridges, along Potter, Little Rabbit, Rabbit, Campbell, North Fork

of Campbell, and Ship Creeks, in the eastern part of the area, and along the Eagle River in the northern part of the area. A brief description of the geology was released to open file in 1950 (Dobrovolny and Miller). In June 1954, the area was revisited briefly by R. D. Miller and J. M. Cattermole. Fieldwork was confined mostly to studying road cuts that had been excavated since 1949; additional well records were also obtained. In 1956, the authors and W. R. Hansen checked the map and geologic interpretation in the field.

Stereoscopic examination of aerial photographs helped to supplement field interpretation of physiography and geology. Photointerpretation was most useful in the mountain area and in the lowland near Eagle Bay where ground traverses were limited by lack of roads, marshy terrain, and artillery ranges.

ACKNOWLEDGMENTS

Personnel of many Federal and Territorial agencies were considerate and helpful in providing data for use in the report or providing facilities to prepare data.

Mr. Harold Jorgensen of the Bureau of Land Management loaned a set of aerial photographs and rendered other service. Mr. N. E. Nelson, construction engineer, Civil Aeronautics Administration, provided test data and use of a materials laboratory. Mr. John J. O'Shea, assayer, Territorial Bureau of Mines, made several insoluble-residue tests on limestone. Mr. W. A. Nieme, district engineer, Alaska Road Commission (1949), supplied materials test data. Col. Lyle E. Seeman (1949), of the U.S. Army Corps of Engineers, Mr. A. A. Theuer (1949), and Mr. J. A. Roy (1954), of the U.S. District Engineers, provided materials test data and water-well records. Mr. W. R. Judd, engineering geologist, U.S. Bureau of Reclamation, provided a sample of clay from Lake Eklutna for testing. Mr. L. G. Anderson, U.S. Bureau of Mines, provided office space and many reference publications.

In addition, special thanks is due T. N. V. Karlstrom, U.S. Geological Survey, Terrain and Permafrost Section, who during a 2-day field conference contributed many ideas and suggestions, as well as thought-provoking concepts of the regional geologic picture.

GEOGRAPHY

PHYSIOGRAPHY

The Anchorage area, as mapped in this report (pl. 1), includes the greater part of the Anchorage district of the Cook Inlet region (Smith, 1939, pl. 3). Plate 2 shows the physiographic relationship

of the Anchorage area to the Cook Inlet lowlands and the adjacent mountain valleys. The Anchorage area can be separated into lowlands, which cover most of the area, and mountains along the eastern boundary of the area. The lowlands in turn, can be separated into six smaller subdivisions: (1) smooth surfaced elongate hills and linear valleys that modify the pitted surface north of the Elmendorf Moraine, (2) the southwest-trending ridges that form the Elmendorf Moraine, (3) a broad surface of a sand and gravel plain that is parallel to and southwest of the Elmendorf Moraine, (4) broad swamps which cover the lowland south of Anchorage, modified by conical and rounded mounds and low sinuous hills, (5) a low hummocky terrain that extends from the boundary with the swamp area just west of the Seward to Anchorage Highway to the mountains, and (6) the Point Woronzof and Point Campbell highland that extends along the western boundary.

The highest point in the area is a peak slightly more than 4,500 feet above sea level on the ridge between Rabbit Creek and South Fork Campbell Creek. The lowlands range between 100 and 150 feet in altitude. The valleys of the mountain mass are U-shaped and the steep intervening ridges are almost barren of mantle rock.

Surface drainage of the area is moderately well developed. Along the mountain front low south-trending elongate ridges 1 to 3 miles long control the orientation of small streams except where the streams turn and flow westward through gaps. Eagle River, Ship, and Chester Creeks follow old melt-water channels. Campbell Creek, the longest stream in the lowlands south of Anchorage, originates in a glaciated mountain valley. It flows in a deeply incised melt-water channel to the lowlands where it meanders through swamps. Streams that cascade from the high valleys of the Chugach Mountains are entrenched as much as 110 feet into unconsolidated glacial deposits on the slopes of the mountain front; in places they flow in steep-walled bedrock gorges almost 150 feet deep.

Drainage is poorly integrated in the swamps south of Anchorage. Many lakes in the swamps are connected by small sluggish streams. Some swamps are undrained, such as those in secs. 32 and 33, T. 13 N., R. 3 W., even though Campbell Creek and other streams have cut channels more than 5 feet below swamp level.

Subsurface drainage in the lowlands is poor because the clayey till that underlies much of the area is relatively impervious and restricts downward movement of the water. For that same reason, small swamps are common on hill tops.

Drainage is even less developed in the area north of the Elmendorf Moraine than in the lowlands south of Anchorage. Along broad melt-water channels small consequent streams connect swamps,

ponds, and lakes. Elsewhere most of the lakes and ponds in the ground moraine are poorly drained.

SOILS AND VEGETATION

The soils in the Cook Inlet area around Anchorage are podzol soils. The process of podzolization and characteristic profiles of podzol soils are described by Wilde (1946), Joffe (1949), and others. Well developed podzol soils are typified by an ash-gray colored zone in the A_2 horizon (the podzol horizon) that results from leaching of the soluble salts and organic matter. Leaching intense enough to remove the iron compounds causes a light color in the horizon; extreme leaching causes the white ashy appearance. The Russian word "zola," meaning ash, is the root of the name podzol. Podzol soils develop in coniferous, deciduous, or mixed forests in cool-temperate climates. Soils of the Knik series, of which the Knik loam is representative, are most extensive in the lowland (U.S. Dept. of Agr., 1938, p. 1148). A characteristic podzol soil profile on the Naptowne outwash along the Spenard Lake road 1½ miles south of Anchorage was measured by Kellogg and Nygard (1951, no. 48, p. 52), as follows:

Podzol

A_0—0 to 2½ inches, very dark brown fibrous organic mat containing many woody roots.

A_1—0 to ¼ inch, dark-brown to black humus soil.

A_2—¼ to 3 inches, light-gray to reddish-gray friable fine sandy loam, specked with yellowish brown; weakly developed fine platy structure; many roots. (Light gray: 5 *Y* 7/1.)[1]

B_2—3 to 10 inches, yellowish-brown fine sandy loam containing many roots. The soil is weakly cemented and, in places, contains strongly cemented fragments of ortstein.[2] (10 *YR* 5/6.)

B_3—10 to 14 inches, light-yellowish-brown friable fine sandy loam; very few roots. (10 *YR* 6/4.)

C—14 inches+, loose fine and medium sands of mixed composition, but high in dark-colored minerals.

Most of the biological processes that enter into soil formation are limited to the upper 6 to 18 inches, so that the soils are said to have a shallow solum (Kellogg and Nygard, 1951, p. 125). Podzolization is moderate, so that the ashy-colored layers are not well developed everywhere.

Muskegs and marshes on the Knik soils consist more or less of decomposed brown peat. Much of the peat is made up of sphagnum moss.

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[1] Color names and designations refer to the Rock Color Chart of the National Research Council, 1948.

[2] "Ortstein is a form of concretion that consists primarily of soil particles cemented with iron, aluminum, manganese, humus substances * * *." (Joffe, 1949, p. 56.)

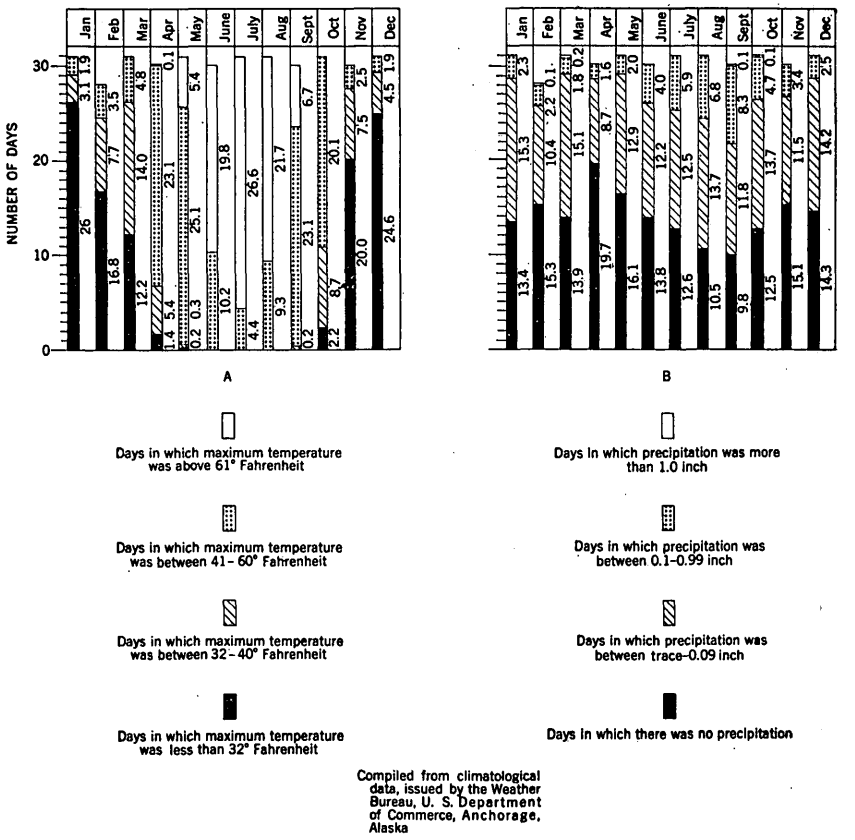

FIGURE 1.—Temperature and precipitation ranges at Anchorage, Alaska, 1938–48 inclusive. Compiled from climatological data, issued by the Weather Bureau, U.S. Department of Commerce, Anchorage, Alaska, for the years 1938–48 inclusive.

CLIMATE

Anchorage is influenced more by the comparatively mild humid climate of the Gulf of Alaska than by the colder climate of the region north of the Alaska Range. Figure 1, compiled from the Weather Bureau files, shows the period 1938 to 1948 inclusive. Temperature and precipitation are factors that control certain aspects of construction activities such as excavation, laying bituminous mats, and setting concrete.

Anchorage has a normal[3] annual precipitation of 14.27 inches. The normal of the wettest month is 2.71 inches, with an extreme of 5.91 inches. (U.S. Weather Bureau, 1954, p. 36.)

The mean annual temperature is 35.3°F. The highest temperature recorded in a 31 year period was 86°F and the lowest was −38°F.

[3] Normal values are based on or adjusted to the period 1921 to 1950.

The prevailing wind is about 5 miles per hour. It blows from the northeast in winter, the north in the spring, the northwest in summer, and from the north in the fall.

PRE-QUATERNARY ROCKS

The mountains bordering the Anchorage lowlands on the east are composed of consolidated metamorphic rocks of pre-Cretaceous(?) age. Poorly consolidated rocks of Tertiary age, exposed in a few places in the lowland, are thought to underlie most of the lowland. Unconsolidated deposits of Quaternary age effectively bury all older rocks in the lowland and mantle parts of the lower slopes of the mountains and some mountain valleys.

PRE-CRETACEOUS(?) ROCKS

The rocks that form the Chugach Mountains in the southeastern part of the area are grouped as metamorphic rocks, undifferentiated (pKg). The present investigation touched but briefly upon areas containing rocks older than Pleistocene, and discussion of the older rocks is for the most part confined to a resumé of previous work. Most of these rocks are described in detail by Capps (1916, 1940) and Park (1933). According to Park (1933, p. 389) they are of pre-Cretaceous age, and are so considered in this report.

Capps (1916, p. 153) restricted the undifferentiated metamorphic rocks in the Knik–Turnagain area to a belt along the western edge of the Chugach Mountains. The rocks are found in all or parts of the mountainous basins of Campbell, Rabbit, Chester, and Ship Creeks.

Capps (1916, p. 153) identified "* * * basic intrusive rocks, locally altered to serpentines, and altered intrusive rocks of more acidic character, associated with much altered and crushed materials that are probably of sedimentary origin and some less altered slates."

In addition, Capps (1916, p. 154) described "* * * altered igneous rocks of acidic composition that under the microscope prove to be altered andesites and andesite porphyries and basic rocks consisting of peridotite, dunite, serpentine, pyroxenite, altered gabbros, and tuff and agglomerates of igneous origin. They also include altered argillites, graywackes, and cherts of sedimentary origin. This whole assemblage has been cut by both basic and acidic dikes and probably by the bosses of diorite that project through the unconsolidated deposits near the mouth of Knik River." Park (1933, p. 388) agreed with Capps as to the types and composition of the rocks.

On the South Fork of Campbell Creek the bedrock consists of graywacke, quartzite, and some greenstone with gray chert bands

and nodules. The graywacke is easily recognized; it consists of angular fragments of quartz, feldspar, and other minerals.

Metamorphosed limestone (pKl) is exposed in three places, in a large outcrop along Little Rabbit Creek, and in two outcrops south of Little Rabbit Creek along the Seward-Anchorage Highway. An outcrop a quarter of a mile south of Little Rabbit Creek was examined in detail. The limestone outcrop is approximately 40 feet wide and 25 feet high; it is separated on the north from the undifferentiated metamorphic rocks by a fault striking N. 22° E. and dipping 62° W. Its contact with the undifferentiated metamorphic rocks on the south is concealed by till 50 to 100 feet thick; the gradeline of the highway is about 70 feet above the top of the limestone outcrop. This limestone contains 4.2 percent residue insoluble in hydrochloric acid, or 95.8 percent $CaCO_3$.[4]

Limestone crops out for about one-fourth mile along Little Rabbit Creek from a point about 300 feet upstream from the Seward to Anchorage highway. The limestone is impure and contains iron. Three hundred feet upstream shattered limestone and graywacke that dips about 80° NW. extends for 60 feet at stream level. A shear zone strikes N. 45° E. and dips 65° W.

The exposures along Little Rabbit Creek are discontinuous; three-fourths of a mile upstream the limestone is interbedded with graywacke and constitutes only a small percentage of the rock.

Three samples of limestone collected about 300 feet upstream from the highway bridge over Little Rabbit Creek range from 51.1 to 64.0 percent residue insoluble in hydrochloric acid.

The age of the undifferentiated metamorphic rocks and limestone is established relative to other rocks. The argillites and graywackes, east of the undifferentiated metamorphic rocks, and east of the area mapped, are dated by fragments and imprints of *Inoceramus* sp. believed to be of Late Cretaceous age (Park, 1933, p. 393–394). Capps (1916, p. 155) considered the undifferentiated metamorphic rocks to lie unconformably below the argillites and graywackes and to be older than late Mesozoic. Parks (1933, p. 389) considered the undifferentiated metamorphic rocks to be of probable pre-Cretaceous age even though the deformation at their contact with the argillites and graywackes is so severe that the relationships between the two units are difficult to establish. Although it could not be determined which rock unit overlies the other, Park considers the undifferentiated metamorphic rocks to be older because of their more intense deformation and greater igneous intrusion. Payne (1955) shows Triassic and Jurassic rocks of the Seldovia geanticline extending

[4] Analyzed by John J. O'Shea, assayer, Territorial Bureau of Mines, Anchorage, Alaska.

through the Anchorage area and apparently including the rocks below the argillites and graywackes.

TERTIARY ROCKS

Rocks of Tertiary age are not exposed in the area mapped, but they crop out just east of the area along the Eagle River between the Alaska Railroad bridge and the bridge on the Glenn Highway (Capps, 1940; Dobrovolny and Miller, 1950). Records of wells near the Power Plant in Fort Richardson, near center of sec. 6, T. 13 N., R. 2 W., at the Fire Control Station, sec. 11, T. 13 N., R. 3 W., and at the West Power Plant well, sec. 8, T. 13 N., R. 3 W., indicate the upper surface of the Tertiary rocks to be at depths of about 230 feet, 447 feet and 776 feet, respectively (U.S.G.S. No. 10, Ski Bowl Road, Corps of Engineers, written communication February 1957; Cederstrom and Trainer, 1953, Well No. 173; U.S. Corps of Engineers, unpublished well record, West Power Plant well). The beds at the abandoned coal mine near the Alaska Railroad bridge over the Eagle River strike N. 10° E. and dip 8° W. This compares with dips of about 2° to 4°, with local maxima of 10° to 13°, reported elsewhere (Capps, 1940, p. 62). Such gentle dips could not alone account for a 700 foot depth to the top of the Tertiary rocks from the surface outcrops. Eardley (1951, p. 523) mentions some orogenic movements in late Pliocene or Pleistocene time. R. G. Gastil[5] (Corps of Engineers, unpublished maps) infers a fault between the surface outcrops and the well locations.

Coal beds, relatively common in the Tertiary rocks, are commercially exploited north of the mapped area along the Matanuska River valley. Once, coal was mined along the Eagle River near the Alaska Railroad bridge, but the workings are now abandoned. No deposits of coal are known along Turnagain Arm, or within the mapped area. Coal seams at or near Point Campbell, reported by Martin (1906, p. 25), and coal ledges at Point Woronzof, reported by Capps (1940, p. 62), proved to be reworked material. Blocks of fluvially transported coal 6 feet long were found partly buried by tidal silts at Point Woronzof. Layers of fluvial coal with blocks as much as 8 inches in diameter were interbedded with gravel, sand, and silt layers at Point Campbell. Coal in seams was not found.

QUATERNARY DEPOSITS

PRE-WISCONSIN DEPOSITS

According to Karlstrom (1957) five major glacial advances can be recognized in the Cook Inlet region. Although the 2 earliest

[5] Corps of Engineers, 535th Terrain Detachment, written communication August 31, 1956.

glaciations may have caused smoothing of spurs in the Anchorage area, deposits of only the last 3 glaciations have been recognized. The oldest glaciation recognized by Karlstrom is the Mount Susitna glaciation, and is based on rounding of summits and spurs at altitudes up to 4,400 feet above sea level on Mount Susitna, a mountain 34 miles northwest of Anchorage, and at other places within the Cook Inlet area (Karlstrom, *in* Péwé, and others, 1953, p. 3). The second oldest glaciation recognized by Karlstrom (*in* Péwé, and others, 1953, p. 4) is the Caribou Hills glaciation (Krinsley, *in* Péwé, and others, 1953, p. 5), represented by glacial deposits at altitudes of 3,000 feet near Tustumena Lake, 75 miles S. 15° W. of Anchorage. Smoothed spurs and ridges at altitudes of about 2,200 to 2,800 feet along the front of the Chugach Mountains east of Anchorage, may be the result of the Caribou Hills glaciation. The oldest glacial deposits mapped in the Anchorage area are products of the Eklutna glaciation of Karlstrom (1957, p. 74) and are exposed as till and outwash in the bluffs along Knik Arm north of the Eagle River Flats (table 1).

DEPOSITS OF THE EKLUTNA GLACIATION

The oldest glacial deposits mapped in the Anchorage area are till and outwash exposed in the bluffs along Knik Arm north of the Eagle River Flats. The lowermost till is olive tan in color. It abuts to the south against a contorted silt which in turn grades into gravel (pl. 3). The upper surfaces of the lowermost till, silt, and gravel, are truncated by an erosional surface that extends across these materials. Forty feet of silt and gravel constitute the lower two-fifths of the bluff in the SE¼ sec. 18, T. 15 N., R. 2 W. (pl. 3, observation point 8). The gravel continues around the point almost to the Eagle River Flats. A cobble layer in the unconformably overlying outwash and a vertical break in slope almost everywhere mark the upper limit of the silt and gravel. The lowermost till was deposited by a glacier that covered the lowland area. The silt and gravel abutting the till and extending southward probably are outwash of the same glaciation. Examination of isolated exposures along the east side of Knik Arm merely suggests the possible antiquity of the deposits: they may correspond with a deposit of contorted buff-colored silt, sand, and gravel, also oxidized over 40 feet in depth, that is exposed beyond Point MacKenzie on the west side of Knik Arm (Karlstrom, oral communication July 1956).

Because the till, silt, and gravel are oxidized throughout their exposed thickness, indicating a long period of weathering, because they are the lowermost deposits in the bluff, because they have an eroded surface that extends across all three materials, and because they are overlain by a younger pre-Wisconsin till and outwash, they

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are correlated tentatively with Karlstrom's Eklutna glaciation of Illinoian(?) age (1957, p. 73). (See fig. 2.)

TABLE 1.—*Stratigraphic column showing Quaternary deposits around Anchorage, Alaska*

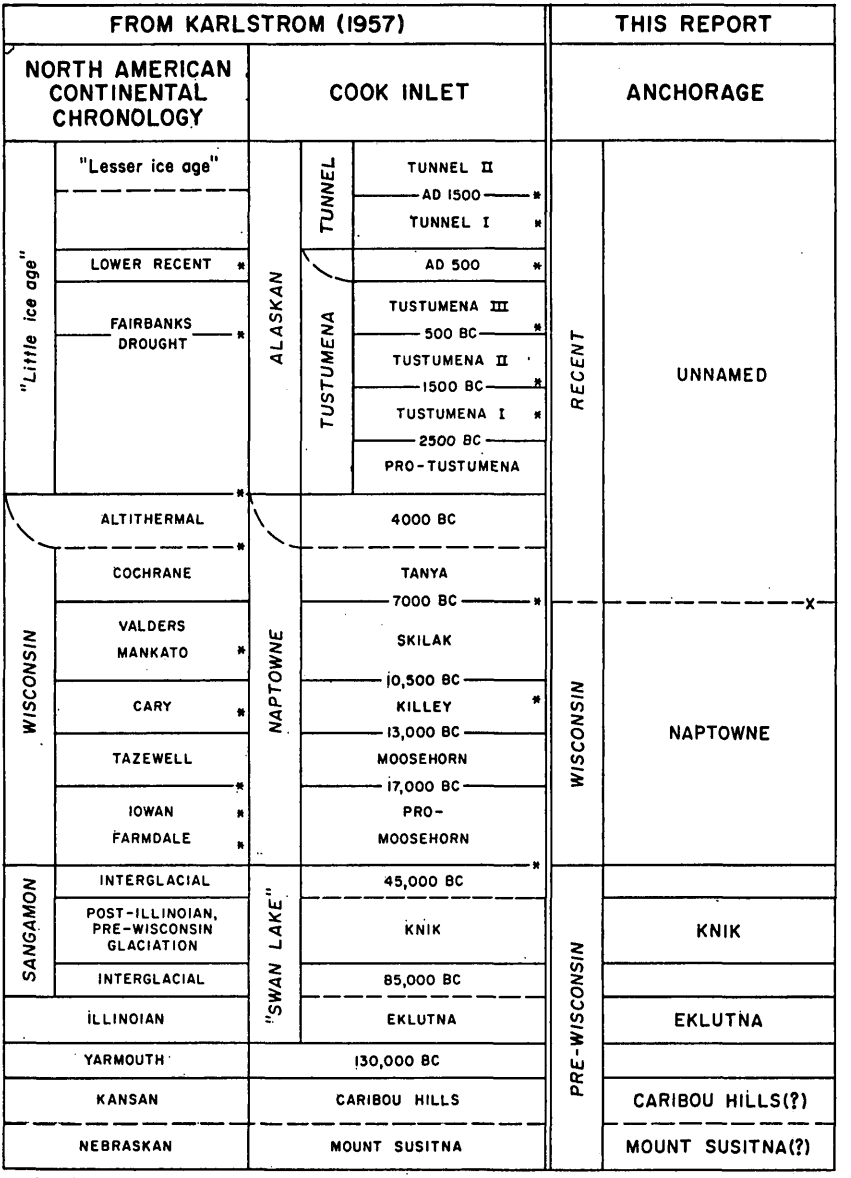
Series	Stage	Glaciation	Geologic units
Recent			Loess (not mapped) Alluvium Estuarine silt Dune sand Swamp deposits
Pleistocene or Recent			Alluvial fan deposits Glacial drift, undifferentiated Morainal deposits, undifferentiated
Pleistocene	Wisconsin	Naptowne	Silt Abandoned-channel deposits Outwash Pitted outwash Kame field and kame terrace deposits Ground moraine End moraine Advance outwash
	Pre-Wisconsin	Knik	Abandoned-channel deposits Pitted outwash Glaciofluvial ice-contact deposits Bootlegger Cove clay Prodelta deposits Delta deposits Ground moraine Lateral moraine Advance outwash
		Eklutna	Till and outwash

DEPOSITS OF THE KNIK GLACIATION

STRATIGRAPHY OF THE KNIK DEPOSITS

The advance outwash is the oldest deposit of the Knik glacier in the area. The lateral moraine along the front of the Chugach Mountains grades westward into the ground moraine that underlies most of the lowland. The glaciofluvial ice-contact deposits, the prodelta deposits, the pitted outwash deposits, and the Bootlegger Cove clay all overlie the ground moraine locally. The delta is at least in part contemporaneous with the Bootlegger Cove clay. The alluvium in the abandoned melt-water channels also overlies the ground moraine, but was deposited at the later phase of the Knik glaciation.

The following genetic relationship of the Knik deposits preclude the possibility that the ground moraine of the Knik glaciation and the overlying stratified drift are deposits of two different glacial stages: 1, the boundary between the glaciofluvial ice-contact deposits south of Ship Creek and the lateral moraine is gradational, as is the contact between the lateral moraine and the ground moraine; 2,



* C^{14} radiocarbon dates

x Wisconsin and post-Wisconsin boundary from Deevey and Flint, 1957

FIGURE 2.—Tentative correlation of glacial events in the Anchorage area with glacial events in the Cook Inlet area as determined by T. N. V. Karlstrom.

surface expression, weathering, and the texture of the materials are similar in both morainal deposits; 3, the glaciofluvial ice-contact deposits and pitted outwash, which locally overlie these moraines, are cut by abandoned melt-water channels that also head in and are incised into Knik ground moraine.

The Bootlegger Cove clay separates the pre-Wisconsin Knik deposits from the overlying Wisconsin Naptowne deposits on the east side of Knik Arm. The Bootlegger Cove clay is considered to be a glacial deposit that shows interglacial weathering. Its upper 6 inches to 2 feet is oxidized. Till and the advance outwash of the Knik glacier overlie the truncated surface of the Eklutna till and outwash along Knik Arm north of the Eagle River Flats. The Bootlegger Cove clay locally separates the till of the Knik ground moraine from the Wisconsin deposits.

DISTRIBUTION

Pre-Wisconsin deposits underlie the lowland south of Anchorage and extend along the Chugach Mountain front. The Knik ground moraine underlies the lowland and the stratified deposits locally blanket the older ground moraine. The highland between Point Woronzof and Point Campbell is composed of delta deposits that at least in part are contemporaneous with the Bootlegger Cove clay. North of the Elmendorf Moraine the Knik deposits are exposed only along the bluff of Knik Arm and near the mouth of the Eagle River.

TOPOGRAPHY

The topography of the pre-Wisconsin glacial deposits of the lowland has been only slightly more modified by erosion than the topography of the Wisconsin glacial deposits; drainage still is poorly integrated. In the Knik stratified deposits, swamp-filled kettles more than 1 mile in diameter are bounded by steep ice-contact slopes. Overlying the ground moraine are almost completely unmodified kames and eskers of the Knik glaciation. On the slopes of the mountains, especially between O'Malley Road and Potter, the topography of the ground moraine is sharp and well defined. Erratic boulders locally cover the surface. Glaciofluvial ice-contact deposits, such as the kames and eskers along the mountains south of Ship Creek, and other stratified drift genetically related to the Knik ground moraine have well preserved, very youthful, topographic forms. At the junction of O'Malley Road and the Seward-Anchorage Highway an exceptionally large kame shows steep, smooth slopes unmodified by erosion (pl. 7). The lateral moraine also has youthful kettles, ridges, and knobs.

In the pre-Wisconsin pitted outwash and prodelta deposits, steep ice-contact slopes bound the large kettles in the lowland. The

topography of the older delta is distinct and relatively unmodified. Kettles, for the most part unfilled with debris, and abandoned meltwater channels have steep smooth slopes.

AGE AND CORRELATION

The pre-Wisconsin deposits in the lowlands are probably correlative with the Swan Lake deposits of Krinsley (*in* Péwé, and others, 1953, p. 5). He gave the name Swan Lake to moraines in the southwest part of the Kenai Peninsula that consist of

> * * * low, rounded hills, partly buried by outwash. Some kettle lakes still persist, but many of the original depressions are filled with peat and organic silt.

Karlstrom (*in* Péwé, and others, 1953, p. 4) describes the drift of the Swan Lake glaciation in the upper Cook Inlet as retaining—

> * * * its hummocky aspect, but kettle depressions are partly filled with an intermixture of organic silt and peat.

These descriptions fit the older glacial deposits in the lowland south of Anchorage. Karlstrom's correlation of 1955 and 1957 subdivides the Swan Lake into the Eklutna deposits of Illinoian(?) age, and the Knik deposits of post-Illinoian, pre-Wisconsin age (fig. 2).

Near Goose Bay, almost directly across Knik Arm from the Eagle River Flats, a 41-inch interglacial peat bed underlies till and stratified sand and gravel that Karlstrom considers to be representative of his Naptowne glaciation (oral communication, July 1956). The peat bed appears to occur at the same stratigraphic horizon as the Bootlegger Cove clay, and the peat may correlate with the weathering on the clay. In 1955, wood collected by T. N. V. Karlstrom from the upper 6 inches of this peat bed was dated as older than 38,000 radiocarbon years (Rubin and Suess, 1955, W–174, p. 486). The carbon-14 methods of radiocarbon determinations are discussed by Kulp, J. L. (1952), and Flint, R. F., and Rubin, Meyer (1955). Earlier radiocarbon dates for the same horizon but determined by different procedures are 19,100±600 years (Kulp, and others, 1952, L–117 A, p. 412–413) and greater than 32,000 radiocarbon years for wood collected by Karlstrom from the base of the 41-inch peat section (Suess, 1954, W–77, p. 471). The greater than 38,000 radiocarbon years date indicates that the peat bed near Goose Bay may be older than the earliest radiocarbon dated Wisconsin age in the central United States (Flint and Rubin, 1955, p. 649), but this does not necessarily make it as old as Sangamon or Illinoian. Karlstrom (1955, p. 1581) considers the Wisconsin glaciation in the Cook Inlet region to range in age from 5,450 to 46,950 radiocarbon years. In July 1956 Karlstrom (oral communication) considered the till underlying the peat to be a deposit of his Knik glaciation (Rubin and Suess, 1956, W–294, p. 444; Karlstrom, 1957).

A peat bed exposed along the Eagle River on the east side of the Knik Arm underlies the Wisconsin ground moraine and advance outwash, and overlies gravel of the pre-Wisconsin advance outwash. Sampled by the authors in 1949, the peat was dated at 14,300±600 radiocarbon years (Kulp, and others, 1951, 101B, p. 568). Resampled by the authors and W. R. Hansen in 1956, the peat bed was dated at greater than 38,000 radiocarbon years (W–535). On the basis of this radiocarbon date and the similar sequence of the Goose Bay section, the deposits below the peat bed are correlated with Karlstrom's Knik glaciation (fig. 2).

The pre-Wisconsin glacial deposits south of the Wisconsin end moraine show weathering profiles that extend 4 to 8 feet in depth in the till of the ground moraine and 4 to 12 feet in depth on the lateral moraine; however, most exposures are oxidized only about 5 feet. Pre-Wisconsin stratified drift in the lowlands, although of greater permeability, shows a similar degree of weathering that extends locally only slightly more than 6 feet. This is in contrast with the oxidation throughout the 40-foot-thick Eklutna drift of Illinoian(?) age exposed along the bluff of Knik Arm north of the Eagle River Flats, and the oxidation of about 2 to 3 feet common on the Wisconsin drift.

Estimated ages for the Sangamon and Illinoian stages vary, but nevertheless indicate considerable time available for post-Illinoian weathering and erosion. Kay (1931, p. 464) suggested, on the basis of depths of leaching, that the Sangamon lasted about 120,000 years and ended about 75,000 years ago. One of the more recent estimates (Hough, 1953, fig. 2) dates the Illinoian as ranging from 338,000 years ago until 268,000 years ago, and the Sangamon as ranging from 268,000 years ago until 64,000 years ago. Suess (1956, p. 357) stated that a warm period about 90,000 years ago may correlate with the Sangamon of North America. Emiliani (1955, table 15, p. 565) suggests that the Sangamon ended about 75,000 years ago, the Illinoian started about 125,000 years ago and ended about 103,000 years ago.

The pre-Wisconsin glacial deposits south of Anchorage have a youthful topography typified by well-defined ridges, smooth and undissected slopes, and poorly integrated drainage. The weathering profile on the glacial deposits is immature in comparison to the weathering profile on the Eklutna drift (Illinoian? age) exposed north of Anchorage. It seems reasonable that deposits of 64,000 to 103,000 years old would be more deeply weathered, as is the drift of the Eklutna glaciation north of Anchorage, and the topography modified during the ensuing long interval of weathering and erosion than are the pre-Wisconsin deposits south of Anchorage. For these reasons the pre-Wisconsin deposits south of Anchorage are considered part of the Knik glaciation (table 1).

ADVANCE OUTWASH

The stratified drift that directly underlies till of the ground moraine deposited by the Knik glacier north of the Eagle River Flats and along Turnagain Arm is considered by the authors to be an outwash that was deposited in front of and subsequently overridden by the advancing Knik glacier. To some workers the term proglacial, as applied to deposits, means those that were deposited in advance of, or in front of, an advancing glacier, whereas to other workers, it means those that were laid down merely in front of a glacier, regardless of either the amount or direction of glacial movement. To avoid possible confusion by use of the word proglacial, and yet to separate this type of outwash from other outwashes related to the same glaciation, the term advance outwash is used in this report for such deposits. The advance outwash extends northward from the Eagle River Flats along the bluffs on the east side of Knik Arm to the boundary of the area mapped. Cuts along the Alaska Railroad, in the bluff along Turnagain Arm, show stratified sand and gravel below till of the ground moraine. Exposed from near Rabbit Creek northward for only about 1¼ miles, the sand and gravel probably extends farther along Turnagain Arm.

The advance outwash is gray and unoxidized where it underlies the till of the ground moraine. Locally hard and compact along Knik Arm, the advance outwash is predominantly a moderately loose pebble to cobble gravel that contains alternating layers of gray medium to coarse sand and pebble gravel. Lenses and layers of coal fragments are common. Along Knik Arm, near to and south of the promontory north of the Eagle River Flats, the bluff is composed of stratified drift of three ages; outwash of the pre-Wisconsin Eklutna glaciation, advance outwash of the pre-Wisconsin Knik glaciation, and advance outwash of the Wisconsin Naptowne glaciation. A horizontal parting marked by a cobble layer separates the advance outwash from the overlying Naptowne advance outwash. A similar cobble layer separates the Knik advance outwash from the underlying Eklutna outwash. This relationship is best seen in the NW¼SW¼ sec. 19, T. 15 N., R. 2 W.

Along the east shore of Knik Arm, the exposed thickness of the advance outwash is generally about 15 feet. The maximum exposed thickness is about 30 feet. Along Turnagain Arm, the maximum exposed thickness is about 40 feet near Rabbit Creek. The advance outwash is partly concealed by the grade of the Alaska Railroad that climbs the bluff westward along the Arm. Examination of the gray stratified sand and pebble gravel that constitutes the Knik advance outwash beneath the ground moraine along Turnagain Arm

failed to reveal any coal fragments either in lenses, layers, or scattered throughout the deposit as individual grains. Deposits of stratified drift exposed in Turnagain Arm were checked almost to the town of Portage (out of the area) without finding any coal fragments. Coal deposits underlie the Susitna Valley, the Matanuska Valley area, and at depth the Anchorage lowland, and are the source areas of the coal fragments in the glacial deposits around Anchorage. The advance outwash along Turnagain Arm, which contains no coal, came from a glacier in Turnagain Arm.

A silt layer (unit 4, measured section 1) associated with the peat that overlies the Knik advance outwash in the SW¼SE¼ sec. 9, T. 14 N., R. 2 W.—dated as greater than 38,000 radiocarbon years (Meyer Rubin, U.S. Geological Survey, sample No. W535)—contains the fresh water gastropods *Gyraulus parvus* (Say) and *Lymnea* sp., identified by F. Stearns MacNeil, of the Geological Survey, and 14 genera of diatoms, identified by Kenneth E. Lohman, of the Geological Survey. These forms are representative of cool shallow fresh to somewhat brackish water in which peat was being formed. The assemblage of diatoms is given below. Relative abundance: R=rare, F=frequent, C=common

Amphora sp	R
Caloneis obtusa (Wm. Smith) Cleve	F
Cocconeis placentula Ehrenberg	F
Cymbella cf. *C. cuspidata* Kützing	F
cymbiformis (Kützing) Brebisson	F
parva (Wm. Smith) Van Heurck	C
ventricosa var. *obtusa* Grunow	R
sp	R
Epithemia argus (Ehrenberg) Kützing	F
turgida (Ehrenberg) Kützing	C
turgida var. *granulata* (Ehrenberg) Grunow	F
zebra (Ehrenberg) Kützing	F
zebra var. *saxonica* Kützing	F
zebra var. *porcellus* Grunow	F
zebra var. *proboscidea* Grunow	F
Eucocconeis flexella (Kützing) Cleve	R
Eunotia praerupta Ehrenberg	R
Gomphonema intricatum Kützing	C
lanceolatum Ehrenberg	F
sp	R
Mastogloia cf. *M. smithii* var. *lacustris* Grunow	C
Navicula cf. *N. amphibola* Cleve	R
oblonga Kützing	C
tuscula (Ehrenberg) Grunow	F
sp	F
Nitzschia cf. *N. amphibia* Grunow	R
Pinnularia major (Kützing) Cleve	F
cf. *P. viridis* var. *rupestris* Hantzsch	F
Rhopalodia gibba (Ehrenberg) O. Müller	R
Stauroneis cf. *S. phoenicenteron* Ehrenberg	F

The dominance of lacustrine diatoms indicates accumulation in a lake or pond that had no river in the immediate vicinity, a situation similar to most of todays muskegs.

Nine samples of clay, silt, or peat were collected from selected beds in measured section No. 1 for pollen analysis. The samples were demineralized, bleached, and examined by Estella B. Leopold and Helen Ranson, of the Geological Survey, who reported (written communication, March 1958):

* * * samples 1, 2, 3 and 9 from the silt or clay beds contained very small amounts of pollen, but the others (esp. 5 & 6) were very rich indeed * * *

Frequency of pollen is very low in the early inorganic sediments, and consists almost entirely of non-arboreal types. Tree pollen, which appears first in sample 4, becomes dominant in samples 5 and 6. The preponderance of spruce pollen in those samples suggests that spruce was growing in numbers at the site of deposition.

All of the plants reported here grow in the Anchorage region today; the fossil pollen assemblage recorded in your samples 5 and 6 appear to reflect a vegetation much like that of modern spruce muskegs in the region.

The pollen counts from one-half square centimeter of slide area of each sample collected from measured section No. 1 (pollen loc. D1243, Anchorage, Alaska) are listed as follows:

Pollen counts from one-half square centimeter slide area
Pollen location D1243, Anchorage, Alaska

[Number at top of column is Miller sample number]

Type observed	Sediment type								
	Blue-gray clay		Silt	Dark-brown peat			Silt	Peat	Silt
	1	2	3	4	5	6	7	8	9
Tree pollen:									
Picea mariana				1	92	96	13	56	7
Populus				2	3	1	1	2	
cf. *Chamaecyparis*						1		1	
Betula				1				1	1
Nontree pollen:									
Alnus				1					
Artemisia				1					
Chenopodiaceae							1		
Ericaceae				1					
Compositae				1			1	1	
Cerastium				1					
Onagraceae				1					
Labiatae						1			
sedge			2	39	4	3	2	25	3
grass	1		2	1					
unidentified dicots	2	7	10	12		1	2	5	1
unidentified monocots				1					
Lycopodium annotinum				18	2	4		7	
L. complanatum				2					
Lycopodium sp				6	2	1			
Botrycoccus (alga)		1		6					
Pediastrum (alga)				1					
fern spores	1			1				6	
other spores	5	1	2	45	4	2	4		
Sphagnum moss spores								1	1
Total pollen and microfossils and spores observed	9	9	16	142	107	110	24	105	13

The peat, pollen, spores, and fossils indicate that an interglacial climate produced the deposits that separate the advance outwash of the Knik glacier from the overlying advance outwash of the Naptowne glacier. A measured section of the peat and the advance outwashes in the bluff along the Eagle River, is as follows:

1. *Section of the peat and the advance outwashes in SW¼SE¼ sec. 9, T. 14 N., R. 2 W.*
[USGS pollen loc. No. D1243]

		Ft	In
	Ground moraine of Naptowne age:		
12.	Till, silty sand matrix; pebbles, cobbles common, some boulders present; slump covers most of slope; upper 12 feet well exposed	±45	0
	Advance outwash of Naptowne age		
11.	Sand, pebbles common, cobbles locally present; iron-stained lower 3 to 6 inches; slump covers upper part	±6	0
10.	Silt, light-gray		2
9.	Peat, purplish-black, silty	----	1.5
8.	Silt, greenish-gray; spongy when wet; upper 2 inches yellow; pollen sample 9 from middle	----	8 to 10
7.	Peat, hard, compact; blackish-purple; grades into underlying silty clay; C^{14} sample A–56–1 (38,000 radiocarbon years, W–535), and pollen sample 8	----	3 to 5
6.	Clay, silty, tan; pollen sample 7	1	0
5.	Peat, compact, lignitelike lower 8 inches; horizontal bedding; ranges from 8 inches to 24 inches in thickness along bluff; pollen sample 4 from lower 6 inches, pollen sample 5 from middle, and pollen sample 6 from upper 6 inches	----	20
4.	Silt, yellowish-tan to gray; 2-inch peat layers alternate with fossiliferous [1] layers; lower contact gradational with unit 3; pollen sample 3 from middle of horizon	----	8
3.	Silt; humic zone(?); lacking in carbon; pollen sample 2	----	8
2.	Clay, blue-gray, compact; horizontal platy cleavage; clay fills between pebbles in upper layer of underlying gravel; pollen sample 1	----	8
	Advance outwash of Knik age		
1.	Gravel, locally sandy in lower 5 feet, stained brown; cemented layers alternate with uncemented zones, ledge former upper 3 feet; rounded pebbles as large as 3 inches, vein quartz, greenstone, granite gneiss; stained by iron and manganese	8	6
	Eagle River channel		
	Total thickness	±65	8

[1] Diatoms and gastropods identified by F. S. McNeil and K. E. Lohman collected from this bed.

The advance outwash was derived from rocks north of the Anchorage area, probably the Matanuska and Knik Valleys, as well as mountain valleys tributary to the Knik Arm lowlands. Sand, pebbles, cobbles, and boulders, for the most part carried in the lower part of the Knik glacier, were deposited by streams as advance out-

wash in front of the glacier as it moved into the Anchorage area. Advance outwash along Turnagain Arm probably was derived in a similar fashion from debris carried in a Turnagain Arm glacier.

LATERAL MORAINE

A ridgelike lateral moraine trends south-southwest more than 12 miles along the lower slopes of the Chugach Mountain front in the southeastern part of the area.

The lateral moraine is a system of hummocky composite linear ridges trending south-southwesterly. Two parallel ridges form the major features of the moraine. The higher of the two rises conspicuously about one-half mile east of Lake Hideaway. This ridge marks the eastern edge of the lateral moraine from the area just south of Little Rabbit Creek to Campbell Creek. Ice margin channels form linear valleys in the moraine parallel to the trend of the lateral moraine, though locally some channels turn and transect the ridges. Kettles are numerous; some contain ponds and lakes, some are filled with swampy debris, whereas others are unfilled. The till of the lateral moraine is commonly sandy and stony with cobbles common. Pebbles and sand predominate although angular boulders 10 feet long are scattered throughout the moraine. The upper 4 to 8 feet of till is looser than the underlying till. This looseness may be caused by frost action on the upper part of the till, or it may represent superglacial deposits over a more compact basal till that accumulated under the ice. Silty till-like cobble gravel is common throughout the lateral moraine; in some exposures it shows collapse bedding.

Along the South Fork of Campbell Creek above Campbell Airstrip, near the sharp bend of the gorge, glacial drift that is part of the lateral moraine is well exposed. About 85 feet of pebbly till containing numerous cobbles and boulders overlies bedrock. The till is overlain by about 30 feet of sand interlayered with compact silty gravel in the lower 15 feet. The sand is well stratified and probably was deposited by water flowing in ice-marginal channels. The gravel stands in a vertical bluff, and in part appears only slightly reworked by water. A nearly horizontal boulder layer that is as much as 3 feet thick grades into cobbles and pebble gravel and separates the gravel from the till.

In a cut along Rabbit Creek near the swamp in sec. 35, T. 12 N., R. 3 W., the upper 4 feet of till is brown and is looser than the lower 3 feet, which is light gray and stony. The maximum thickness of the drift in the lateral moraine is estimated to be about 150 feet. About 85 feet of till overlies bedrock near the sharp bend in the gorge along the South Fork of Campbell Creek. This thickness

is probably typical for the eastern margin of the moraine. The underlying bedrock surface slopes westward steeper than the surface of the moraine, so the moraine is probably thicker along its western margin than along its eastern margin. Sand and gravel deposits on the floor of ice-marginal channels in the moraine may be as much as 30 feet thick, but are commonly thinner.

The eastern margin of the lateral moraine was deposited at altitudes from about 1,000 to 1,200 feet. The highest altitudes (1,250 to 1,400 feet) along the eastern ridge of the lateral moraine are between North Fork Campbell Creek and Rabbit Creek; the lowest altitudes (about 1,000 feet) are near Ship Creek. The lateral moraine slopes northward. The reason for this reversal of topography is that glacial debris from the glaciers in North Fork Campbell Creek, South Fork Campbell Creek, and Rabbit Creek accumulated on the eastern ridge of the lateral moraine. The highest ridge is not entirely lateral moraine but includes end moraines from the tributary mountain glaciers. Because the texture, compaction, and oxidation on the higher and lower ridges are similar, the drifts cannot be separated and the ridges are mapped as a part of the lateral moraine.

Karlstrom (*in* Péwé, and others, 1953, p. 4) considered the lateral moraine and the materials that cover the lower slopes of the mountains to altitudes of 1,000 to 2,000 feet to be deposits of the Swan Lake glaciation of early Wisconsin age. In his subdivision of the Swan Lake glaciation (fig. 2) into the Eklutna and Knik glaciations of pre-Wisconsin age, Karlstrom (written communication, February 1957) regards the lateral moraine as part of the Eklutna glaciation, and considers it equivalent to the lateral moraines south of Turnagain Arm on the Kenai Peninsula that he designates as Eklutna in age.

In this report the lateral moraine is considered part of the Knik glaciation that deposited the lowland materials. A correlation between the lateral moraine and the older ground moraine is indicated by (1) the relatively unmodified topography of both units, (2) the gradational change in form from the lateral moraine to the ground moraine and the glaciofluvial ice-contact deposits, (3) the similarity of composition, texture, and compactness of the lateral moraine and the older ground moraine, and (4) the similarity in local depths of oxidation of materials in both the lateral moraine and the ground moraine; in most places the depths of oxidation ranges from 4 to 7 feet.

The lateral moraine was derived from talus and avalanche debris that accumulated on and along the margin of the ice as the glacier moved down the Arm from the north. As the glacier thinned, this

debris accumulated on the slope as conspicuous ridges. The upper margin of the moraine may have been reached when the ice was at its maximum thickness, or it may represent a period of equilibrium in the glacier regimen during downwasting of the ice from a greater thickness. If the latter condition is the case, the debris on the slopes above the lateral moraine and the smoothed spurs along the mountain may be, at least in part, the result of the Knik glaciation.

As the thinning progressed further and the ice margin moved downslope, marginal streams deposited sand, pebbles, and cobbles in their channels along the edge of the glacier.

GROUND MORAINE

The ground moraine underlies most of the lowland, as proved by wells, although it is overlain in places by deposits of different origins and is largely covered west of R. 3 W. It has a wide surface distribution southwestward from Ship Creek parallel to the mountain front. It covers the lower slopes of the Chugach Mountains between Huffman Road and Potter, and it is coextensive with the lowland south of Anchorage. East and southeast of Anchorage the ground moraine protrudes through the overlying deposits.

A blue-gray silty till beneath the Bootlegger Cove clay and over the advance outwash is exposed discontinuously in the east bluff of Knik Arm. The till is best exposed north of the Eagle River Flats (pl. 3) although locally it is exposed south of the Flats, and east of Knik Arm along the Eagle River. The ground moraine has a gently undulating surface in the area of Huffman and Dearmoun Roads, The swells and troughs are pitted with small kettles. Rounded hills of till stand above the large swamp areas and pitted outwash deposits in the central part of the lowland south of Anchorage. Mounds of ground moraine—mostly drumlins—rise above the swamps and Wisconsin outwash between Ship Creek and Campbell Airstrip. The crestlines of the drumlins are shown on plate 1.

Adjacent to the lateral moraine, large abandoned melt-water channels, incised as much as 60 feet into the ground moraine, break the continuity of the moraine surface. North of O'Malley Road, smaller unmapped channels parallel the lateral moraine for most of their distance, but trend toward the lowland near the lower part of their courses.

The ground moraine is predominantly compact till that contains pebbles, cobbles, and boulders. Ridges and knobs of stratified or unsorted loose sand and gravel rest on till of the ground moraine locally and in places cover it. A small esker (not mapped) is preserved in the NE¼ sec. 18, T. 13 N., R. 2 W. Almost every exposure contains striated and soled cobbles and boulders (pl. 4);

practically every boulder on the surface of the ground moraine is striated. The till varies appreciably in texture. In some exposures it has a clayey matrix and a heterogeneous mixture of fragment sizes. In other exposures it is more sorted, such as along the access road to the Campbell Airstrip in the NW¼NW¼ sec. 10, T. 12 N., R. 3 W. where the till is predominantly silt, sand, small pebbles, and scattered boulders. In a cut 12 feet deep along Rabbit Creek Road, a silty pebble till that has a platy cleavage is interpreted as basal till.

In most exposures, the till of the ground moraine is moderately hard and compact, though the upper 2 to 6 feet may be loose and unsorted. In general, the till of the ground moraine is more compact than the till of the lateral moraine. Erratics 6 feet long are common. Here and there are lenses of stream-laid sand and pebbles. The till of the Knik glacier north of the Eagle River Flats beneath the Bootlegger Cove clay is dark blue gray, silty to clayey, and contains pebbles, cobbles, and boulders. A buried weathered zone 20 inches to 2 feet deep at the top of the till is tan in some exposures and reddish brown in others. Along the Eagle River in the NW¼NW¼ sec. 17, T. 14 N., R. 2 W., Knik till 12 feet thick consists of cobbles and pebbles in a silty clay matrix. The upper 4 feet is oxidized brown, whereas the lower 8 feet is blue gray.

Tills of two possible ages are exposed in a drumlin on the south side of the Glenn Highway in sec. 12, T. 13 N., R. 3 W. Beneath 2 feet of silty humus is a 3-foot thick horizontally plated gray silty till. Pebbles have a sandy coating and are stained purplish black. Below is a 4-foot-thick section of a compact silty till that also contains black-stained pebbles, and underlying this compact till is a more sandy gray pebble till. A time break in the till sequence conceivably could be placed at the top of the 4-foot compact silty till.

One-half mile east of the Seward–Anchorage Highway, an 8-foot cut along O'Malley Road contains oxidized till. The upper 5 feet is reddish brown and has a nutlike structure. This is one of the thickest and most intensely oxidized zones on the Knik ground moraine recognized in the area. The thickest exposure of till in the ground moraine seen by the authors is in an old pit 100 yards north of Potter where it is 118 feet thick. About 70 feet of till is exposed in a gravel pit along the Ski Bowl Road in the NE¼SE¼ sec. 8, T. 13 N., R. 2 W. In cuts in the sea cliff along the Alaska Railroad in secs. 29 and 32, T. 12 N., R. 3 W., gray till ranges from 22 to 38 feet in thickness. A dug well in the SE¼ sec. 29, T. 12 N., R. 3 W., near the border of the ground moraine and the pitted outwash, penetrated 66 feet of silty till with boulders. Silty clayey till 45 feet thick is exposed in a hill of ground moraine north of Ship Creek in the SW¼SE¼ sec. 31, T. 14 N., R. 2 W. Published drill-

well records (Cederstrom and Trainer, 1953) are interpreted by the authors as recording a maximum thickness of ground-moraine deposits of more than 130 feet.

Blue-gray till overlies the Knik advance outwash and underlies the Bootlegger Cove clay along the east shore of Knik Arm. That the ground moraine south of Anchorage also underlies the Bootlegger Cove clay has been determined from well records (Cederstrom and Trainer, 1953, nos. 33, 46, 48, 69, 90). Because of the similar stratigraphic position, the till along Knik Arm and the ground moraine are considered as the same unit.

The position of the drumlins south of the Elmendorf Moraine, however, is not so clear cut. Examination of the material that consitutes the drumlins along the Glenn Highway in sec. 12, T. 13 N., R. 3 W., suggests that they contain more than one till. The upper 3 feet of till is horizontally plated and has sandy coated purplish-black stained pebbles. The underlying 4 feet of compact silty till also contains purplish-black-stained pebbles. The horizontal cleavage in the uppermost till may indicate basal till that was deposed over a preexisting till hill. The overriding by the later glacier may have formed the drumlins. A gray clay that can be interpreted as Bootlegger Cove clay underlies a drumlin in the NE¼ NW¼ sec. 12, T. 13 N., R. 3 W. (Corps of Engineers unpublished well records, No. 55, well 6, No. 62, well 3).

Samples of till from two exposures of ground moraine were collected for analysis of clay minerals in an attempt to determine any alteration of minerals owing to weathering processes. Interpretation by H. C. Starkey and Gillison Chloe (IWM–871) of the U.S. Geological Survey of the results showed that sample *A*–21 (pl. 7), till collected from the 8-foot exposure of ground moraine one-half mile east of the Seward to Anchorage Highway, contains mixed layered chlorite and montmorillonite (4 parts in 10) that suggest a longer interval of weathering than does the analysis of till along the bluff of Turnagain Arm (sample *A*–22) where only the upper 18 inches of a 22- to 38-foot thickness of till is oxidized. Though only suggestive, the possibility exists that two tills are represented, and the till along Turnagain Arm may in reality be a remnant of an end moraine of Wisconsin age from a Turnagain Arm glacier. A ridge that trends northwest from Potter to the vicinity of Dearmoun Road may be the arc of the end moraine lobe. The till hills in sec. 23, T. 12 N., R. 4 W., which rise above the swamp area south of Sand Lake Road, may be remnants or outliers from this supposed moraine.

Such relationships can not yet be explained satisfactorily, and because of this incomplete understanding, the drumlins south of the

Elmendorf Moraine, and the till along Turnagain Arm are mapped as part of the ground moraine of Knik age.

The ground moraine was derived from rock particles of all sizes that accumulated north of the Anchorage area and that were carried (1) in the lower part of the glacier, (2) within the body of the glacier, and (3) on the surface of the glacier. The ground moraine was deposited as basal till and superglacial till as the glacier thinned and the area was deglaciated. Widespread ice-contact features on the ground moraine and associated Knik age deposits indicate stagnation as the cause of deglaciation.

DELTA DEPOSITS

The high ridge between Point Campbell and Point Woronzof, mapped by Karlstrom (1950) as a moraine on the basis of topographic form, is called a delta in this report and is considered to be a glaciofluvial deposit because (1) the body of the ridge is not till but is composed almost entirely of fluvial sand and gravel, (2) intimately associated silt, sand, gravel, and blocks of till indicate close proximity to a glacier, (3) the bedding is deltaic, and (4) the high plane surface of the ridge is covered with kames and kettles.

The high ridge of the delta extends from Point Woronzof on Knik Arm to Point Campbell on Turnagain Arm. It is about 4 miles long and ranges from ½ to 3 miles in width. Part of the eastern boundary forms the western shore of Jewel Lake and the northern, western, and southwestern shores of Sand Lake; near Knik Arm, the boundary coincides with the western border of a large swamp. The delta grades indefinitely into prodelta deposits, pitted outwash, and glacial silt near the International Airport. The eastern boundary is marked by topographic differences between the higher ridge area and the more level surface of the prodelta deposits and the pitted outwash area.

The delta deposits are well exposed along Turnagain Arm near Point Campbell and along Knik Arm from Point Woronzof east for about 1 mile to a point where they disappear beneath the Bootlegger Cove clay. The delta consists topographically of three parts: the high land around Point Woronzof, the high land around Point Campbell, and an area sloping east from the high land around Point Campbell.

The high land at Point Woronzof is a ridge that extends south about 1½ miles. The west slope of the ridge is erosional and moderately steep, the east slope is depositional and more gentle. The surface crest of the ridge, covered with small kames and pitted with kettles, slopes southward toward a saddle that separates the Point Campbell ridge from the Point Woronzof ridge. The saddle is marked by more numerous kames, kettles, and overflow channels.

The topographic boundary is distinct between the Point Woronzof ridge and the overflow channel, and between the overflow channel and the high land at Point Campbell. Point Campbell is part of a relatively flat tableland that slopes to the north and east and grades into the lowland. The tableland is covered with kames and pitted with kettles. One high mound covered with kames stands above the general level in the SW¼ sec. 5, T. 12 N., R. 4 W.

The eastern slope of the high land at Point Campbell is pitted by large circular or elongate kettles, a small percentage of which contain ponds or small lakes, such as Campbell Lake. Most of the kettles are not filled because the sand permits unrestricted downward movement of the water. One spectacular circular kettle with raised edges is at the end of a road in the NW¼SW¼ sec. 9, T. 12 N., R. 4 W. The western slope of the tableland is steep and bounds the east side of a flat surface, about 4 miles long and ranging in width from about 450 feet to about 1,800 feet, that parallels the seaward side of the delta. The surface slopes from more than 50 feet above sea level near Point Woronzof to about 30 feet above sea level near Point Campbell. A low scarp on the east side of the surface separates it from the pre-Wisconsin abandoned-channel deposits. A similar flat surface is evident on the eastern end of Fire Island.

The materials in the delta are almost continuously exposed in the sea cliffs from the east line of sec. 8, T. 12 N., R. 4 W. to Point Campbell along Turnagain Arm, and from near the east line of sec. 21, T. 13 N., R. 4 W. to Point Woronzof along Knik Arm. To describe the deposits better, the Point Campbell and Point Woronzof areas are discussed separately.

In general, stratified deposits of cobbles, pebbles, sand, silt, clay, and, in places, blocks of till compose the delta along Turnagain Arm. Sand and silt alternate in layers that dip slightly out of the bluff. The sand is gray, fine to medium, well sorted, and contains scattered round to subrounded pebbles and cobbles. Slightly silty, the sand locally stands in almost vertical breaks. Small channels or lenses of coarser sand that contain fragments of coal one-sixteenth of an inch to 8 inches in diameter are included in some of the sand layers. In some exposures the lamina in the sand dip about 10° S. to SW. Tan to brown silt layers, intimately interlayered with gray clay, pinch and swell. The sand layers commonly range in thickness from 1 inch to 2½ feet and are generally thicker than the silt layers. In places, the sand layers are ripple marked at the top, and differential erosion between the sand and the overlying silt results in overhanging molds of the ripple marks on the undersides of projecting silt ledges. Though thin in most places, the silt lay-

ers locally may be as much as 6 feet thick. Some silt layers that contain lenses of medium sand from one-half to 1 inch thick show contemporaneous deformation.

Some exposures along Turnagain Arm do not fit this description. An example of the variable composition of the delta deposits is shown in a scar that extends from the top of the sea cliffs down to the beach in the NE¼SE¼ sec. 8, T. 12 N., R. 4 W. The lower 40 feet is covered by slopewash and slump, but above that, 38 feet of gray silty till is exposed that contains cobbles and boulders and is probably an older predelta deposit. A gray crossbedded pebble and cobble gravel which ranges from 44 to 68 feet thick overlies the till and is overlain in turn by gray medium sand from 58 to 73 feet thick which shows tangential crossbedding that dips in general about 15° SE. Coal fragments are concentrated in layers within silt, sand, and gravel layers. Abrupt truncation of the layers are common. About 3 feet of dune sand tops the bluff.

About 1,000 feet from Point Campbell southeast along Turnagain Arm, sand, pebble and cobble gravel, and till are intimately associated in an exposure that extends from the beach to the top of the bluff. The till is in two large blocks, one enclosed in the gravel, the other in the upper part of the gravel and overlain by dune sand at the top of the bluff. The gravel contains silt lenses and is slightly contorted near the till. A section measured from high tide follows:

2. *Section along Turnagain Arm in NE¼ NW¼ sec. 7, T. 12 N., R. 4 W.*

	Ft
5. Sand, fine to very fine, tan; bedding dips into hill from 30° to 40°; contains numerous ±0.1-foot peat-humus layers; wind-blown sand; active dune	±45
4. Till, silty, contains pebbles and cobbles; tan; compact; unsorted, with pebbles, cobbles, and boulders common: lenses of silt, sand, and pebble gravel contorted; part of till covered by vegetation, lower part covered by slump, western part of till bounded by sand of unit 5	0 to 52
3. Gravel, pebble to cobble, about 10 percent is larger than 3 inches in diameter; gray; lower part slumped; pebbles and cobbles subangular to round; obscured bedding appears to dip southwest; gravel near till only slightly contorted; upper part has silt and sand lenses	55 to 131
2. Sand, very fine, some silt; gray; tan where more silty; silt lenses common; coal fragments scattered throughout; more or less evenly bedded with some beds truncated, may be deltaic with foreset-bottomset contact; average dip of sand lamina about 10°; contains a few lenses 1 foot thick of pebble gravel and reworked coal; upper part more silty and contact with gravel appears gradational	56 to 78
1. Beach, sand, pebbles and cobbles	
Total thickness	156 to 301

Almost continuous exposures from Point Woronzof southeast along Knik Arm provide a cross section three-quarters of a mile long through the delta deposits. In general, the deposits range from coarse cobble gravel at Point Woronzof to sand and silty sand where the delta underlies the Bootlegger Cove clay. The lower slope of the sea cliff (1956) is about 50° to 55°. At several places along the bluff, beds of silt, sand, and gravel in the delta, intimately interlayered and apparently in place, have apparent dips that range between 40° and 50° SE. In the NW¼NE¼ sec. 29, T. 13 N., R. 4 W., 22 feet of moderately well-sorted sand and gravel, which dips east about 30° and displays small displacements from slump or consolidation, overlies a boulder layer 2.5 feet thick that interfingers with a fine sand. Overlying the sand and gravel is about 10 feet of crossbedded sand that dips about 30° E., and contains lenses of black-stained gravel. The upper 3 feet of the exposure is a well-sorted, horizontally bedded fine to medium gravel. The lower 16 feet of the bluff is covered by slump. About 300 feet southwest of Point Woronzof, pebble to cobble gravel has silt layers 10 inches to 3 feet thick in the lower 30 feet. The gravel thins to the north or northeast, which suggests a western or southwestern source for material. At 150 feet southwest from Point Woronzof, the lower part of the bluff has a northeastward steeply dipping cobble gravel that is overlain by 6- to 10-inch silt layers in the upper part. A less steeply dipping (about 15°) silty sand truncates the gravel. At Point Woronzof, a medium sand constitutes the lower 20 feet of the bluff. Gravel overlies the sand.

Alternating silt and sand layers in the lower 20 feet have the appearance of foreset beds to the observer looking 90° SW. from the direction of deposition (SE.). About 1,200 feet southeast of Point Woronzof, the gravel has more pebbles but fewer cobbles, has a lower dip, and is slightly crossbedded. Silty sand overlies the gravel along the entire horizontal distance. The amount of pebble gravel decreases still further southeast along the Arm until about 2,500 feet from Point Woronzof, the bluff is composed of sand containing ½- to 1½-inch-thick lenses of pebbles high in the section (pl. 4). Apparent warping of layers may be a curvature of the surface of deltaic beds. Some of the sand beds have steep dips, are crossbedded, locally contain alluvial coal, and are truncated by evenly bedded sand. Interfingered with the even-bedded sand are lenses of fluvial coal about 1 foot thick and 10 feet long. About six-tenths of a mile from Point Woronzof, the bluff is composed almost entirely of gray sand that has some tan silt layers. Coal fragments, in layers in the sand, are iron stained. Further east along the bluff, beyond the high ridge toward the lowland area, the Bootlegger Cove clay interfingers with sand and silt of the delta.

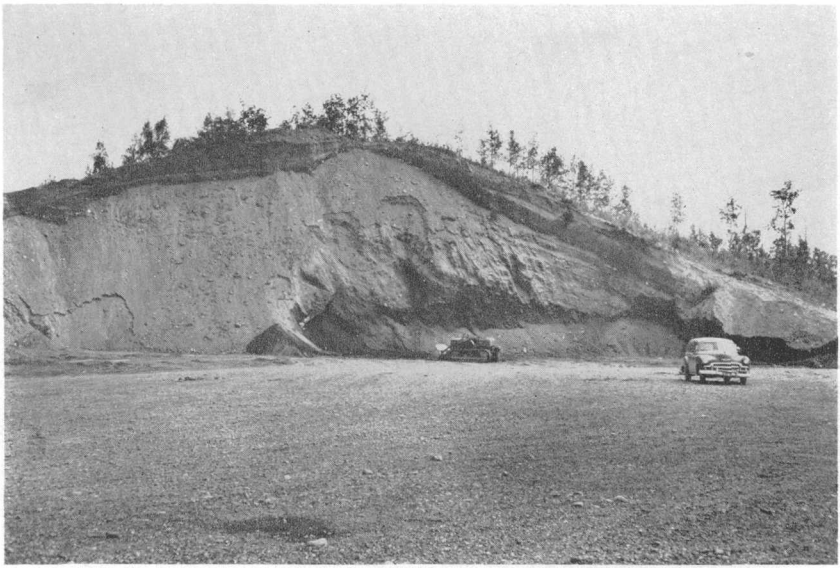
What appears to be a blue-gray clayey till along the bluff, is on close examination, only slump material from the Bootlegger Cove clay mixed with sand, silt, and a few pebbles. About 30 feet of brown sand and sandy silt at the base of the bluff underlies 15 to 20 feet of the Bootlegger Cove clay that in turn is overlain by tan sandy silt that extends to the surface. The lower silt and sand is inclined and passes beneath the Bootlegger Cove clay so that about 1 mile from Point Woronzof, only the Bootlegger Cove clay is exposed in the bluff. The easternmost exposure of the sand and tan sandy silt below the Bootlegger Cove clay is near the outlet of the drainage ditch in the NW¼SW¼ sec. 22, T. 13 N., R. 4 W.

Exposures between Point Campbell and Point Woronzof are not common. One of the better exposures is in a small gravel pit in the SW¼NW¼ sec. 33, T. 13 N., R. 4 W., near the Alaska Communications System Station where silt layers in pebble and cobble gravel lenses are contorted. The log of a water well 240 feet deep, the collar of which is 140 feet above sea level, near this station (Cederstrom and Trainer, 1953, No. 97) lists a clayey sand in the upper 30 feet of the delta at that point. Deposits logged above the 140-foot depth are for the most part sand containing some coal. Deposits logged below 140 feet are predominantly sand and gravel to the 187-foot depth and below that depth the material is gravel. Till was indicated from 40 to 50 feet, and probable till from 30 to 40 feet. Below 140 feet, 1 foot of till is recorded between 141 and 142 feet, 9 feet of till between 200 and 209 feet, and four other possible tills in the lower 31 feet, each of which range from 2 to 7 feet in thickness. Reinterpretation of the well log by Cederstrom and Trainer (written communication, January 1957) places till between 30 and 61 feet, and between 160 and 235 feet. The high ridge may be composed of interlayered silt, sand, and gravel containing till. This compares favorably with the exposures in the sea cliffs near Point Campbell and Point Woronzof.

Varied materials are exposed by pits and road cuts in the eastern part of the delta deposits. A pit in the SE¼SW¼ sec. 4, T. 12 N., R. 4 W., contains steeply dipping gravel that appears deltaic in origin and is similar in bedding, sorting, and degree of disturbance, to the prodelta gravel in the pit west of the road in the SE¼SE¼ sec. 9, T. 12 N., R. 4 W. The gravel also appears to extend westward under a hill west of another gravel pit located in the SW. corner of sec. 4. The hill, a ridge on the delta, is cut by Kincaid Road, where gray crossbedded medium sand contains silt layers and angular cobbles and boulders. Part of the sand is distorted, crenulated, and faulted. The crossbedded sand is truncated by other sand layers.

A. Soled and striated greenstone boulder from till of Naptowne age north of Cairn Point along east side of Knik Arm.

B. Delta deposits, looking south into bluff along south shore of Knik Arm near Point Woronzof. Photograph by W. R. Hansen.



A. Kame showing inclined bedding; west end of O'Malley Road, in the NW¼NW¼ sec. 20, T. 12 N., R. 3 W. Photograph by W. R. Hansen.

B. Kame deposit showing pebbly till at right and normal faulting of sand and pebble gravel beds at left of figure. Exposed in gravel pit in SE¼NE¼ sec. 18, T. 12 N., R. 3 W. Photograph by W. R. Hansen.

A 230-foot bluff near Point Campbell contains the maximum exposed thickness of the delta deposits. There is no indication in the record of well 97 (Cederstrom and Trainer, 1953), which extends 100 feet below sea level, of any change in materials that would establish the lower limit of the deltaic deposits. Thus the maximum thickness is more than 330 feet.

The Point Woronzof and Point Campbell highland area rises 125 to 150 feet above the lower lying glacial deposits on the lowland around Lake Spenard and Sand and Jewel Lakes. The highland is different both topographically and stratigraphically from the lowland around it. The highland appears from its geographic and topographic position to be a segment of a morainal ridge deposited by a glacier from Turnagain Arm and to be continuous with Fire Island, however, for geologic reasons this origin does not seem to fit.

Stratified deposits dip eastward from Point Woronzof and interfinger with the Bootlegger Cove clay. Along Turnagain Arm, the layers dip southeastward in the sea cliff, so that deposition probably was from the west or northwest. Coal fragments are either scattered throughout the stratified deposits, or, in places, are concentrated in lenses and layers along both Turnagain and Knik Arms. The only known coal exposures are on the west side of Cook Inlet southwest of the area, up the Susitna River valley to the northwest, or up Knik Arm and the Matanuska Valley to the north. No coal deposits are known along Turnagain Arm.

The lack of coal, either in the advance outwash near Potter, or in the stratified deposits up Turnagain Arm, suggests that materials derived from Turnagain Arm are coal free. This interpretation coupled with the southeastward dips of the layers in the delta deposits, and with the similarity between the stratified deposits on Fire Island and on the Point Woronzof and Point Campbell highland, indicates that the delta deposits were derived from either the west or northwest side of Cook Inlet or the Susitna Valley, and not from Knik Arm.

Fire Island, in the middle of Turnagain Arm off Point Campbell, is important in the interpretation of the origin of the older delta deposits. The senior author and W. R. Hansen visited Fire Island in June 1956 to examine the deposits that form the island. Compact silty till, locally hard and stony, forms the surface of the island, except for sand dunes along the east and southeast bluff, and a gravel-covered flat surface at the northeast end of the island. Underlying the till on the west side of Fire Island, near Race Point, is a medium sand with one-fourth to one-half inch fragments of coal scattered throughout. The appearance of the stratified deposits on Fire Island is the same as the materials exposed near Point Camp-

bell. On the east side of the Island intermixed till, silt, sand, and gravel compose the moraine. A 5-foot layer of peat overlies till on the south bluff about 1 mile east from the Fire Island light. A radiocarbon determination of a sample collected at the base of the peat section gave an age of 9,300±250 radiocarbon years (Rubin, Meyer, U.S. Geological Survey, written communication April 2, 1957, W–536). Thus, the minimum age of the moraine is about 9,000 radiocarbon years, but the maximum or absolute ages are not known. The following hypothesis is presented although no one theory of deposition known to the authors is completely satisfactory in all details.

A lobe of either the Susitna Valley glacier or a glacier from the Alaska Range on the west side of Cook Inlet extended into the area south of Anchorage. Melt water from at least the Matanuska–Knik lobe and possibly the Susitna lobe apparently was ponded behind this ice barrier across what is now Cook Inlet. Melt water from the "barrier" glacier deposited its load in part as a delta into the ponded waters, and in part as an end moraine. Most of the crossbedding in the delta deposits exposed along Knik Arm is confined within thin units that are dipping about 10° to 30° E. The crossbedding within a unit is steeper than the overall dip of the unit, and commonly ranges between 20° and 40° to the east. If the deposits were built forward as a delta into standing water the crossbedding would likely extend the entire height of the delta, rather than be confined within thin beds. One condition of deposition that could account for the lack of long deltaic crossbeds is that the level of the lake increased continuously as the sediments were deposited, but stayed barely above the level of the topmost layer of sediment. In this manner, thin crossbedded layers could be piled up on top of each other.

The delta extended from a point west of Fire Island to the Point Campbell and Point Woronzof area. Further advance by the lobe from the eastward-moving glacier over its delta, resulted in deposition of the till, in part deposited in the ponded water, that forms the moraine at Fire Island. The ice front stood between Fire Island and Point Campbell. Evidence that the glacier was near Point Campbell and that blocks of ice probably were rafted into the delta deposits is: (1) the accumulation of till over the stratified deposits on Fire Island; (2) the presence of tilted blocks of till above the stratified deposits near Point Campbell; and (3) the knobs and kettles on the surface of the delta. Thus the delta is a proglacial feature, and may be equivalent to an end moraine.

Fire Island and the Point Campbell–Point Woronzof highland were connected after deglaciation. Subsequent erosion by the wa-

ters of a combined Matanuska and Knik River, coupled with the waters of Turnagain Arm and Cook Inlet, separated the areas. At lowest tide, boulders as much as 30 feet in the longest dimension, cover the tidal flats between Point Campbell and Fire Island. They are probably remnants of the moraine that originally extended almost to Point Campbell.

The flat surface along the western side of the delta originated either before or during erosion of the delta deposits. Assuming that the formation of the surface was contemporaneous with the erosion of the delta, wave action at sea level probably cut the flat surface. The thin cover of reworked sand and gravel was deposited on the underlying deposits of the delta. Rebound of the surface in Recent time, or perhaps lowering of the sea level, raised the beveled surface relative to the sea and resulted in a wave-cut bench elevated above modern sea level.

An alternative origin is favored by the authors. Prior to erosion of either the moraine supporting the delta, or the delta itself, the lake in which the delta and Bootlegger Cove clay accumulated may have overflowed along several channels. The channel in the saddle between Point Campbell and Point Woronzof is one such channel. Overflow waters subsequently scoured a channel, somewhere west of Point Woronzof, through which the lake drained southward, as suggested by the gradient of the flat surface. The overflow channel in the saddle between Point Campbell and Point Woronzof was eroded, and a scarp marks the boundary between the two channels. Erosion by the waters of Cook Inlet removed much of the delta and the overflow channel deposits. The flat surface along the delta and along the east end of Fire Island could be considered remnants of either one large or several smaller overflow channels. The gradient of the flat surface suggests that the lake was not yet drained before the delta was eroded by the waters of Cook Inlet.

The silts in the bluffs near Point Campbell and Point Woronzof are predominantly tan to brown. Silty sand and gravel also are tan to brown. Silt and sand layers adjacent to layers of coal fragments are an intense brown. The color is considered to be secondary rather than primary and caused by oxidation. The oxidation extends from the top of the bluff to the beach level, a thickness of as much as 175 feet. Karlstrom (oral communication, July 1956) considered the oxidation to be related to a weathering profile, and in March 1957 (written communication) he reiterated his belief that the delta is part of the Eklutna glaciation rather than part of the Knik glaciation. Three methods of oxidation, however, seem plausible to the authors; oxidation as part of a weathering profile, oxidation that extends inward from the surface for several feet, and that is

continuing at the present, and oxidation by ground water moving along permeable layers. The authors favor oxidation by circulating ground water for the following reasons:

(1) Layers of gray clay and silty clay 1 to 10 inches thick are unoxidized even though layers of oxidized tan silt or silty sand overlie and underlie the clay. If weathering produced the oxidation, the clays would either be oxidized along with the other materials, or else the clays would act as a barrier and prevent oxidation of the underlying materials.

(2) Layers of sand and fine gravel that contain coal fragments are oxidized. The coal fragments have a brown rim, and the color continues into the surrounding sand or gravel. The coloration is caused by oxidation of the pyrite in the coal fragments.

(3) Oxidation of the bluff is not uniform from the top to bottom, instead, layers of tan to brown silt, sand, and gravel, alternate with layers of gray clay, silty sand, and silty gravel. Oxidation proceeding inward at the present time would also include these layers. Thus, the apparent thickness of oxidation is relative neither to the length of time available for weathering, nor to the age of the deposits.

Deposits of the delta underlie, and interfinger with, the Bootlegger Cove clay along Knik Arm. The delta, thus, is either contemporaneous with, or older than, the Bootlegger Cove clay. The tan silts that underlie the Bootlegger Cove clay are believed to have been oxidized by circulating ground water and not by surface weathering. The delta, the prodelta deposits, and the pitted outwash deposits that show ice-contact features are intimately related. The delta thus is considered to be part of the pre-Wisconsin Knik glaciation.

PRODELTA DEPOSIT

Stratified sand and pebble and cobble gravel with local steep dips from the west and northwest flank the eastern margin of the delta. Northeasterly or easterly dips are not compatible with the dominant direction of dip of materials in the pitted outwash, which appears to originate from the north. Though part of the delta, it is here called a prodelta deposit because the flatter surface expression is distinct from the steeper delta deposits.

The surface of the southern part of the prodelta deposit near Jewel and Sundi Lakes is smooth and nearly level, though sloping gently toward Jewel Lake. North of Jewel and Sundi Lakes, rounded hills slope gently toward Jewel Lake, and rise above the generally level surface to the south. Steep slopes of ice-contact deposits bound the east margin of the prodelta deposit around the shores of Sand, Sundi, and Jewel Lakes.

Sand, pebble and cobble gravel, olive gray (5 *Y* 3/1) when dry and darker olive gray (5 *Y* 4/2) when moist, constitute the materials in the prodelta deposits. Sand and gravel are commonly at the surface. The prodelta deposits contain sand and gravel layers that range from horizontally bedded to steeply dipping or crossbedded; from well sorted to poorly sorted; from undisturbed to contorted. A 61-foot section measured along the east side of the road in the NE¼ sec. 9, T. 12 N., R. 4 W., consists of olive-gray crossbedded medium sand in which a deep red-brown oxidation is noticeable along some of the layers. Pebble gravel is interlensed with the sand, and coal fragments are scattered throughout the section. The upper 10 feet contains lenses of coarser angular material. The apparent dip of the laminations in the sand ranges from horizontal to about 70° from the west.

In a gravel pit in the SW. cor. sec. 10, T. 12 N., R. 4 W. the dip of layered sand and gravel ranges from horizontal near the surface to 30° from the northwest at shallow depth. Coal layers are common.

The prodelta deposit accumulated in a glacial lake as a frontal part of the delta. The lake waters surrounded stranded blocks of glacial ice, some of which exceeded 1 mile in longest dimension. As the delta encroached into the lake, sand and gravel were deposited over some of the smaller blocks and around some of the larger blocks. The prodelta deposit was laid down by streams flowing eastward and southeastward, as shown by the gradient of its surface and the dips of the foreset beds.

BOOTLEGGER COVE CLAY

The Bootlegger Cove clay is here named for the light-gray silty clay, locally called the "blue clay," that is conspicuously exposed in the bluffs along Knik Arm. Typical sections of the Bootlegger Cove clay are in the SW¼NE¼ sec. 23, T. 13 N., R. 4 W. near Bootlegger Cove for which the unit is named. The Bootlegger Cove clay is exposed almost continuously from a point about three-fourths of a mile southeast of Point Woronzof northward to a point about half a mile southwest of the Eagle River Flats. North of the Flats it is exposed discontinuously in the bluffs. In some places, stream erosion has removed the clay to below sea level. The Bootlegger Cove clay underlies sand and gravel in the banks along the lower courses of Ship, Chester, and Fish Creeks. Well logs record blue clay, interpreted by the authors as Bootlegger Cove clay, beneath outwash sand and gravel at Anchorage, beyond the Seward–Anchorage Highway in sec. 20, T. 13 N., R. 3 W., under Mountain View, and under most of Elmendorf Air Force Base (pl. 5). The

extent of the Bootlegger Cove clay in the northern part of the area is not known, but the clay is assumed to extend under the Wisconsin advance outwash and ground moraine for at least one-fourth mile east of Knik Arm, and probably farther.

South of Anchorage, a clay correlated by the authors as the Bootlegger Cove clay underlies the Hood and Spenard Lakes area (Cederstrom and Trainer, 1953, well logs 73, 80, 81, and 88) and the International Airport, and appears to extend beneath the Knik pitted outwash and the prodelta deposits in the vicinity of Sand Lake. Blue clay reported in well records near Sand Lake (Cederstrom and Trainer, 1953, well logs 46, 69, 80, 83, 93, and 101) is interpreted by the authors as the Bootlegger Cove clay because of apparent continuity with, and similar altitude of, the surface of clay to the surface of the Bootlegger Cove clay. It extends under, and perhaps interfingers with, the delta and prodelta deposits (pl. 6). The Bootlegger Cove clay is re-exposed south of Jewel Lake, where it covers parts of secs. 11, 13, 14, 15, and 25 in T. 12 N., R. 4 W. in the lowland adjacent to Turnagain Arm. The clay probably extended southwestward before erosion along the Arm truncated the southwestern edge of the clay. Two hills of ground moraine, flanked by stratified sand and gravel mapped as part of the glaciofluvial ice-contact deposits, stand above the level of the clay; the clay may overlap the till, and may be overlapped by the sand and gravel, but these relationships were not seen in the field. The till hills may be part of the moraine of Naptowne age from Turnagain Arm, as discussed under the section on the Knik ground moraine, and overlie the Bootlegger Cove clay. The lack of a coating of Bootlegger Cove clay over the surface of the till hills, which are below the level of the lake necessary for the deposition of the delta deposits, may be explained if the till hills are younger than the Bootlegger Cove clay. The clay is covered by swamp deposits to the east of the hills of till, but about three-fourths of a mile east of the till hill at the west end of Klatt Road an auger hole penetrated the clay.

A light-gray clay exposed along the Seward to Anchorage Highway, about three-fourths of a mile southeast of Little Rabbit Creek, is mapped as Bootlegger Cove clay. Another exposure of clay underlies 73 feet of till in the bluff about one-fourth mile north of Potter. This exposure is in a nearly vertical bluff and is not shown on plate 1; it may not be part of the Bootlegger Cove clay.

The Bootlegger Cove clay apparently overlaps or interfingers with the delta deposits beneath peat and muskeg along a line that is more or less parallel to the rise of the highland between Point

Woronzof and Point Campbell, as shown along Knik Arm near the drainage outlet in sec. 22, T. 13 N., R. 4 W. The upper surface of the Bootlegger Cove clay extends almost horizontally along most of the bluff of Knik Arm. The materials that overlie the Bootlegger Cove clay range from peat near Point Woronzof, Naptowne outwash sand and gravel that extends northward from a point about 1¼ miles east of Point Woronzof to the Elmendorf Moraine, to sand and gravel of the Naptowne advance outwash, and gravelly till of the Naptowne ground moraine north of the Elmendorf Moraine. Springs and seeps along the upper surface of the Bootlegger Cove clay cause slumps and earthflows (Varnes, D. J., 1958) along Knik Arm. Scarps with slickensided surfaces are common on the Bootlegger Cove clay near the top of the bluff; hummocky earthflows are abundant at the foot of the bluff along Knik Arm. The measured slope on the Bootlegger Cove clay in most places along the bluff is about 30° to 35°.

South of Jewel Lake, the surface of the Bootlegger Cove clay forms a relatively flat bench from Campbell Creek south to Turnagain Arm. A kettle and small lake interrupt the evenness of the generally horizontal surface. At the east end of the deposit, the surface gradually slopes beneath a swamp. Moderately steep banks confine Campbell Creek through the clay.

The Bootlegger Cove clay is a light-gray to dark-greenish-gray silty clay that contains layers or lenses of medium sand. The clay is hard and compact, breaks with a conchoidal fracture when dry, and is soft and sticky when wet. Beds one-fourth inch to 2 inches thick are visible in undisturbed samples, and laminations ranging from 0.25 mm to 1.0 mm thick commonly show within the larger beds. The laminations as well as the beds appear to be cyclic and to consist of alternating light-gray and dark-gray laminae and represent differences in the ratio of silt-size particles to clay-size particles in individual lamina. The particle-size similarity between the Bootlegger Cove clay and other samples is shown in figure 3.

The upper 12 inches commonly is a yellowish-gray silt that becomes more sandy in the upper 6 to 8 inches. Sand grains are scattered throughout the clay and angular pebbles 1 inch in diameter are common.

The Bootlegger Cove clay is best exposed along Knik Arm west of Bootlegger Cove and Chester Creek. A typical section of the Bootlegger Cove clay was prepared from sections exposed along the bluff of Knik Arm. In addition, an exceptionally thick exposure of the clay was measured near Cairn Point.

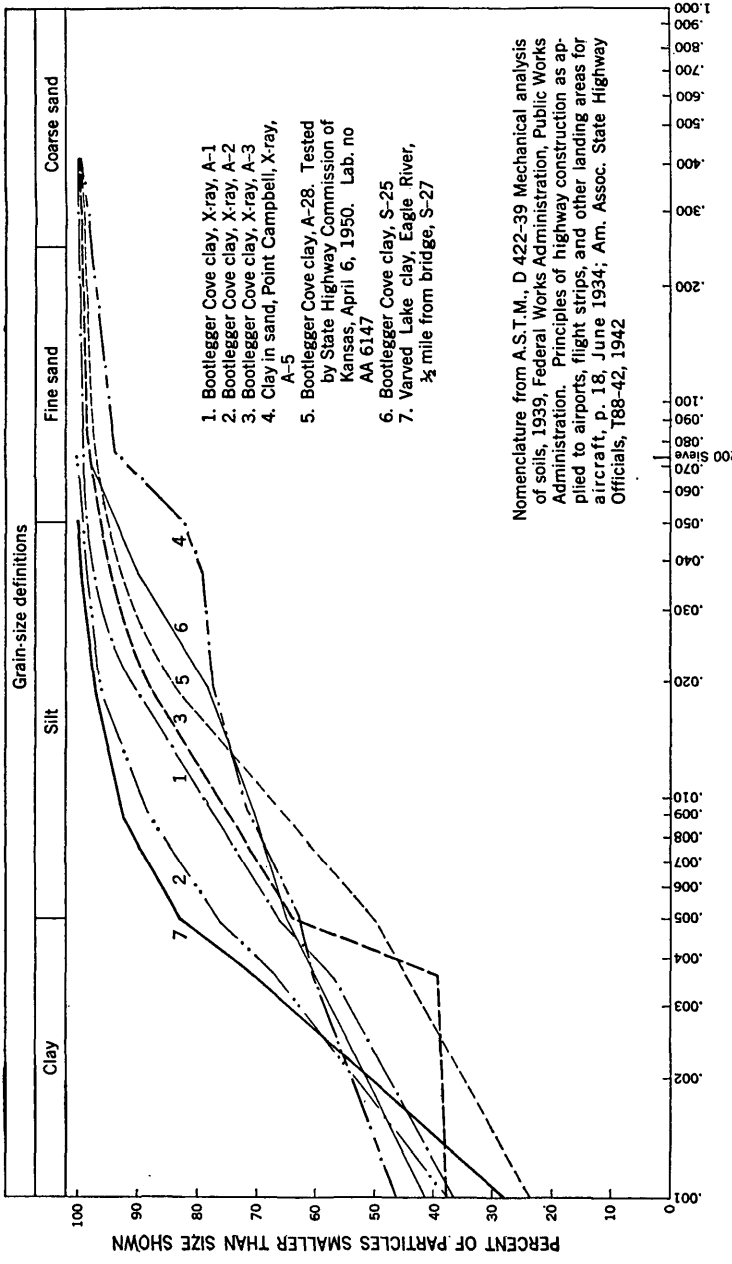


FIGURE 3.—Comparative curves showing grain size of various clays.

3. *Composite section along the bluff of Knik Arm in the SW¼ NE¼ sec. 23, T13 N., R. 4 W.*

		Thickness Ft	In
	Outwash of Naptowne age:		
9.	Sand, silty with humus; oxidized yellowish gray (5 *Y* 6/2)	1	6
8.	Sand, fine to medium, contains fine gravel in lenses; gray, some layers oxidized brown; fluvial crossbedding, beds 1 foot thick; coal fragments scattered throughout, locally concentrated into layers. Contact with Bootlegger Cove clay is sharp and horizontal	18	0
	Bootlegger Cove clay:		
7.	Clay, silty, light-gray (*N* 7) dry to dark-greenish-gray (5 *GY* 4/1) moist; upper 12 inches oxidized yellowish gray (5 *Y* 6/2), lower limit oxidation even and distinct, no mottling below upper 12 inches; upper 6 to 8 inches more sandy; plastic when wet, compact when dry; breaks with uneven hackly fracture	14	6
6.	Sand, medium, dark-greenish-gray (5 *GY* 4/1) moist	--	8
5.	Clay, light-gray (*N* 7) when dry to dark greenish gray (5 *GY* 4/1) when moist; compact, breaks with uneven fracture	2	0
4.	Sand, medium, dark greenish-gray (5 *GY* 4/1) when moist	--	10
3.	Clay, silty, dark greenish-gray (5 *GY* 4/1) when moist; grades into underlying clay	1	0
2.	Clay, silty, light-gray (*N* 7) when dry to dark greenish gray (5 *GY* 4/1) when moist; compact when dry, plastic when wet	6	0
1.	Slump and flow debris to beach level	10	0
	Total thickness	54	6

4. *Thick section of Bootlegger Cove clay measured along ravine near Cairn Point, in the NW¼SW¼SE¼ sec. 31, T. 13 N., R. 3 W.*

		Ft
4.	Silt, sandy, pale-brown (5 *YR* 5/2), humic	0 to 7
	Glacial till:	
3.	Silt, sandy to gravelly, yellowish-gray (5 *Y* 6/2); compact; contains irregular lenses of sand and gravel, somewhat distorted; large erratics locally	110
	Bootlegger Cove clay:	
2.	Clay, silty, light-gray (*N* 7) when dry, to dark greenish gray (5 *GY* 4/1) when moist; plastic when wet, compact when dry; horizontally banded and laminated in 0.25 mm to 2-inch layers; angular pebbles scattered throughout; upper surface not well exposed, but alinement of seepage and springs suggests irregular contact	126
	Tidal beach:	
1.	Clay, silty to sandy, dark-greenish-gray (5 *GY* 4/1); sticky, plastic; surface covered by erratic boulders of graywacke and greenstone that range from 1 to 6 feet in the longest dimension. Overlaps Bootlegger Cove clay	0 to 10
	Total thickness	236 to 253

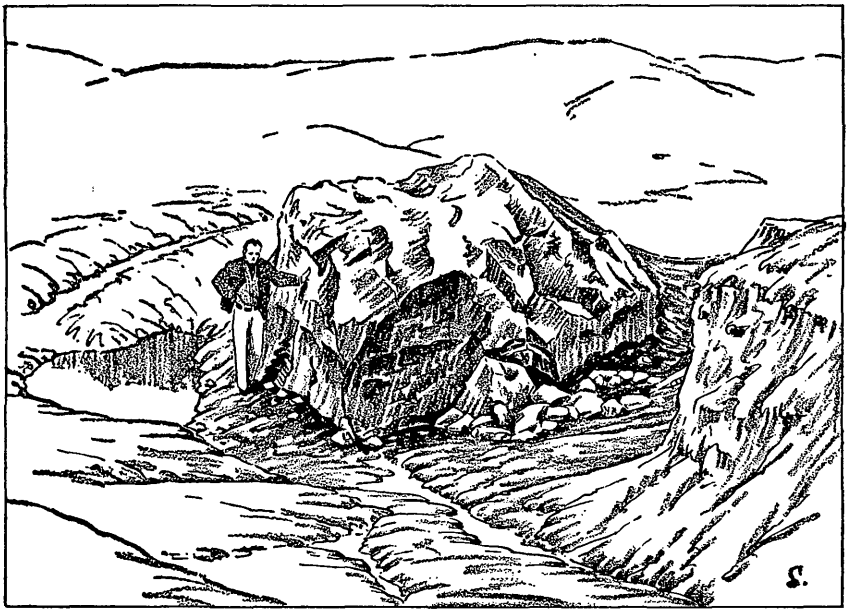


FIGURE 4.—Erratic boulder in Bootlegger Cove clay south of Sand Lake Road, near center of sec. 14, T. 12 N., R. 4 W. Sketched from a photograph.

The 126-foot thickness of clay is inconsistent with thicknesses observed in other exposures, and an attempt to recover the exposure in 1956 failed. Trash and debris filled the ravine and covered the sea bluff at Cairn Point so that the till and clay were obscured. Exposures north and south of Cairn Point contain the Bootlegger Cove clay that extends about 30 to 50 feet above high tide.

Blue-gray silt and fine sand in the SE¼ sec. 21, T. 13 N., R. 4 W., overlies tan silt and sand of the delta. The blue-gray silt and fine sand is considered to be a coarse phase of the Bootlegger Cove clay and the two intergrade eastward along the bluff.

In the area south of Jewel Lake the Bootlegger Cove clay is light gray when dry and a dark greenish gray when wet. Compact and hard when dry, the clay is sticky and soft when wet. The upper 4 to 6 feet is oxidized to a yellowish gray (5 *Y* 7/2) when dry, and light olive gray (5 *Y* 5/2) when wet. Angular pebbles are scattered throughout the clay, but cobbles and boulders are rare. In 1955, an excavation near the center of sec. 14, T. 12 N., R. 4 W. exposed oxidized clay that had a weak granular structure and displayed no layering that could indicate cyclic deposition. An erratic in the center of the excavation measured roughly 14 by 10 by 8 feet (fig. 4). This erratic boulder is the largest seen by the authors in the Bootlegger Cove clay, and must have been rafted on glacial ice. Near the edge of the bluff along Turnagain Arm, the lower 4 feet

of excavations examined in 1956 show 4- to 6-inch layers of greenish-gray fine sand alternating with 1-inch layers of a tight plastic clay. Two feet of plastic dark-greenish-gray clay overlies the 4 feet of sand and clay. No oxidation was noted at this excavation.

One-half of a mile south from the Sand Lake Road along the west section line of sec. 14, T. 12 N., R. 4 W., a road cut exposed a block of yellowish-gray silty clay faulted downward into a poorly sorted gravel. Drag along normal faults was well developed. The silty clay shows laminae approximately horizontal, and contains pebbles, especially in the lower part near the underlying gravel. The clay in this exposure looks very much like an ice-contact deposit. The underlying gravel is very poorly sorted and consists of silt to boulder-size particles.

In the exposure three-fourths of a mile southeast of Little Rabbit Creek the Bootlegger Cove clay is a compact light-gray (dry) to plastic dark-greenish-gray (moist) silty clay. The clay is about 20 feet thick; the lower 11 feet is a plastic "blue" silty clay, the upper 9.5 feet is a sandy clay that becomes increasingly sandy near the top. The contact between the two parts of the clay is gradational.

Sample *A*–6 was collected at this exposure, and the similarity between the clay in this exposure and the Bootlegger Cove clay elsewhere can be seen by comparing sample *A*–6 with sample *A*–2 in table 2. The similarity in particle size is shown in the particle size curve on figure 3.

Along the bluff in the middle of sec. 25, T. 13 N., R. 4 W., the Bootlegger Cove clay is 58 feet thick, the right order of thickness for most exposures. The maximum observed thickness is at Cairn Point, where 126 feet of light-gray silty clay is exposed. A well drilled in Turnagain Heights (Cederstrom and Trainer, 1953, No. 50) near the sea cliff where the Bootlegger Cove clay is exposed to beach level penetrated 117 feet of the clay. The maximum thickness of the Bootlegger Cove clay in the Anchorage area may be in excess of 250 feet. A well near the road forks near Lake Spenard (Cederstrom and Trainer, 1953, No. 80) penetrated 269 feet of silt and clay—interpreted by the authors as the Bootlegger Cove clay—before reaching the underlying gravel. The Bootlegger Cove clay was deposited blanketlike in all directions from the type area. Along its eastern and southern margins it appears to thin out or abut against the edge of the basin of the Susitna Valley. The fine silt- and clay-size particles that comprise the Bootlegger Cove clay were derived from rock flour transported by glacial melt water. The loads probably were similar to those carried by modern glacial streams. The Matanuska, Knik, and Eagle Rivers carry silty clay (rock flour) from the glaciers at their sources to Knik Arm. At low

TABLE 2.—*X-ray analysis of clay samples showing materials in silt and clay fractions of each sample*

Lab. sample No.	Field sample No.	Unit	Location	Environment	Size [1]	Minerals present (parts in ten)					
						Chlorite	Mica	Kaolinite	Quartz	Feldspar	Other
135854	A-1	Bootlegger Cove clay	NW¼SW¼ sec. 22, T. 13 N., R. 4 W.	Doubtful. Fresh water or estuarine.	Clay Silt	5 (?)	3 1	Trace? —	Trace 4	Trace 3	
135855	A-2	Bootlegger Cove clay lens near Woronzof Point.	NE¼SE¼ sec. 21, T. 13 N., R. 4 W.	Doubtful. Fresh water or estuarine.	Clay Silt	6 4	2 2	Trace? —	Trace 2	Trace 1	
135856	A-3	Bootlegger Cove clay	SW cor. NE¼ sec. 14, T. 12 N., R. 4 W.	Fresh-water lake	Clay Silt	— —	2 1	1 1	Trace 4	Trace 2	Mixed layered chlorite-montmorillonite. Mixed layered chlorite-montmorillonite hornblende.
135857	A-4	Lake clay (outside of area).	Three-eighths of a mile east of old Palmer Highway bridge, N. side Eagle River.	Fresh-water lake	Clay Silt	5 Trace?	2 Trace?	— 3?	Trace 4	Trace 2	
135858	A-5	Lake clay, in sand, Point Campbell.	NE¼SW¼ sec. 8, T. 12 N., R. 4 W.	Fresh-water lake or pond.	Clay Silt	5 —	3 —	— 1?	Trace 5	Trace 3	Montmorillonite vermiculite(?) hornblende(?). Hornblende(?).
135859	A-6	Bootlegger Cove clay	SW¼SW¼ sec. 3, T. 11 N., R. 3 W. (unsurveyed).	Doubtful. Fresh water or estuarine.	Clay Silt	6 2	1 1	Trace —	Trace 4	Trace 2	
141358	A-7 U.S. Bur. Reclamation Number 16R-50.	Lake clay (outside of area).	From 31-ft-level drill hole, Lake Eklutna (U.S. Bur. Reclamation).	Fresh-water lake	Clay Silt	4 2	3 1	— —	1 4	1 2	
148908	A-23	Estuarine silt	SW¼NW¼ sec. 21, T. 13 N., R. 4 W. 166 ft from bluff, from pool after retreat of high tide.	Estuarine	Clay Silt	4 Trace	4 Trace	— —	1 6	Trace 3	

148907	A—24	Estuarine silt	SW¼NW¼ sec. 21, T. 13 N., R. 4 W. Six inches under gravel pavement, 300 ft from bluff.	Estuarine	Clay Silt	6 Trace	2		1 6	Trace 3	Montmorillonite.
148909	A-22	Till of older ground moraine.	NW¼, sec. 32 T. 13 N., R. 3 W. Upper 18 in of till in bluff along Alaska RR.	Glacier	Clay Silt	3 Trace	2		3 6	1 3	
148910	A-21	Till of older ground moraine.	Along O'Malley Road, channel sample from 3–5 ft depth. One-half mile east of Seward-Anchorage Highway.	Glacier	Clay Silt	2 Trace	1		1 6	1 3	Mixed layered chlorite-montmorillonite.
148911	A-25	Bootlegger Cove clay	NW¼SW¼ sec. 22, T. 13 N., R. 4 W. Base of bluff.	Doubtful. Fresh water or estuarine.	Clay Silt	7 2	2		1 5	Trace 2	Montmorillonite.
148912	A-26	Bootlegger Cove clay	Same location as A-25, halfway up bluff, associated with marine fossils.	Doubtful. Fresh water or estuarine.	Clay Silt	5 1	2		1 5	1 3	
148913	A-27	Bootlegger Cove clay	Same as A-25 and A-26, top of bluff, 1 ft below peat section, about same horizon as A-1.	Doubtful. Fresh water or estuarine.	Clay Silt	5 Trace	2		1 6	1 3	Mixed layered chlorite-montmorillonite.

[1] Clay size of all field samples listed is <2μ. Silt size for field samples A-1 through A-6 is 2-74μ; size for field samples A-21 through A-24 is 2-62μ.

507199—60——4

tide this blue-gray estuarine silty clay is exposed from bluff to bluff across the Arm. Whether the Bootlegger Cove clay was deposited in an estuary or in a fresh-water lake is not conclusively known. Facts that support a lacustrine or an estuarine environment are discussed below.

The Bootlegger Cove clay overlies deposits of the delta, and in the SE¼ sec. 21, T. 13 N., R. 4 W., a blue-gray silt and sand phase of the Bootlegger Cove clay overlies and appears to interfinger with the delta deposits. If these two deposits are contemporaneous, as the authors believe, the Bootlegger Cove clay must be a glacial deposit; if the deposits are not contemporaneous, the Bootlegger Cove clay may be, but must not necessarily be, an interglacial deposit.

The Bootlegger Cove clay and the delta may have been deposited contemporaneously from the same source into a glacial lake. The Bootlegger Cove clay then would have accumulated as bottomset beds of the delta. This explanation is not acceptable because the lateral extent of the clay, north and east from the margin of the delta, the horizontal surface of the clay, the constancy of percentages of particle sizes in the clay, and the similar altitude of the clay above sea level combine to suggest that the clay is not a bottomset deposit.

Another possibility is that the delta formed in a glacial lake that was drained prior to deposition of the Bootlegger Cove clay, which accumulated either in a later lake that reoccupied the basin, or in an estuary that formed as the sea encroached on the drained-lake area. Drainage and refilling of a lake basin is required by this explanation. The ice-contact features in the clay along Campbell Creek, the weathered upper surface of the clay, and the large ice-rafted boulder, all discussed earlier, suggest deposition of the Bootlegger Cove clay in a glacial environment. The delta and prodelta deposits are associated with features that necessitate stagnant blocks in the area during deposition and indicate a late phase glacial deposit. Drainage of the lake basin prior to deposition of the Bootlegger Cove clay requires reoccupation by a second lake during the same part of a glacial substage. To make these events possible, the glacier blocking the Inlet had to retreat; deltaic deposition ceased; the delta was eroded, the lake drained, and the basin was refilled. Such refilling by another lake in the same glacial stage in which the Bootlegger Cove clay was deposited is inconsistent with the authors' interpretation of late-stage glacial activities.

The Bootlegger Cove clay was accepted as an estuarine deposit for many years. In 1950, the authors were of this opinion and based their decision on fossils that have similar present-day forms col-

lected by Miller and Cooley along the bluff in secs. 22 and 23, T. 13 N., R. 4 W. F. Stearns MacNeil identified them as:

Buccinum cf. B. *physematum* Dall
Odostomia (*Evalea*) sp.
Nuculana fossa Baird
Cardium ciliatum Fabricius
Macoma cf. M. *sabulosa* Gmelin
Saxicava pholadis Linné
Mya truncata Linné

Collecting records in the Distributional list of the West American Marine Mollusks, the Conchological Club of Southern California, indicate that *Nuculana fossa* Baird, *Cardium ciliatum* Fabriciuss, *Saxicava pholadis* Linné, and *Mya truncata* Linné have been dredged from relatively shallow waters; that is, 10–75 fathoms. *Mya truncata* has been collected from intertidal mud flats. (F. Stearns MacNeil, oral communication, January 1957.) The bluff line is an area of almost continuous slump and although utmost care was taken in collecting the fossils, the authors doubt if the fossils were in undisturbed materials and in place. In July 1956 the authors and W. R. Hansen revisited the locality and although many individual shells were found in the slumps and earthflows that extend along the bluff of Knik Arm, no specimens could be found in material that was unquestionably undisturbed, or was even high enough to be unaffected by storm waves or winter shore ice.

F. W. Trainer (written communications, dated Sept. 18, 1956, and Jan. 17, 1957) of the U.S. Geological Survey, however, does consider shells he collected from the same bluff line to have been in place in undisturbed material and that the Bootlegger Cove clay is at least in part estuarine in origin. The height of the surface of the Bootlegger Cove clay above modern sea level is explained if the waters of the Cook Inlet were higher during the interval of deposition. If, however, the sea level was no higher than the present level, rebound of the surface in post-Wisconsin time could have raised the Bootlegger Cove clay to its present position. Recent differential uplift has been reported at different places along the Alaskan coast (Smith, P. S., 1909, p. 278; Buddington, A. F., 1927, p. 52; and Twenhofel, W. S., 1952).

Deposition of the Bootlegger Cove clay in an estuary requires retreat of the glacier blocking Cook Inlet, erosion of the glacial lake, and encroachment of the basin by the sea. If the Bootlegger Cove clay was an estuarine deposit, sea water covered the lowland behind the delta. During this time, the glaciers to the north remained close and provided the ice-rafts for boulders, such as the one south of Jewel Lake. Rock flour in the melt water was depos-

ited in slack water much as rock flour is being deposited in the modern Knik and Turnagain Arms. Reworking of the delta by waters of Cook Inlet would result in apparent interfingering between the Bootlegger Cove clay and the delta deposits.

The differential glacial retreat, erosion, lake drainage, and encroachment by the sea, all taking place during the last part of the Knik glaciation does not seem feasible. If the Bootlegger Cove clay is considered to be an interglacial deposit rather than a late-glacial deposit, the ice-contact features and large ice-rafted boulders that suggest a glacial environment can not be explained by accumulation as either a lacustrine or estuarine deposit.

Beds and laminations in the Bootlegger Cove clay exposed near Cairn Point may be varves, or annual laminations. The beds appeared to be graded within each unit during field examination, but no detailed analysis was made. If varves, they would almost necessitate a fresh-water environment inasmuch as clays flocculate in sea water and are deposited as a massive deposit (Twenhofel, 1939, p. 499).

Seven samples were tested for similarities or differences that might be diagnostic of the depositional environment (table 2). Hathaway and Parker of U.S.G.S. (written communication, September 1954), report that "* * * All of the samples except 135856 (*A*–3) show essentially the same composition. The presence of chlorite may indicate an environment with relative high pH. This together with the general scarcity of kaolinite group minerals suggests a marine environment, although as glacial materials, the clays may have undergone little change from their original composition and therefore not reflect their environment adequately. * * * The presence of montmorillonite interstratified with chlorite in sample 135856 (*A*–3) suggests an environment of relatively lower pH." After analyzing sample *A*–7, they reported (written communication, June 1955) "* * * Samples *A*–1 through *A*–5 all show interstratification of chlorite and montmorillonitic layers which in sample *A*–3 reaches a degree that gives the X-ray pattern an appearance similar to that of vermiculite. The samples could be grouped as follows on the basis of the chlorite characteristics":

Increasing mixed layering [of chlorite and montmorillonite]

16*R*–50(*A*–17) [fresh water lake clay]
A–6 [*Qbc*]
A–1 [*Qbc*]
A–2 [*Qbc*]
A–4 [fresh water lake clay]
A–5 [fresh water lake clay]
A–3 [*Qbc*]

The samples are grouped above to show the trend toward interstratification of chloritic and montmorillonitic layers. Indications of the types of materials have been inserted for clarity. High chlorite content could indicate a marine environment, and high mixed layered mineral content (sample *A*–3) a fresh-water environment. At the chloritic end of the sample grouping, however, as well as at the mixed layered end, are samples of fresh-water deposits; that is, samples *A*–7, *A*–4, and *A*–5, and a trend toward a marine environment of samples *A*–1, *A*–2, and *A*–6 must be discounted to a large extent. Hathaway and Parker also emphasize that surface weathering of the source rock before redeposition as rock flour could produce the montmorillonite layers in the mineral particles. In addition, the silty clay in all the samples was derived from chlorite-rich rocks—greenstone and graywacke—and the presence of chlorite in the samples would not necessarily indicate a marine environment. Of interest is the thesis by R. W. Stump, on file at Iowa State College, in which he concludes that the clay mineral in the Matanuska Valley loess is dominantly chlorite derived from parent rocks and was uninfluenced by soil-forming processes (written communication, 1956).

Additional clay samples collected in 1956 were analyzed by J. C. Hathaway, H. C. Starkey, and Gillison Chloe, in a further attempt to determine the depositional environment of the Bootlegger Cove clay. Samples of known estuarine silt were compared to the Bootlegger Cove clay (table 2). The differences between the estuarine samples (*A*–23, *A*–24), the fresh-water clays (*A*–4, *A*–5, *A*–7), and the Bootlegger Cove clay (*A*–1, *A*–2, *A*–3, *A*–6, *A*–25, *A*–26, *A*–27) are too small to verify the environment of the Bootlegger Cove clay. The montmorillonite and mixed-layered minerals in the Bootlegger Cove clay are only traces and, according to the analysts, could have developed through weathering of the material at its source rather than through marine diagenesis.

Angular pebbles and occasional boulders scattered throughout the clay indicate deposition by glacial ice rafting. Lake ice transport of a 10 by 14 foot boulder does not seem feasible. Further support for a glacial environment during deposition of the Bootlegger Cove clay is in sec. 14, T. 12 N., R. 4 W. Bootlegger Cove clay, exposed in a road cut along the south bank of Campbell Creek, is downfaulted into a poorly sorted gravel. It appears that at this point the Bootlegger Cove clay was in contact with glacial ice. North of Anchorage, a clay interpreted as the Bootlegger Cove clay, is recorded in the log of the West Power Plant well (Corps of Engineers, unpublished well logs) with sand, gravel, and till interlayered with the clay between the depths of 208 and 236 feet. In addition,

oxidation of the upper 18 to 24 inches of the Bootlegger Cove clay strongly suggests deposition during a glacial stage and weathering during an interglacial stage. Everywhere the Bootlegger Cove clay was observed to be oxidized the clay was overlain by deposits of the Naptowne glaciation; that is, the outwash, pitted outwash, end moraine, advance outwash, or ground moraine. A sufficient time interval apparently was available for oxidation between the deposition of the Bootlegger Cove clay and the subsequent deposition of the Wisconsin glacial deposits.

In the absence of conclusive evidence, the depositional environment of the Bootlegger Cove clay is not established, but the authors favor the view that the clay was deposited in a fresh-water glacial lake. The following hypothesis that fits most of the facts available is presented with the realization that no one theory of deposition known to the authors is completely satisfactory in all details. Part of the pre-Wisconsin Matanuska-Knik Valley glacier apparently stagnated and covered the area with blocks of ice as large as 1 mile in diameter. The active ice of this glacier was north of the area. The glacier blocking the Cook Inlet south of Anchorage dammed the southward flowing melt water and formed the lake into which the delta and prodelta deposits accumulated from the southwest, and the rock flour accumulated from the north. The silt, sand, and gravel of the delta and the clay of the Bootlegger Cove clay encroached toward each other. Two separate source areas would explain the separation in grain size where the Bootlegger Cove clay overlaps or interfingers with the delta. The thickness of the clay depended on the proximity of the delta as well as the position of the margin of the depositional basin. The thinness of the clay south of Jewel Lake suggests that deeper water lay off what is now Point Woronzof, and shallow water lay off what is now the Jewel Lake area. The lake probably extended up Turnagain Arm for an unknown distance, but the deposits were eroded except for the remnants near Little Rabbit Creek and Potter.

GLACIOFLUVIAL ICE-CONTACT DEPOSITS

Hills and ridges stand above the level of the ground moraine and display in section stratified and crossbedded moderately dipping beds of silt, sand, pebbles, and cobbles. The hills and ridges have steep depositional ice-contact slopes. All of the ice-contact features have similar depositional characteristics; the deposits are sorted and usually stratified, they show fluvial deposition, they show abrupt changes in grain size in adjacent layers, and they are deformed. The knobs, hills, and ridges—kames and eskers—are prominent constructional features, but they are not mapped separately. They are

grouped instead, as glaciofluvial ice-contact deposits. The boundary between this group of deposits and the ground moraine is approximately located in the area around O'Malley and Huffman Roads, where the gray sand and gravel of the glaciofluvial ice-contact deposits overlie the ground moraine in sufficient thickness (+4 feet) or in knobs and ridges numerous enough to warrant differentiation from the underlying till of the ground moraine.

Two major areas of accumulation of the glaciofluvial ice-contact deposits are south of Ship Creek adjacent to the lateral moraine, and between O'Malley and Huffman Roads east of the Seward-Anchorage Highway. Other deposits are along Tudor Road near Otis Road, from Goose Lake northeast to Walton Road, near the Campbell Airstrip, and near the edge of the bluff along Turnagain Arm south of the Sand Lake Road. Smaller kames and eskers are scattered throughout the lowland, but because of the map scale they are not shown.

The glaciofluvial ice-contact deposits consist almost entirely of conical or knoblike kames and a few sharply terminated sinuous eskers. The slopes of the knolls are smooth and in places are as steep as 30°. Between O'Malley and Huffman Roads the glaciofluvial ice-contact deposits form a low hummocky terrain composed of small ridges and mounds 4 to 10 feet high, and a general formless cover of fluvial debris. The glaciofluvial ice-contact deposits consist of rock rubble, fluvial, lacustrine or deltaic deposits. Piles of rock rubble, stratified deposits with horizontal or steeply dipping layers, silt and clay with ripple marks overlying coarse sand and pebble gravel, and contorted beds of interlayered silt, sand, and gravel comprise—separately or in combination—many of the hills in the lowland. Many small ridges or hills similar in shape to kames and eskers are composed of till of the ground moraine. In the Lake Otis Road–Tudor Road area, road cuts expose contorted stratified silt and sand and some pebble gravel. Steep slopes separate the glaciofluvial ice-contact deposits from the swamp area. Road cuts likewise provide most of the exposures in the ridges between Goose Lake and Walton Road, where the ridges are composed of poorly sorted silty sand and gravel. A deposit at Bragow Road and DeBarr Road is a tight silty brown pebble and cobble gravel.

A kame field is on the eastern edge of the glaciofluvial ice-contact deposits south of Ship Creek. Many circular, elongate, and ridgelike tree-covered kames form a knob and basin topography. The kames here consist of contorted interlayered stratified silt, sand, and gravel. Extending into the NE¼ sec. 25, T. 13 N., R. 3 W. from the SW¼ sec. 19 and the NW¼ sec. 30, T. 13 N., R. 2 W. (unsurveyed), this small kame field rises above the swamp that ad-

joins it on the north and south sides. The boundary with the glaciofluvial ice-contact deposits on the west is distinct and steep, whereas a low hill of ground moraine abuts it on the east.

The materials in the O'Malley and Huffman Roads area range from moderately well-sorted sand and cobble gravel to poorly sorted sand and cobble gravel with horizontal to steep dips. In the NW¼ NW¼ sec. 16, T. 12 N., R. 3 W., a road cut in a south-trending kame exposes concave bedding in sand interlayered with silt and gravel. The slight concavity of the layers suggests that only slight differential settling accompanied ice melting. Any great amount of settling would have contorted the bedding more than is seen in exposures.

Glaciofluvial ice-contact deposits in the area around O'Malley and Huffman Roads overlie the ground moraine, are bounded by swamps and pitted outwash, and, in addition, are locally cut and bounded by abandoned melt-water channels. Cuts along O'Malley Road show poorly sorted medium to coarse sand with stringers of gravel. The sand layers one-half to 3 inches thick alternate with silt layers one-eighth inch to one-fourth inch thick. A cut along the Alaska Railroad in the NW¼ sec. 29, T. 12 N., R. 3 W. exposes gray cross-laminated ripple-marked sand and layers of silt. Layers of similarly cross-laminated and ripple-marked silt and sand are exposed along a cut in a side road that extends south from Huffman Road into the same deposit. Gravel lenses 6 inches below the surface overlie the ripple-marked and cross-laminated silt and sand. Twenty feet south along the road cut the sand is cross-laminated and cut and filled by additional layers of sand. Such features suggest changes in depositional environments that range from rapid flowing streams to slow moving streams or ponded waters.

One of the better exposures of kame structure is in a pit at the west end of O'Malley Road. The Seward-Anchorage Highway transects a kame of silt and sand interlayered with pebble and cobble gravel that dips from 27° to 35° SW. Some of the layers are truncated by less steeply dipping layers of sand and gravel. Underlying the northern part of the kame is clayey till 14 feet thick, exposed along the ditch line downslope toward a swamp. A block of till that overlies the stratified drift in the southwest part of the gravel pit points up the close association with the ice during deposition. A 1.5-foot layer of cobbles and small boulders, exposed south of the gravel pit during construction of the Seward-Anchorage Highway, show imbricate structure with an inclination of 55° to the northwest. The cobbles and boulders overlie 14 feet of gray sand and pebble gravel, which contains occasional cobbles, that dips 25° to the southeast. The dip and imbrication indicate streamflow from the northwest.

In 1956, examination of a gravel pit in the kame on the east side of the Seward-Anchorage Highway, in the NW¼NW¼ sec. 20, T. 12 N., R. 3 W., revealed beds dipping about 20°. Layers of sand and pebble and cobble gravel parallel the surface slope of the kame ridge (pl. 7*A*). Overlying the sand and gravel is a tan silty sand that shows little evidence of slopewash or modification of the topography of the kame.

In the SE¼NE¼ sec. 18, T. 12 N., R. 3 W., a low sinuous kame ridge (not mapped) about 600 feet long trends southward and overlies the ground moraine. A gravel pit in the south end of the ridge exposes (1956) silty pebble and cobble gravel (pl. 7*B*). Gravel layers alternate with layers of medium to coarse sand; lenses of silty fine sand and silt interfinger with the coarser materials. The silt and gravel layers are contorted with sandy silt layers bending upward into the gravel. Where this happens, the stratification of the gravel parallels the contortions. Such features are discussed under the Naptowne pitted outwash. Two small normal faults suggest deformation due to collapse as the supporting ice melted. Part of the pebble and cobble gravel is unsorted and silty, and appears to grade into till. In this pit the bedding is not parallel to the slope of the kame surface.

A pit at the west end of Klatt Road exposes horizontally layered silt, sand, and gravel, which contains scattered cobbles overlying silty boulder till. In general, the gravel is sorted so that the coarser material, near the contact with the till, grades upward into pebble gravel containing some cobbles. About 18 inches below the surface, there is a sharp change in sorting; the upper 18 inches is a gray sandy pebble gravel and has fewer cobbles. The gravel covers the flanks of the till mounds and perhaps accumulated as slopewash from the till of the ground moraine. The deposit may not, therefore, be a true kame. Nevertheless, the gravel is included as part of the glaciofluvial ice-contact deposits.

In most places road cuts expose only the upper 6 to 12 feet of the glaciofluvial ice-contact deposits. In the southwest corner of the NW¼NW¼ sec. 20, T. 12 N., R. 3 W. a drilled well was still in sand at the depth of 45 feet. The gravel pit in the kame ridge in the NW¼NW¼ sec. 20, T. 12 N., R. 3 W. exposes a thickness of about 50 feet. Exposed thicknesses of the glaciofluvial deposits greater than 50 feet are not known elsewhere in the lowland. Many of the deposits over the ground moraine along O'Malley Road are thinner, ranging from a featheredge to about 30 feet in thickness. The glaciofluvial ice-contact deposits accumulated on the surface of the active ice or around blocks of stagnant ice that covered the lowland. Some of the glacial debris was deposited as unsorted to

slightly sorted rubble in crevasses. Streams flowing on and between blocks of stagnant ice left fluvial deposits in crevasses and thaw depressions in the ice or older ground moraine. Not all the fluvial deposition was by streams of similar or constant velocities. The ripple-marked sand and silt and the concave-bedded sand indicate a shallow stream or slack-water environment, whereas deposits that have steep dips and rapid change of texture suggest fluvial or deltaic deposition.

As the Anchorage area was deglaciated, the glaciofluvial ice-contact materials were deposited over the ground moraine. Streams flowing under the ice or between the ice and the lateral moraine deposited kames and eskers south of Ship Creek. In the lowland, streams flowing partly on the ice and partly on the ground moraine deposited the glaciofluvial ice-contact deposits as kames, eskers, and crevasse fillings, or merely as a covering of sand or pebble and cobble gravel over the till of the ground moraine. Melt waters from ice in the lowlands incised channels into both the ground moraine and the glaciofluvial ice-contact deposits, indicating that the glaciofluvial ice-contact deposits are products of the same glaciation that deposited the ground moraine; that is, the pre-Wisconsin Knik glaciation.

The glaciofluvial ice-contact deposits were derived from debris that accumulated on the surface of the glacier and was carried from the north into the Anchorage area. As the glacier thinned, this debris covered the surface of the glacier, and was reworked and redeposited by streams flowing partly on the ice and partly on the ground moraine.

PITTED OUTWASH

Overlying the ground moraine in the lowland south of Anchorage are deposits of sand and gravel that are horizontally stratified, cross-laminated, and locally distorted. The surface is generally horizontal, but it is modified by swamp-filled kettles and low hills. Though many gradients probably controlled deposition, two cycles or sequences of deposition are mapped based on relative altitudes of the depositional surfaces; the older cycle has a higher depositional surface, and the younger cycle has a lower depositional surface. Deposits of the older cycle of deposition are restricted to areas south of Spenard and south of Lakes Hood and Spenard. Extending from Lakes Hood and Spenard the pitted outwash, sequence 1, continues almost to the Sand Lake Road east of Jewel Lake. One other area of the pitted outwash, sequence 1, extends from south of Spenard to beyond Tina Lake. The pitted outwash locally bounds the delta, Naptowne silt, and the prodelta deposits south of Lakes Hood and Spenard.

South of Spenard the pitted outwash, sequence 1, locally adjoins the Naptowne outwash, Naptowne pitted outwash, and the pitted outwash, sequence 2. The greater part of the pitted outwash, sequence 1, is bounded by areas of peat and muskeg-filled swamps.

Deposits of the younger cycle, pitted outwash, sequence 2, cover parts of the lowland south of Anchorage from near Ship Creek to Turnagain Arm. The preponderance of deposits of the pitted outwash, sequence 2, parallel Campbell Creek and extend from the Campbell Airstrip to Turnagain Arm.

The surfaces of the pitted outwash gradually slope to the southwest. Kettles and low hills locally disrupt the continuity of the surfaces. The pitted outwash, sequence 2, forms low mounds that locally abut against till of the ground moraine in the swamp areas. North along the road from Campbell a series of four terracelike surfaces are developed. The highest surface is at the top of the hill north of the crossing on the Alaska Railroad. In the area east of Rogers Park, erosion by waters that deposited the Naptowne pitted outwash cut straight smooth scarps into most of the deposits of pitted outwash. In the area south from Spenard to Turnagain Arm, deposits of the pitted outwash display steep smooth ice-contact slopes around the swamp-filled kettles. The pitted outwash consists of fluvially stratified sand and gravel that is olive gray (5 *Y* 3/1) when dry and a deep hue of olive green (5 *Y* 4/2) when wet. Medium sand to pebble gravel comprise the pitted outwash, although fine sand and coarse gravel comprise the deposits locally. Dips in excess of 20° and contorted bedding are common near the kettles that pit the surface of the outwash. Oxidation is confined to the upper 18 inches in most exposures.

The pitted outwash, sequence 1, is typically exposed in a pit in the NE¼ sec. 36, T. 13 N., R. 4 W. Twenty feet of fine gravel and medium sand are interfingered with coarse gravel. Fragments as large as 12 inches in diameter are included in the deposits. An oxidized brown silty soil one foot thick overlies the gravel. Along the Sand Lake Road east of Jewel Lake the pitted outwash consists of subround to subangular medium to coarse olive-gray sand in which pebbles are scattered. Oxidation extends down about 8 inches from the surface. A gravel pit south of the cemetery in the SE¼ sec. 19, T. 12 N., R. 3 W. exposed a sandy pebble gravel. Eleven to 14 feet of crossbedded gravel beneath about 4 feet of well-sorted fine sand is exposed in a pit in the NE¼ sec. 8, T. 12 N., R. 3 W. Some distortion and collapse suggest close proximity of ice during deposition. Distortion in the sand and silt layers in the pitted outwash, sequence 2, in an exposure along Klatt Road also is attributed to collapse.

Differences in maximum altitudes of the upper surfaces of the pitted outwash deposits suggest a changing gradient of deposition. From Campbell Station northward, four well-defined surfaces are developed and indicate at least four gradients of the outwash stream. Near the west end of O'Malley Road, the upper surface of the kame in the NW¼NW¼ sec. 20, T. 12 N., R. 3 W., the surface of the pitted outwash south of the cemetery in the SE¼ sec. 19, T. 12 N., R. 3 W., and the surface of the pitted outwash north of the cemetery suggest at least three gradients or base levels during deposition of the stratified drift in the lowland. A closer or more detailed study of the levels of deposition cannot be made from the topographic mapping available (50-foot contours), but changing gradients would be expected where 1) channels extended around blocks of ice and were of different lengths, 2) the amount of flow of the melt water fluctuated abruptly, or 3) the source of the melt water slowly moved northward behind a zone of stagnant ice and thereby increased the length and lowered the gradient of the melt-water channel.

Steep well-developed ice-contact slopes resulted from collapse of the deposits along the contact between the outwash and the ice in the NE¼SW¼ sec. 24, T. 12 N., R. 4 W., and in the eastern part of secs. 2 and 11, T. 12 N., R. 4 W. Small lakes such as Sand Lake, Sundi Lake, Jewel Lake, Connors Lake, Campbell Lake, and others, are remnants of larger lakes partly filled by peat and muskeg.

The waters that deposited the pitted outwash may have modified the prodelta deposits. The horizontal bedding in the upper few feet of the prodelta deposits exposed near Jewel Lake suggests such a reworking. The blocks of ice against the prodelta deposits still remained, although they were perhaps somewhat reduced in size when the pitted outwash was deposited, as indicated by a continuous ice-contact slope in both deposits around a swamp-filled kettle, in sec. 10, T. 12 N., R. 4 W. The pitted outwash deposits were derived from debris carried in and on the Knik glacier. Melt water from the zone of ice actively retreating to the north and the lesser amount from the blocks of stagnant ice in the Anchorage area deposited the outwash over earlier deposits and around blocks of ice. After deglaciation, kettles pitted the surface of the outwash.

ABANDONED-CHANNEL DEPOSITS

Melt-water streams deposited stratified sand, pebbles, and cobbles along wide channels incised into the Knik glacial deposits. The sand and pebble and cobble gravel in the channels are mapped as abandoned-channel deposits. The ground moraine, the glaciofluvial ice-contact deposits, and sequence 2 of the pitted outwash are cut by

the abandoned channels in the area between Campbell Airstrip and Huffman Road. Most of the channels originate in depressions in the ground moraine, although a few of them originate in the glaciofluvial ice-contact deposits and pitted outwash deposits.

Abandoned-channel deposits are also at the mouth of Rabbit Creek.

The upper surfaces of the channel deposits are graded and level. The abandoned channels range from a few tens of feet to over 2,000 feet in width, and from 20 feet to over 50 feet in depth. They are sinuous and indirect, and contain small modern streams.

Most of the channel deposits are well sorted, but some are not. Where the melt-water stream flowed on or near blocks of ice, slumping or sliding has distorted the sand and gravel. In places, till is exposed where later erosion has cut into the abandoned-channel deposits; till associated with stratified sand, for example, is exposed along Rabbit Creek a few hundred feet upstream from the highway bridge in a cut along the old Anchorage-Potter Road. Some of the channel deposits are pebble and cobble gravel (pl. 8*A*), whereas others are chiefly sand. The particle size of the material deposited along each channel depends on the composition of the ground moraine along the melt-water stream, the gradient of the stream, and the distance from the source. Thus, the size of the particles in the abandoned channel deposits vary from place to place.

In most places the deposits are thin—4 to 12 feet thick—although channel deposits at the mouth of Rabbit Creek are about 22 feet thick. During stagnation of the ice the melt-water streams flowed partly on the ice and partly on the recently deglaciated ground moraine. The amount of debris carried by streams was small and probably did not decrease their cutting power as they left the stagnant ice. Downcutting by the streams increased their load, so that most of the abandoned-channel deposits were reworked from materials on which the streams flowed. The deposits on the floors of the scoured channels are veneers that were left as the discharge decreased.

The channels may have been cut by melt-water streams that originated from either the melting ice in the lowland, or from the melting ice of the retreating valley glaciers in the mountains. The authors believe that in most cases, the melt water came from a combination of the sources. Between Campbell Airstrip and O'Malley Road are examples of channels probably formed from stagnant ice in the lowland. An alluvial fan and abandoned-channel deposits of Wisconsin age obscure some of the relationships of these channels to the ground moraine.

The stratified sand and gravel in the abandoned-channel deposits at the mouth of Rabbit Creek were deposited by melt water from

valley glaciers in Rabbit Creek. The increased width of the deposit at the mouth of the creek may be due merely to a widening of the channel, or the deposit may be the apex of an alluvial fan that was later eroded by the waters of Turnagain Arm. Horizontally bedded sand and fine gravel that overlie deposits of ground moraine in the road cut at the mouth of Rabbit Creek (pl. 8*A*), and along the bluff of Turnagain Arm, suggest deposition as an alluvial fan at the end of a melt-water channel.

WISCONSIN DEPOSITS

DEPOSITS OF THE NAPTOWNE GLACIATION

STRATIGRAPHY OF THE NAPTOWNE DEPOSITS

An unmapped blue-gray pebble and boulder till that overlies the Bootlegger Cove clay and underlies the younger Naptowne advance outwash exposed in the bluff along Knik Arm in the SW¼ sec. 29, T. 14 N., R. 3 W., is the oldest Wisconsin glacial deposit in the area. The advance outwash is stratigraphically the lowest Naptowne glacial deposit mapped. An end moraine extending through the Elmendorf Air Force Base was deposited next. It grades into the ground moraine that covers most of the area north of the end moraine. Kame fields and kame terraces and alluvium in abandoned channels overlie the Naptowne ground moraine. In front of the end moraine are stratified deposits of outwash and pitted outwash, as well as a deposit of silt, all of which locally overlie the Bootlegger Cove clay.

TOPOGRAPHY

Topography of the ground moraine, kame fields and kame terraces, and the end moraine, all of Wisconsin age, is young in appearance. The pitted surface of the ground moraine is gently undulating, with low rounded hills and mounds. Most of the kettles are unfilled, or contain lakes or swamps. The kettles are not connected by modern stream channels. Drainage is not well integrated except along abandoned channels where small streams flow in large valleys. The channels trend southwesterly through the ground moraine and emphasize the striated appearance established by southwest-trending drumlins.

The kame fields and kame terraces behind the end moraine have a hummocky knob and kettle topography. Some kettles contain lakes, others contain swamps, and still others are unfilled. The ice-contact slopes are steep, smooth, and unmodified by erosion.

The end moraine is unmodified by glacial erosion. Kettles and kames cover its surface but it is modified locally by incised channels of abandoned melt-water drainages.

Topographically, the deposits of the pre-Wisconsin Knik glaciation and the Wisconsin Naptowne glaciation are closely similar. Physiographic evidence does not indicate a long period of erosion or weathering between the deposition of the two drift sheets.

AGE AND CORRELATION

That an interglacial interval separates the Naptowne glacial deposits from the Knik glacial deposits, however, is indicated by the weathering and oxidation on the Bootlegger Cove clay, the peat development on the pre-Wisconsin Knik advance outwash, and the ecology of fresh-water gastropods from clays associated with the peat. The peat underlies the Naptowne advance outwash in an exposure in the south bank of the Eagle River in the SW¼SE¼ sec. 9, T. 14 N., R. 4 W. The peat was dated as being more than 38,000 radiocarbon years old (W–535). Karlstrom (1950, *in* Péwé, 1953, p. 4) considered the morainal belt at the mouth of the Matanuska Valley as deposits of the Naptowne glaciation of late Wisconsin age. The Elmendorf Moraine is part of this Naptowne morainal belt. In 1957 he recorrelated the Naptowne to represent all of Wisconsin time. Because of the evidence for an interglacial stage or substage, and the carbon-14 date, the Naptowne glacial deposits are considered younger than 38,000 years old, part of the Wisconsin glaciation (table 1), and are correlated with the Naptowne glaciation of Karlstrom (fig. 2). The relationships of the deposits of the Eklutna, Knik, and Naptowne glaciations, are shown in plate 9.

ADVANCE OUTWASH

The stratified sand and pebble and cobble gravel that overlies the Bootlegger Cove clay and underlies the ground moraine along Knik Arm is considered to be an outwash deposited in front of the advancing Wisconsin glacier and subsequently overriden by the glacier. The advance outwash is exposed almost continuously northeastward from Cairn Point in the bluff along the east shore of Knik Arm, where it overlies the Bootlegger Cove clay. This outwash appears to terminate in the disturbed area near Cairn Point. Sand and gravel that may be the advance outwash are exposed beneath the Elmendorf Moraine and overlie the Bootlegger Cove clay. The outwash extends eastward at least to the Eagle River. It underlies the till in the bluff on the west side of Eagle River, SW¼SW¼ sec. 9, T. 14 N., R. 2 W., and overlies peat and pre-Wisconsin gravel in the bluff just north of the Eagle River station, in the SW¼SE¼ sec. 9. The total extent of the outwash in the area is not known, but the pebble and cobble gravel that underlie till and overlie the peat bed one-fourth mile east of Goose Bay on

the west side of Knik Arm (Trainer, 1953, p. 10) probably correlates with the advance outwash.

In the bluff along the east side of Knik Arm, the Naptowne advance outwash consists either of current crossbedded stratified sand, pebbles, and cobbles that are truncated by other beds, or of nearly horizontally bedded layers with occasional cut and fill structures. Few beds are continuous for more than 200 feet. Sections of small channels are represented by catenary sand lenses within sorted beds of pebble gravel. The sand lenses locally display an inclined current bedding. Elsewhere along the Arm the outwash consists of horizontally bedded silt interlayered with coarse to medium sand. Less commonly the advance outwash is distorted and deformed by Recent slumps and earthflows.

North of the Eagle River Flats in the SE¼ sec. 18, T. 15 N., R. 2 W., the advance outwash ranges in thickness from 4 to 25 feet. A cobble layer at the base of the outwash separates it from the underlying advance outwash of the Knik glaciation. This cobble layer can be traced, as can the cobble layer at the base of the Knik advance outwash, northeastward where it overlies the till of the Knik glaciation. The cobble layer is used to separate the Naptowne advance outwash from the Knik advance outwash. The Naptowne advance outwash is well stratified in this area, and in most exposures is a pebble to cobble gravel interbedded with medium sand in layers about 5 feet thick. Locally, the gravel is iron stained in 6- to 18-inch layers.

Near the mouth of Sixmile Creek, the lower part of the advance outwash directly overlies the Bootlegger Cove clay and is cemented by iron oxide into massive layers of hard, compact conglomerate that extend for about 1 mile south of the creek. Seeps and springs along the upper surface of the Bootlegger Cove clay deposited iron oxides to cement the conglomerate. The conglomerate resists weathering and wave action but blocks of conglomerate over 5 feet in the longest dimension are separated from the layers and are common along the beach in this area.

The exposed thickness of the Naptowne advance outwash ranges from 5 feet to 30 feet along Knik Arm. Along the bluff on the west side of the Eagle River in sec. 9, T. 14 N., R. 2 W., 42 feet of outwash is exposed beneath the ground moraine. The lower part of the slope is covered by wash and slump, so that the total thickness of outwash is not known. The upper surface of the outwash is nearly horizontal in most exposures where the contact is exposed. As interpreted in this report, the advance outwash was deposited in front of an actively moving glacier. Thus the advance outwash was deposited by melt-water streams flowing in front of the Wis-

consin glacier as it advanced to the position marked by the end moraine. The outwash was deposited over the Bootlegger Cove clay, and in turn was covered by the ground moraine deposited by the overriding glacier. Most of the advance outwash south of the end moraine apparently was removed by the streams that formed the outwash plain that parallels the south flank of the end moraine. Sand and gravel of the advance outwash that overlies the Bootlegger Cove clay, underlies the end moraine and extends under the Naptowne pitted outwash. Slump obscures its relationship to the outwash, but the advance outwash may underlie the Naptowne outwash in the vicinity of the Elmendorf Air Force Base.

END MORAINE

The sinuous ridge that crosses the northern part of the area, referred to hereafter as the Elmendorf Moraine, is mapped as an end moraine. The Elmendorf Moraine extends beyond the area mapped on both sides of Knik Arm toward the Matanuska Valley (pl. 2).

The Elmendorf Moraine ranges in width from ½ to more than 1 mile. North of Anchorage and the Elmendorf Air Force Base runways, it crosses the area diagonally to the southwest, a distance of about 10 miles. It continues north along the mountains and west across Knik Arm from Cairn Point. It is bounded along most of its southern edge by outwash, and its northern edge by ground moraine, kame fields, kame terraces, and abandoned channels, all features of the Naptowne glaciation. Near the extreme eastern boundary of the area, the end moraine is cut by the Eagle River. Though the end moraine has a maximum altitude of over 450 feet in the NW¼NW¼ sec. 23, T. 14 N., R. 2 W., its maximum relief is in the SE¼SE¼ sec. 32, T. 14 N., R. 3 W., where it stands 100 feet above the Naptowne outwash. The surface of the moraine drops 250 feet below the outwash in a kettle trough north of the morainal rim that stands behind the Kermit Roosevelt Memorial Cemetery.

In most places the south slope of the Elmendorf Moraine is steep and the north slope is gentle, but locally the converse is true because the sharp crestline is not everywhere toward the southern edge of the moraine. The narrow linear crestline sweeps in a gentle S-curve from the south edge of the moraine in the NE¼NE¼ sec. 6, T. 13 N., R. 3 W., to the north edge of the moraine in the NW¼NW¼ sec. 26, T. 14 N., R. 3 W. where the ridge gives way to an area of kames and kettles. East of this gap, the ridge continues as a discontinuous arc along the south edge of the moraine from the NE¼NE¼ sec. 35, T. 14 N., R. 3 W., to Fossil Creek. Fossil Creek transects the moraine in a deep ravine.

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Most of the surface of the moraine is covered by kames and kettles. Many of the kettles contain ponds or lakes, others contain swamp deposits, and still others are unfilled. Small drainageways locally modify the knob and kettle topography. The till in the end moraine consists of round to subround pebbles, cobbles, and boulders in a tan or light-gray silt and clay matrix. Erratics 4 feet in the longest dimension are common. Although most of the pebbles and cobbles are dark gray, the overall color is light gray or tan, depending on the color of the matrix. In most exposures the till is compact, but in some exposures it is less compact in the upper few feet and may grade into a loose pebble or cobble rubble. The end moraine contains thick deposits of stratified drift as well as the unstratified till. Intratill fluvial sand and gravel, and the sand and gravel of ice-contact deposit compose part of the end moraine.

A cross section of the moraine is well exposed in the bluff near Cairn Point. Composed of sand and gravel in a silt matrix, the till is hard and compact but contains discontinuous lenses of somewhat distorted stratified sand and gravel. The till locally is crudely sorted.

The thickest observed section of the Elmendorf Moraine is near Cairn Point (measured section 4, p. 39) where an exposure from the Bootlegger Cove clay to the top of the morainal ridge shows 110 feet of till. About 4,000 feet to the east, the top of the morainal ridge is 100 feet higher in altitude than at the measured section, so it may be assumed that if the basal contact here lies on the Bootlegger Cove clay—although the Naptowne advance outwash may separate the two deposits—the maximum thickness of the moraine is about 200 feet.

The exposure of till, over the Bootlegger Cove clay and under the advance outwash, along Knik Arm in the SW¼ sec. 29, T. 14 N., R. 3 W. suggests that a glacier of Wisconsin age preceded the Naptowne glacier, and extended beyond the end moraine deposits. The Elmendorf Moraine probably overlies the advance outwash (pl. 1) although such outwash, if present, was covered when the section at Cairn Point was measured (measured sec. 4, p. 39). Karlstrom (1957, p. 73) correlates the Naptowne glaciation in the Cook Inlet as representing all of Wisconsin time. He previously (1950) included what is here called the Elmendorf Moraine as part of the Naptowne morainal belt. The Elmendorf Moraine, however, may not represent the earliest advance of a Wisconsin glacier; a post-Knik and pre-Naptowne glaciation may be recorded by the till at this locality. Such a suggested pre-Naptowne advance is further indicated by the drumlin in the NE¼NW¼ sec. 12, T. 13 N., R. 3 W.—mapped as ground moraine of the Knik glaciation—that over-

lies a blue clay that may be the Bootlegger Cove clay. Ice-contact slopes in a pitted phase of the Naptowne outwash also support the conjecture of this advance. Whether this advance beyond the Elmendorf Moraine is a pre-Naptowne Wisconsin or is merely a fluctuation of the Naptowne glacier that deposited the end moraine is unclear. The Naptowne glacier advanced into the area from the north over outwash deposited in advance of the glacier. The glacier remained at the position marked by the Elmendorf Moraine long enough to deposit the moraine.

The deposits of the end moraine were derived from north of the Anchorage area and carried in the lower part of, within, or on top of the Naptowne glacier as it advanced into the Anchorage area. Accumulating directly from the melting ice front as a heterogeneous mixture or from melt-water streams flowing from the glacier, debris carried by the glacier formed the ridges of the end moraine. Because the end moraine marks the position of farthest recorded advance of the Naptowne glacier, subsequent fluctuations did not obliterate the moraine.

GROUND MORAINE

The ground moraine is coextensive with the lowland north of the end moraine. Although the ground moraine underlies this area, later deposits of different origins locally blanket the moraine. Near the center of the lowland, the Eagle River has eroded the ground moraine and other deposits to form the Eagle River Flats, a silt-filled reentrant of the Arm. Along Knik Arm, northward from the Elmendorf Moraine, the ground moraine is almost continuously exposed. Exposures are infrequent elsewhere in the area covered by the ground moraine. The ground moraine forms steep bluffs along Knik Arm; slopes range from 25° to 90°. Back from the Arm the surface is pitted with kettles. Many drumlins trend southwesterly parallel to groovelike depressions in the ground moraine. Locally, the drumlins are closely spaced and form an en echelon series of ridges. The ground moraine is an area of relative low relief that seldom exceeds 50 to 75 feet. The maximum altitude of about 300 feet in sec. 9, T. 14 N., R. 2 W., provides about 100 feet of relief.

Drainage in the ground moraine is not well integrated, although small streams occupy abandoned channels entrenched in the surface. Some of the streams, like Sixmile Creek and Clunie Creek, occupy channels as much as 125 feet deep. Most of the channels trend southwesterly and give the area a distinctive striated appearance that differs markedly from the appearance of Knik ground moraine south of Anchorage.

Most of the kettles throughout the area are shallow depressions that are unfilled in places, or contain lakes or swamps. They are not

connected by streams, except in the abandoned channels where modern streams flow along previously established courses. The ground moraine is composed predominantly of tan to light-gray compact, stony till that contains rounded cobbles in a silt and clay matrix. In some exposures between the Eagle River and Sixmile Creek, the contact between the till and the underlying stratified sand and gravel of the advance outwash is distinct and clearly defined, but in other exposures it is obscure and appears to be gradational.

A less compact till and poorly sorted sand and gravel locally overlie compact till along Knik Arm. The contact between them is gradational in some exposures, distinct in others. Dampness is common in the more permeable looser materials locally, and springs flow in places along the contact between the looser materials and the compact till.

Naptowne till is discontinuous along the bluff of Knik Arm. Stratified sand and gravel, which extends to the top of the bluff, locally overlies the Bootlegger Cove clay. This relationship is true in the NE¼SE¼ sec. 20, T. 14 N., R. 3 W., where the Bootlegger Cove clay is overlain by about 40 feet of sand and gravel. Some of this stratified sand and gravel is advance outwash deposited in front of the advancing Wisconsin glacier. Other deposits are later outwash related to the withdrawal of the glacier. One such deposit is the 12 feet of stratified sand and gravel overlying 40 feet of till that forms the point of land south of the Eagle River Flats in the SW¼ SW¼ sec. 2, T. 14 N., R. 3 W.

The ground moraine is exposed in two places along the Eagle River in sec. 9, T. 14 N., R. 2 W. On the west side of the river, in the SW¼ sec. 9, about 42 feet of compact cobble till that has a silt and clay matrix overlies about 100 feet of poorly bedded sand and gravel. In the SW¼SE¼ sec. 9, approximately 20 feet of silty till is exposed just below the grade of the Alaska Railroad. More than 25 feet of slump material covers the slope below the till, and about 6 feet of sand and gravel—outwash deposited in front of the advancing Wisconsin glacier—is exposed below the slump and overlies a peat deposit. In the NW¼ sec. 17, T. 14 N., R. 2 W., about 12 to 15 feet of brown till containing sand and gravel layers is exposed along the river bluff and in road cuts.

Till is exposed in the south end of a drumlin in a 15-foot cut along a jeep road in the NE¼NE¼ sec. 5, T. 14 N., R. 2 W. The till is gray, composed of pebbles and cobbles in a silty to sandy matrix, is compact and has a platy cleavage that more or less parallels the surface of the drumlin. The upper 2 to 3 feet is crudely stratified, and may be ablation debris, a solifluction deposit, or slopewash.

Till is not the only material at the surface east of Knik Arm. Stratified sand and gravel along small melt-water streams cover the till locally. Poorly sorted sand and gravel deposited in part during ablation of the ice, but without distortion of bedding, covers much of the moraine. The maximum thickness of this poorly sorted sand and gravel is not known, but as much as 15 feet of it is exposed in many cuts along the roads north of the Elmendorf Moraine.

The exposed thickness of the ground moraine ranges from about 6 feet to about 40 feet along Knik Arm and the Eagle River. If the lower contact surface of the ground moraine with the underlying deposits is generally horizontal, the hills and hummocks of the moraine east of the Arm may indicate a thickness as much as 100 feet.

After the Naptowne glacier was stationary long enough to deposit the end moraine, the ice lobe retreated leaving detached and isolated blocks of stagnant ice. The compact basal till in the ice was deposited over the advance outwash that accumulated in front of the advancing glacier. The drumlins probably formed from till lodged beneath the advancing ice. Superglacial till was laid down on top of the basal till locally, and streams flowing on the ice and on the ground moraine reworked some of the till into deposits of stratified sand and gravel.

Most of the kettles in the ground moraine are shallow rather than deep depressions. Many are in areas where sand and gravel overlie till; they were probably formed by the melting of buried ice rather than by deposition of material around blocks of ice projecting through the surface.

KAME FIELD AND KAME TERRACE DEPOSITS

Deposits of the kame fields and kame terraces, sequence 1, parallel the northern edge of the Elmendorf Moraine southwest from Fossil Creek to beyond Otter Lake. Sequence 1 ranges from about one-quarter mile to about six-tenths of a mile in width, and is about 3½ miles long. The kame fields are at the north and south ends of the kame terrace. Extending from north of Fossil Creek south to Otter Lake, the deposits of the kame fields and kame terrace, sequence 2, parallel the western edge of sequence 1 of the kame fields and kame terrace deposits but stand lower. The deposits of sequence 2 range from one-fourth mile to six-tenths of a mile in width and are about 2½ miles long.

The flat surface of the kame terrace, sequence 1, gives way upstream and downstream into knob and kettle topography in the kame fields. A continuation of the grade of the kame terrace not

only approximates the altitude of the tops of the kames in the kame field at the north end of the terrace, but projects to the upper remnant of the channel of the ancient Fossil Creek. A scarp separates this kame field and terrace sequence from topographically lower kame field of sequence 2. As in sequence 1, the flat surface of the kame terrace, sequence 2, gives way both upstream and downstream into the knob and kettle topography of the kame fields. The kames and kettles, however, are not as well developed in this sequence as in sequence 1. The surface of the kame terrace slopes southward into the swamp and abandoned channel around Otter Lake. Extending the surface of the kame terrace and kame fields northward, the surface projects into the terrace surface of the abandoned channel mapped along the Eagle River. Ice-contact deposits related to the Naptowne glacier were deposited by streams flowing on or adjacent to the ice. Typically, the deposits are sorted and stratified but show abrupt changes of grain sizes between adjacent layers, have extremes of grain sizes interbedded in the same stratified layer, show local deformation of layers, and contain blocks of till. Two cycles or "sequences" of alluviation are suggested by the levels of surfaces that extend south from Fossil Creek beyond Otter Lake. The first cycle of alluviation resulted in a kame terrace (Qkt_1), which gave way into kame fields (Qk_1) at both ends, and the second cycle of alluviation resulted in a kame terrace (QKt_2) that also gave way into kame fields (Qk_2).

In the SW¼ sec. 19, T. 14 N., R. 2 W., a gravel pit in the kame terrace, sequence 1, displays layers of fluvial bedded sand. The upper 18 inches of the kame terrace is oxidized. Pebble and cobble gravel, locally with collapsed bedding, overlies the sand. Layers of gravel parallel the edges of included blocks of silt. Blocks of till are exposed in the lower part of the pit. A cut through the kame field, sequence 2, along the road in the SW¼ sec. 17, T. 14 N., R. 2 W., shows a silty cobble and boulder gravel that locally has collapse structure.

While the melt water flowing along the south side of the Eagle River valley cut a trench into the outwash and moraine at Fossil Creek, ice still lay along the north side of the end moraine. Diverted by the ice barrier, the waters from Fossil Creek flowed between the ice and the moraine and deposited the kame terrace, sequence 1, that extends west from Fossil Creek beyond Otter Lake. Subsequent melting of the ice left the kame terrace and the kame fields. Some of the kettles probably formed from blocks of ice that projected through the surface, whereas others probably formed when buried blocks of ice melted and the overlying deposits collapsed.

Melt-water streams that flowed from the active ice front to the north through channels in the ground moraine and from the north-

east in channels along the flank of the mountains converged and formed the wide melt-water channel now occupied by the modern Eagle River. This channel extends southwest past the Eagle River Flats to form the valley of Sixmile Creek. When it was cut, the channel of sequence 1 was abandoned. The overflow from the Eagle River valley may have continued to flow in the channel of Fossil Creek, and may have joined the waters flowing in the new channel of Sixmile Creek. The kame fields and kame terrace of sequence 2 were deposited in this drainage. Stagnant blocks of ice that formed part of one wall probably were buried under the terrace in places and left ice-contact slopes as the west scarp of the sequence 2 kame field and kame terrace on the eastern shore of Otter Lake.

PITTED OUTWASH

Stratified sand and pebble gravel with a surface that slopes southeast from the front of the Elmendorf Moraine is mapped as pitted outwash. It covers parts of secs. 5, 6, and 7, T. 13 N., R. 3 W. It extends from the south edge of the Elmendorf Moraine along Knik Arm for about 1 mile, and it ranges in width from two-tenths of a mile to about three-fourths of a mile. The western and eastern boundaries of the outwash are erosional contacts. The pitted outwash apparently overlies the Bootlegger Cove clay in front of the Elmendorf Moraine. The advance outwash underlies the moraine in the bluff but its relationship to deposits in front of the moraine is obscured by slump. Possibly the lower part of the pitted outwash merges with the advance outwash.

The pitted outwash is bounded on the west by the bluff along Knik Arm, where slump blocks form a hummocky landslide area. The surface of the outwash slopes southeast from the front of the Elmendorf Moraine. The largest kettle in the pitted outwash is about 400 feet wide, at the widest place, about 2,000 feet long, and about 30 feet deep. These dimensions are estimated, as the original landform has been modified by earthmoving equipment. Several short incised channels cut through a scarp that bounds the pitted outwash on the south.

The pitted outwash lacks uniformity in particle size and stratification. Where it overlies the Bootlegger Cove clay in the landslide area along Knik Arm, the pitted outwash is composed of gray fine to medium sand. Fine sand overlies the Bootlegger Cove clay near the Loop Road in the SE¼SE¼ sec. 6, T. 13 N., R. 3 W. A pit adjacent to the east side of the large kettle near the west end of the east-west runway in Elmendorf Air Force Base, displays festoon crossbedding that indicates deposition from the north before collapse due to melting ice. Fifteen feet of coarse sand containing

layers of medium sand are exposed in the pit. Brown silt layers one-half to 6 inches thick are interbedded with gray sand. Coal fragments are scattered throughout the sand; pebbles are commonly in layers; a few cobbles are intermixed with the pebbles.

The maximum exposed thickness is near the Loop Road in the SE¼SE¼ sec. 6, T. 13 N., R. 3 W., where approximately 20 feet of fine sand overlies the Bootlegger Cove clay. The thickness of the pitted outwash along Knik Arm is obscured by the many slump blocks and by slopewash. It is the authors opinion that the pitted outwash thickens toward the end moraine.

Contorted beds of silt, sand, and pebble and cobble gravel are exposed in a ditch about 750 feet west of the east-west runway and about 300 to 500 feet north of the edge of the runway. Along this ditch a fine sand that contains layers and lenses of small pebbles is overlain by a clayey silt layer about 18 inches thick. The dips of the sand layers are variable and range from about 30° to nearly vertical depending on the amount of distortion of the beds. In places the sand contains distorted layers of silt.

Pebble gravel overlies the sand and silt layers and truncates the steeper dipping sand beds in most places along the ditch. Small vertical faults in the sand and silt have displacements of 18 inches to 3 feet. The pebble gravel is faulted down into the sand and silt in some places, but the displacement in the gravel is obscure. The gravel is drawn into the silt and sand in bulbous fingerlike involutions (pl. 8*B*). Stratification of the gravel tends to parallel the walls of the enclosing silt to the extent that in circular involutions the distorted gravel shows concentric arrangements.

The involutions in the silt, sand, and pebble gravel in the ditch exposure can be explained by several processes: (1) they may have resulted from deformation owing to the weight of the gravel overlying saturated silt and sand whereby the sand and gravel settled into the silt as stringers and fingers; (2) overriding of the sediments by ice may have compressed, sheared, and faulted the deposits and contorted the bedding; (3) ice-shove may have contorted the sediments in front of an advancing glacier; (4) melting of buried ice blocks may have collapsed the sediments and may have promoted flowing that contorted the beds; and (5) frost action may have formed involutions and other contortions in the sediments.

The sediments are considered part of outwash deposition, and do not suggest saturation that would allow penecontemporaneous deformation (Shrock, 1948, p. 156). For that reason, possibility (1) is not considered a major cause of deformation. Because the involuted deposits are in front of the end moraine and were not overridden by ice, possibilities (2) and (3) can be discounted. Either

A. Abandoned-channel deposits overlying pebbly till of ground moraine (Knik in age) on southwest side of Seward to Anchorage Highway at mouth of Rabbit Creek.

B. Involutions in pitted outwash of Naptowne age along drainage ditch in NW¼ sec. 5, T. 13 N., R. 3 W., about 500 feet north of east-west runway, Elmendorf Air Force Base. U.S. Army photograph.

Slides and flows in Bootlegger Cove clay along Knik Arm southwest of Anchorage, Alaska, in the SE¼ sec. 21, T. 13 N., R. 4 W.

possibility (4) or (5) could individually cause the displacement and involutions exposed along the ditch, but a combination of them, probably not contemporaneous in occurrence, are believed to have caused these features. The small faults, slumps, and displacements in the sand and gravel likely resulted from collapse of the sediments when buried blocks of ice melted. Frost action would most likely destroy any fault trace. Because the collapse features are in the upper part of the exposure they would indicate frozen ground at depth. It may be inferred that the collapse and faulting are later features than those caused by the frost action.

Involutions caused by frost action have been described by Denny (1936), Sharp (1942), Shrock (1948), and Schafer (1949). An assumption that the involutions are freeze and thaw features would require frozen ground near the surface, perhaps within 15 feet of the surface (Sharp, 1942, p. 128), in order to form a barrier that would force water to saturate the upper parts. Schafer (1949, p. 163) quotes Zuener (1945, p. 12) as stating that involutions form only on perennially frozen ground.

Streams flowing to the southeast from the end moraine west of Cairn Point, as suggested by the slope of the surface of the outwash, and confirmed by the east and southeast dip of the beds, deposited the outwash and buried blocks of ice in front of the glacier. The outwash subsequently collapsed where the ice blocks melted, and surface was pitted.

OUTWASH

The flat surface that adjoins the Elmendorf Moraine on the south, is an outwash plain related to the Naptowne glaciation. It extends about 12½ miles southwest from the eastern boundary of the project south of the Elmendorf Moraine. It ranges in an undissected width from about one-quarter of a mile north of Hood and Spenard Lakes to about 2 miles in width near the Elmendorf Air Force Base. At its widest point it is about 4½ miles wide. It underlies parts of the Elmendorf Air Force Base, Fort Richardson, and most of Anchorage.

The surface of the outwash plain slopes southwest about 32 feet per mile. The even continuity of the plain is locally disrupted by ridges and drumlins of ground moraine of the Knik glaciation that project through the outwash, by Wisconsin deposits that overlie the outwash, and by erosion of the outwash. Although stream channels are entrenched into the outwash, the overall level surface of the outwash continues without any pronounced break in slope until it disappears beneath the swamp deposits around Lake Spenard, Lake O'Connell, as well as east of Bonibrook. Kettles pit the generally even surface of the outwash near Lake Spenard. Steep ice-contact slopes bound the kettles, some of which are partly filled

with peat and muskeg. The pitted surface grades into the unpitted outwash surface and also extends gradually under the peat of the swamps that bound Connors Lake and Lake Spenard.

The outwash grades northeastward from stratified fine sand along the bluff near Turnagain Heights into coarse sand, cobbles, and boulders toward the Eagle River. Lenses of alluvial coal range in thickness from 2 to 6 inches and in length from 3 to 15 feet; individual fragments are as large as 4 inches in diameter. Lenses of detrital coal have been interpreted erroneously as coal seams where exposed in excavations or recorded in wells.

Toward the Eagle River valley (off the map) and near Fossil Creek the outwash contains many boulders more than a foot in diameter. The surface of the outwash is in fact almost a boulder pavement, but contains negligible amounts of pebbles and less sand than toward Knik Arm. In this area, where the outwash is coarse, weak Tertiary sandstone constitutes part of the smaller fraction. Beneath Anchorage, pebble gravel in lenses 2 to 6 inches thick and 20 to 50 feet long alternates with lenses of coarse sand. This contrasts with the grain size of the deposit southwest of Anchorage toward Knik Arm where pebble gravel is almost absent. A few exposures in the pitted area around Lake Spenard show a fluvial bedding in fine- to medium-gray sand. This sand compares in grain size to the sand of the younger outwash exposed along the bluffs of the Knik Arm near Turnagain Heights, and along the banks of Fish and Chester Creeks. Along the north side of the road to Radio Station KFQD 35 feet of partly crossbedded gray sand overlies the Bootlegger Cove clay in the SW¼SW¼ sec. 24, T. 13 N., R. 4 W. The sand contains about 1 percent of pebbles larger than 1 inch in diameter, about 5 to 10 percent of pebbles larger than ½ inch in diameter, and about 50 percent fine sand. In the bluff along Knik Arm, in the middle of sec. 23, T. 13 N., R. 4 W., about 75 percent of the outwash is crossbedded fine to very fine sand that contains about 1 percent of pebbles larger than 1 inch in diameter.

Southwest of Anchorage along Knik Arm about 400 feet west of the east section line into sec. 21, T. 13 N., R. 4 W., 12 feet of outwash overlies the Bootlegger Cove clay. The lower 8 feet of the outwash is a gray medium sand and the upper 4 feet is a gray silt to silty sand. A peat layer about 6 inches thick extends laterally about 12 to 18 inches from the top of the outwash. Eight feet of peat overlies the outwash to the surface. The 6-inch peat layer was sampled and a carbon-14 determination dated the peat at 11,600 ±300 radiocarbon years (Rubin, Meyer, U.S. Geological Survey, written communication, April 2, 1957, W–540). Considered a part of the last phase deposition of the Naptowne outwash the peat layer places a minimum age on the deposition of the outwash.

Some of the ranges of exposed thicknesses along Knik Arm are, 5 feet in the NW¼SW¼ sec. 23, T. 13 N., R 4 W., 30 feet between Fish Creek and Chester Creek, and over 10 feet in the bluff above the Alaska Railroad in sec. 13, T. 13 N., R. 4 W. The deposit thickens away from Knik Arm, so that where the road to Radio Station KFQD crosses Fish Creek, sand 35 feet thick overlies the Bootlegger Cove clay. The outwash ranges in thickness from 20 to 40 feet in secs. 16 and 21, T. 13 N., R 3 W. In the SE¼ sec. 8, T. 13 N., R 3 W., over 50 feet of outwash is exposed in the bluff along Ship Creek.

Well-log records (Cederstrom and Trainer, 1953; U.S. Corps of Engineers, unpublished well records) indicate that the outwash is about 60 feet thick in most places under Fort Richardson and the Elmendorf Air Force Base, but the thickness is not everywhere constant. Cederstrom (1952, p. 21) considers the outwash deposits to be as much as 300 feet thick and more than 100 feet below sea level near Anchorage, but he included the Bootlegger Cove clay as part of the outwash. In a pit in the NW¼ sec. 34 T. 14 N., R. 3 W., 91 feet of gravel is exposed against a till hill, 68 feet of which extends above the outwash surface. Part of the thickness here, however, could be caused by small fans deposited by later streams flowing from the end moraine. Channels cut in the surface of the Bootlegger Cove clay, as along Chester Creek, increase the thickness of the outwash. The outwash under Anchorage is shown on plate 5.

An outwash plain that extends out of the area mapped and up the Eagle River valley for several miles (Dobrovolny and Miller, 1950, Knik quadrangle map) is considered by the authors to be a continuation of the younger outwash. Reconnaissance up the Eagle River valley indicates that the source of the outwash was a glacier in the Eagle River valley.

The Naptowne glacier and related morainal deposits dammed the mouth of the Eagle River valley. The Eagle River glacier had a small supply area, and retreated up its mountain valley leaving a gap between it and the morainal dam. Melt water accumulated as a lake behind this morainal barrier. Acting as a settling basin, the lake was completely filled by clay and outwash deposits of sand, pebbles, and cobbles. The clear water overflowing from the lake probably cut some of the channels into the Bootlegger Cove clay—though water from Ship Creek probably helped erode the clay (see pl. 5, near Spenard Road along Chester Creek)—as well as channels in the till and bedrock along the south flank of the Eagle River valley (Dobrovolny and Miller, 1950). The outwash started to deposit from the overflow waters and covered the area in front of the Elmendorf Moraine and filled the depressions between hills of ground moraine of the Knik glaciation. The outwash channel

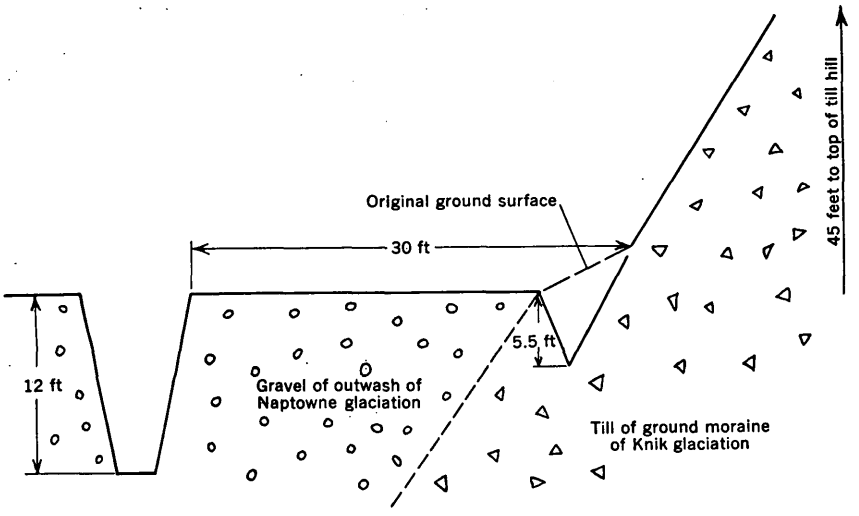

FIGURE 5.—Relationship of outwash of Naptowne age to till of ground moraine of Knik age in SW¼SE¼ sec. 31, T. 14 N., R. 2 W., as exposed in excavation.

in sec. 4, T. 13 N., R. 2 W. originally was continuous with the channel in sec. 13, T. 13 N., R. 3 W. Ship Creek occupied the channel when it built an alluvial fan across the outwash deposits. Excavations in the SW¼SE¼ sec. 31, T. 14 N., R. 2 W. (fig. 5) showed outwash overlapping ground moraine on flank of a till hill. Seeking a shorter route to Knik Arm, the Eagle River flowed in a westerly direction as soon as the ice retreated far enough north of the Elmendorf Moraine. The channel of Fossil Creek, eroded into the outwash and the Elmendorf Moraine, probably is the shortened course of the Eagle River. Restriction and channeling of flow from the Eagle River along the shortened courses stopped deposition of the outwash.

The outwash from the Eagle River covered blocks of stagnant ice in the lowland isolated after retreat by the Naptowne glacier to the position marked by the end moraine from an advance or fluctuation. Such a block of ice apparently formed the depression containing Lake Otis. Many such stagnant blocks remained in the area around Lake Spenard and left kettles after they melted.

ABANDONED-CHANNEL DEPOSITS

Broad channels topographically higher than the Eagle River are incised into the ground moraine and Elmendorf Moraine, and the deposits that cover their level floors are mapped as abandoned-channel deposits. These deposits are restricted mostly to the ground moraine north of the Elmendorf Moraine, but a short channel is incised into the Elmendorf Moraine north of Whitney. In addition,

the large abandoned channels at Fossil Creek and at the Eagle River station of the Alaska Railroad transect the end moraine.

Eagle River, Sixmile Creek, and Clunie Creek, all flow as consequence streams in wide abandoned melt-water channels that originate in the ground moraine. Sixmile Creek and Clunie Creek, as well as other streams that flow in channels starting abruptly in the ground moraine, extend to Knik Arm or the Eagle River Flats where the channels are truncated by the bluffs.

South of the Elmendorf Moraine, abandoned-channel deposits are mapped along Ship Creek, Chester Creek, the South Fork of Campbell Creek, Campbell Creek, Rabbit Creek, Potter Creek, the unnamed creek between Potter and Little Rabbit Creeks, and Rainbow Creek. Abandoned-channel deposits along the North Fork of Campbell Creek are not mappable at the scale of the map.

The surfaces of the stratified deposits covering the floors of the channels are graded and level. The channels range in width from about 180 feet in the smaller tributary channels to about 1 mile along the larger channels. These deposits are striking in appearance, as viewed through a stereoscope, where the channels pass through the lateral moraine. The bottom of the channel appears as a broad terrace that cuts through the hill topography. Most of the channels north of the Elmendorf Moraine end abruptly as hanging valleys in scarps along the sea cliffs or along the Eagle River.

The abandoned-channel deposits extend from the mouth of Ship Creek more than 6 miles upstream where they grade into the alluvial fan. The flat surfaces of the abandoned-channel deposits south of Ship Creek slope southwest about 36 feet a mile to Chester Creek. The northward contact with the alluvial fan is gradational; no prominent scarps separate the two deposits. The channels range in width from about two-tenths to about four-tenths of a mile.

In most places in the ground moraine area, the deposits in the abandoned channels consist of cobble gravel and boulders with thin but widespread lenses of sand and pebble gravel. The dominant particle size varies from place to place depending on the local composition of the materials from which the deposits were derived. Most of the abandoned-channel deposits are veneers only 4 to 12 feet thick. At the mouth of Sixmile Creek, 10 feet of abandoned-channel sand overlies about 30 feet of coarser advance outwash. Channel surfaces are covered locally by a veneer of silt which in places makes the land useable for agriculture.

South of the Elmendorf Moraine abandoned channels were eroded into the Naptowne outwash. The abandoned-channel deposits here are generally coarser than the enclosing outwash inasmuch as the waters scoured and reworked the outwash leaving only the coarser

material. Additional coarse material was brought in from the outwash upstream. Abandoned-channel deposits along Ship Creek are composed of stratified coarse sand and pebble gravel that contains some cobbles. In the NW¼SW¼ sec. 9, T. 13 N., R. 3 W., the deposit ranges in thickness from 11 feet at the edge of the valley to about 35 feet near Ship Creek about 800 feet away. Medium to coarse sand with pebbles constitutes the abandoned-channel deposit along Chester Creek and veneers the Bootlegger Cove clay where the Seward to Anchorage Highway crosses Chester Creek. The channel deposit is a thin veneer overlapped at the east end by swamp deposits. Along the South Fork of Campbell Creek east of the Campbell Airstrip the abandoned-channel deposits are 12 feet thick, and overlie till of the lateral moraine of the Knik glaciation. Along Campbell Creek, however, the abandoned-channel deposits are mostly composed of fine to medium sand and silt.

Cuts along the Seward to Anchorage Highway through the abandoned-channel deposits at the lower end of the stream between Potter and Little Rabbit Creek expose more than 11 feet of brown pebble to cobble gravel.

The length and parallelism of the channels north of the Elmendorf Moraine suggest that wasting ice north of the mapped area supplied vast amounts of melt water. The channels may have formed, however, as lateral drains during melting of the ice at the margin of the Naptowne glacier. That stagnant ice was in the area mapped is indicated by abrupt ice-contactlike slopes at the beginnings of some of the channels. The deposits of the abandoned channels are related, therefore, to the melt-water streams that flowed in part on the ice and in part on the ground moraine. The streams scoured their channels into the ground moraine.

Abandoned channels that are tributary to the Eagle River were cut by melt water from the Eagle River valley. They represent courses of the ancestral Eagle River. The surfaces of the abandoned-channel deposits along the Eagle River and Fossil Creek correspond in overall altitude with the surfaces of the deposits of the kame fields and kame terraces. Such similar levels implies the coincident deposition of the abandoned-channel deposits with the kame fields and kame terraces.

Along the mountain front south of the Elmendorf Moraine, other abandoned channels were also scoured by melt waters from the valley glaciers. The abandoned-channel deposits of Ship Creek, South Fork of Campbell Creek, and of North Fork of Campbell Creek (not mapped), merge into alluvial-fan deposits. The channels have been incised into all low-lying glacial deposits in the mountain valleys.

Ship Creek, which carried an increased volume of water during deglaciation, is the probable source of water that eroded the channels in the Naptowne outwash. The water dropped most of its load and formed an alluvial fan, so that the water that flowed over the outwash carried little load and channels were incised into the outwash surface. During the increased flow, Ship Creek probably flowed westward and southwestward along the channels of the modern Chester and Ship Creeks. As the volume of water decreased, the flow was concentrated along what is now Ship Creek. The steeper gradients of the channel deposits along Chester and Ship Creeks suggests that erosion widened an existing Knik Arm thereby shortening the stream courses and steepening the gradients, or reduction of the load carried by the waters permitted entrenchment of the channels into the outwash, or a channel of the combined Matanuska-Knik River entrenched into the outwash and lowered the base level of the Ship Creek waters flowing along what is now Chester and Ship Creeks. In addition, isostatic adjustment, as the glaciers melted, may have raised the surface of the land and rejuvenated stream erosion. The authors favor a combination of conditions, cutting caused by a decreased load, and a lowered base-level control caused by entrenchment of the combined Matanuska-Knik River into the outwash west of Anchorage.

SILT

A silt deposit underlies the International Airport, extends south of the A.C.S. road, and extends to the Alaska Communication Station. It covers part of secs. 32, 33, 34, T. 13 N., R. 4 W., secs. 3 and 4, T. 14 N., R. 4 W., and imperceptibly grades into the surrounding deposits in these and other sections. Light tan to gray, the silt is even grained, horizontally laminated, and interlayered with thin sand stringers. Pebbles one-fourth to one inch in diameter are scattered throughout the silt. About 300 yards north of the A.C.S. road, along the road that passes west of DeLong Lake, the silt is even more sandy. A road cut in the silt shows distorted layers and bands of silt with sand. The silt is well exposed in the SE¼NW¼ sec. 3, T. 12 N., R. 4 W., where the A.C.S. road cuts through a ridge.

The exposed thickness of the silt is more than 6 feet. A well at the National Guard Air Station penetrated 13 feet of silt and the well at the Alaska Communication Station (Corps of Engineers, unpublished well logs, Point Campbell A.C.S. Receiver Station well, International Airport, National Guard facilities water well) penetrated about 30 feet of sandy silt and silt. No thickness of silt in the International Airport area greater than 17 feet is known to the authors. The silt appears to mantle older glacial deposits.

Topographic relief within the silt area is about 40 feet near DeLong Lake. Irregular hills and kettles extend beyond the boundary of the silt.

The silt is considered to be a deposit of the Naptowne glaciation. Well records (Corps of Engineers, unpublished well records, International Airport, National Guard facilities water well; Cederstrom and Trainer, 1953, Nos. 86, 90) show that it overlies the Bootlegger Cove clay. Otherwise, the relationship of the silt to the adjacent deposits is not known, but two possibilities exist regarding its origin. The first possibility is that the silt represents a lacustrine deposit that may be part of the cycle of deposition of the Bootlegger Cove clay or a later lake episode. Laminations, pebbles, and sand stringers suggest such a lacustrine depositional environment. If the deposit is lacustrine, it is probably part of the Knik glacial sequence instead of the Naptowne glacial sequence, and was deposited in the same basin as the Bootlegger Cove clay.

The second possibility is that the silt is a relatively thin loess blanket over preexisting topography. Seventeen feet of the silt around the International Airport as compared to 30 feet at the Alaska Communication Station on the border of the delta, seems to the authors to be the reverse of what would be expected of a lake deposit; the Alaska Communication Station is near the edge of the deposits of the silt and the silt should be thinner.

Laminations in loess can be explained by slopewash action or stratification in puddles, perhaps during relatively quiet periods of deposition. The sand stringers, likewise, can be explained as part of slopewash or small stream accumulations. Stratification and sand stringers have been seen in loess in bluffs along the Missouri and elsewhere. Pebbles in loess have been observed in the central Great Plains. It is possible that the pebbles in the silt were blown in from a short distance, or were carried in by sheet wash or slopewash from upslope exposures of the sand and gravel that were either not as yet covered by silt or that temporarily were reexposed by wind action. The considerable area of Naptowne outwash is an ample source for the silt; winds blowing across the outwash may have picked up the finer fraction.

The many kettles in the silt can be explained under either hypothesis. If the silt accumulated in standing water, the deposit was probably evenly bedded and of relatively constant thickness, assuming deposition on a level surface. The kettles may have resulted from thawing of perennially frozen ground, or the silt may have been deposited as a loess blanket on an existing knob and kettle topography. Limited field evidence suggests that the silt is a loess mantle over pitted outwash, prodelta and delta deposits.

PLEISTOCENE OR RECENT DEPOSITS

Two of the glacial deposits—morainal deposits, undifferentiated and glacial drift, undifferentiated—can not be restricted to either the Knik or the Naptowne glaciations, but they are glacial deposits that may range from early Pleistocene to Recent in age. Additional deposits that could be either Pleistocene or Recent in age are the alluvial-fan deposits. Deposition of the units could have started in the Pleistocene epoch and continued through the Recent epoch.

MORAINAL DEPOSITS, UNDIFFERENTIATED

Ridges and hills that are interpreted as moraines, but for which the age or depositional relationship to other deposits is not known, are mapped as morainal deposits, undifferentiated. These deposits were delineated by photogeologic methods and were checked in the field.

Moraines in the mountain valleys at a higher altitude than the lateral moraine are mapped near the mouth of Ship Creek valley along McHugh Creek, across Potter Creek, near the heads of Little Rabbit and Rabbit Creeks, along the South Fork of Campbell Creek, along an unnamed tributary to the South Fork of Campbell Creek, and along the tributary valley north of Campbell Creek Canyon (pl. 1). Smaller moraines in the valleys and cirques have not been mapped. The valley moraines typically form arcuate ridges across mountain valleys; the slopes of the moraines are more gentle down-valley than upvalley. A series of parallel north-south ridges, extend eastward from the mouth of Ship Creek valley. Stream erosion cut steepsided modern valleys through the moraines.

The materials in these undifferentiated morainal deposits were examined only along the Ski Bowl Road where over 40 feet of brownish oxidized(?) till overlies stratified tan lake silt in the NE¼ sec. 9, T. 13 N., R. 2 W. The lake silt may be the source of the brown color of the till. Elsewhere they should be similar physically to those in the lateral morainal and end moraine such as pebbles, cobbles, and boulders. Stratification from reworking of the till by melt water, though present, will be scarce. Valley moraines were derived from valley glaciers. Debris carried by the glacier was deposited at the fronts of the glaciers either at the maximum advances or at stillstands during glacial retreats. The moraine across Ship Creek probably represents the Naptowne Ship Creek glaciers. Because the parallel ridges blocking the valley were examined only in reconnaissance, their relationship to the other deposits can only be surmised. The other moraines are probably late Wisconsin or Recent in age.

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GLACIAL DRIFT, UNDIFFERENTIATED

All of the glacial deposits east of the lateral moraine that do not have morainal topography are grouped into one map unit, glacial drift, undifferentiated. The slopes of the mountains are covered with glacial drift from about 1,500 feet altitude to 2,000 feet, though the upper boundary of the drift is not well defined. The drift extends along the sides of the mountain valleys up to altitudes of 2,000 or 2,500 feet and higher beyond the map boundary. The glacial drift that filled the valleys, slopes toward the lateral or undifferentiated moraines along the front of the mountains.

The glacial-drift deposits were examined only briefly in the field. The drift on the mountain slope along the road that parallels Little Rabbit Creek is a bouldery till, which suggests that the drift along the whole mountain front may be similar. The drift that fills the valley bottoms may be partly till and partly outwash composed of stratified sand and pebble and cobble gravel, and locally may be pond deposits of silt and peat.

Several of the bedrock spurs between valleys show smooth surfaces caused by overriding glacial ice, perhaps of the Caribou Hills glaciation of Kansan age. Some of these spurs, such as the spur that separates the South Fork of Campbell Creek from Rabbit Creek, have thin deposits of unmapped glacial drift. The thickness of the drift is not known but must be extremely variable.

Though the ages of the drift along the mountain front is not known, the deposits could represent several glacial ages; for example, Caribou Hills glaciation upward through Recent glaciations. The drift in the valleys probably is no older than the moraines (Wisconsin?) in the lower parts of the mountain valleys, but may be older than the early Recent moraines toward the heads of the valleys or the late Recent moraines in the cirques. The stratified or unstratified drift probably was derived from the valley glaciers or by possibly one or more of the pre-Wisconsin ice sheets.

ALLUVIAL-FAN DEPOSITS

Some of the alluvial-fan deposits grade upstream into deposits of the Naptowne abandoned channels. The ages of some of the alluvial fans are not known, because of obscured relationship of the fans to other units, and are grouped as one unit on the map. The largest alluvial fans are at the foot of the mountains where Ship Creek and the South Fork of Campbell Creek enter the lowland. Other conspicuous fan deposits are at the mouths of the mountain valleys of the North Fork of Campbell Creek, Rabbit Creek, and Little Rabbit Creek. One alluvial fan is mapped along the southern slope of the end moraine. Smaller alluvial fans are north of the

Elmendorf Moraine at the mouths of Clunie Creek and Sixmile Creek, and along the north side of Chester Creek in Anchorage. Many small alluvial fans at the mouths of small streams are not mappable at the scale of the map that accompanies this report. Undissected alluvial fans in the area have a characteristic deltoid shape, a smooth upper surface, and an upslope apex. Although the streams that flow across the larger fans are well entrenched, most of the streams that flow across the smaller fans are but slightly entrenched. Most of the fan deposits grade almost imperceptibly into the materials along their perimeter.

As is typical of most alluvial deposits, the materials in the alluvial fans vary in size from place to place and in composition from sand to pebbles, cobbles, and boulders. The bedding may be irregular, continuous or truncated, horizontal or steeply dipping. Bedding is more continuous and uniform at the surface of the fan than within the fan. Bedding is exposed in steep valley walls along entrenched streams where sections show cut and fill structures that probably developed as the stream meandered across the surface of the fan. Clay layers within fan deposits support perched-water tables at different depths.

The material in the large alluvial fan of Ship Creek is finer than the Naptowne outwash in the same area. The fan deposit is composed of silty sand, medium-fine sand with pebbles, and gravelly sand (Corps of Engineers, unpublished drill records, *DH*–3, *DH*–4, *DH*–43), whereas the outwash ranges from sandy gravel to pebble gravel with cobbles.

The fans on the tidal beach at the mouth of streams are predominantly medium sand with pebble lenses.

Fan deposits differ in thickness from place to place and from fan to fan. Those along Ship Creek range in known thickness from about 10 feet to about 35 feet (Corps of Engineers, unpublished drill records, *DH*–3, and *DH*–4).

Deposits of the fans along the mountains apparently are related to glacial melt-water streams. The fan along Ship Creek is separated from the abandoned-channel deposits at the mouth of the valley by a scarp about 10 feet high in places. Such a scarp could indicate that the fan is younger than the abandoned melt-water channel, or, more likely, that the fan was deposited by melt-water and headward accumulation of deposits at a gradient different from that of the melt-water channel resulted in erosion of the scarp separating the higher standing channel deposits from the fan. Fans along the North Fork of Campbell and South Fork of Campbell Creeks are contemporaneous with and grade upstream into the Naptowne abandoned-channel deposits. As the melt-waters from the valley

glaciers emptied onto the lowlands, they deposited their loads and braided their channels. The contemporaneity of the abandoned-channel deposits with the alluvial fans along the mountain fronts dates some of the fans as probably late Wisconsin in age.

The fan deposit at the front of the Elmendorf Moraine was deposited when the glacier front was a short distance behind the moraine. The source stream flowed through the abandoned channel is sec. 26, T. 14 N., R. 3 W. Additional melt water flowed through the smaller channel in sec. 27.

The alluvial fans on the tidal beaches are modern fans deposited where the modern streams change gradient at the beach level.

RECENT DEPOSITS

SWAMP DEPOSITS

Swamps are widespread throughout the lowlands, along valley streams, and along edges of lakes and ponds. Closed swampy depressions are abundant on most glacial deposits in the area, and some swamps, in addition, are even found on low rounded hills and ridges of ground moraine of the Knik glaciation. The largest swamps are in the lowland area south of Anchorage. Smaller swamps, common everywhere, are most conspicuous along the terraces entrenched into the Naptowne outwash, along the Naptowne abandoned channels, and in the Naptowne ground moraine north of the Elmendorf Moraine. Both the lowland and valley swamps and muskegs have a flat or concave surface that is bounded by upward sloping ground. Depressions within this surface contain small lakes or ponds. Even though irregularly shaped with indentations and crenulations along their margins, the lowland swamps tend to have an overall circular outline.

Smaller swamps in kettles in the surface of the lateral moraine and ground moraine of the Knik glaciation, and the end moraine and ground moraine of the Naptowne glaciation tend to be more or less elongate or circular in outline.

Swamp deposits in the area are predominantly a brown, locally peaty, organic accumulation. Woody tissues, silt, and clay combine in places to make slime. Some peat deposits contain volcanic ash layers; two light-gray layers three-eighths to one-half inch thick were exposed as the peat was removed from a kettle during construction of the International Airport. The first layer was 18 inches below the top of the peat deposit, the second layer 6 inches below the first. Volcanic ash is also recorded in the profiles of muskegs by Dachnowski-Stokes (1941).

Dachnowski-Stokes (1941, p. 3–5) classified Alaskan muskegs into three categories: slope muskegs, raised muskegs, and flat or valley

muskegs. His classification is based on topographic, structural, and developmental differences. Slope muskegs have sloping surfaces, develop on gently undulating sloping land only slightly above sea level, on slopes of mountain islands. Cool summers, high precipitation, and high humidity are required. Raised muskegs have convex surfaces and contain hummocks of sphagnum moss that continuously grow upward until they are several feet thick. Though raised muskegs develop in less wet conditions than the slope muskegs, high humidity, strong acid reaction of the waters, and lack of mineral salts are required. Flat or valley muskegs have flat or concave surfaces. The height to which the surface of any muskeg can grow is dependent on the ground-water level coupled with the inability of the vegetation to grow above the local water table. Though similar to slope muskegs, environmental requirements of flat muskegs differ in that they are limited to lowlands, stream valleys, and the edges of slightly acid lakes or ponds.

The muskegs and swamps in the Anchorage lowlands are classified as part of the flat or valley-group muskegs (Dachnowski-Stokes, 1941, p. 5). Two muskeg localities in the Anchorage area, one near Lake Hood and Lake Spenard, the other on the abandoned-channel deposits below Merrill Field are described in detail by Dachnowski-Stokes. The swamp around Lake Hood and Lake Spenard (Dachnowski-Stokes, 1941, locality no. 33, p. 54) is over 11.5 feet deep and consists of partly decomposed hypnum peat (70 inches), sedge peat (52 inches), plus sphagnum moss at the surface. The profile through the center of a muskeg near Merrill Field gave an average thickness of 6 feet of peat over a sandy gravel (Dachnowski-Stokes, 1941, p. 55). General descriptions of other muskeg soundings near Merrill Field (op. cit. p. 55) indicate that the swamp deposits along stream valleys, though shallower than those in kettles and other pond depressions, consist principally of sphagnum moss, peat, and sedge peat. The marginal parts are about 30 inches deep as compared to the 140 inches around Lake Spenard.

Dachnowski-Stokes (1941, p. 56, footnote) mentions at least three seams of volcanic ash in the peat along Knik Arm near Point Woronzof.

The profiles listed by Dachnowski-Stokes (1941, p. 54–55) show at least one muskeg to be 11 feet thick (Merrill Field No. 34). A rod driven by the present authors into muskeg along the Seward to Anchorage Highway in sec. 30, T. 13 N., R. 3 W., penetrated more than 12 feet without reaching the underlying glacial materials, whereas in sec. 24, T. 12 N., R. 3 W., the muskeg is about 4 feet thick. Near Point Woronzof, 14 feet of peat overlies the Bootlegger Cove clay. The thickness of the swamp deposit depends on the type of depression or surface on which the swamp formed. As a general

rule, the valley muskegs are thinner than the lake or pond muskegs. The lowland muskegs that overlie the older ground moraine are also thinner than the pond muskegs. A carbon-14 determination of a peat sample taken from the lower foot of an 8-foot peat exposure at the International Airport was measured as 5,340±300 years (Kulp, and others, 1951, 101A, p. 568). The sample was taken from the drainage ditch through a muskeg on the east side of the north end of the north-south runway. Plant growth and encroachment by swamp deposits are still in progress in other swamps. Thus, the carbon-14 date indicates the minimum radiocarbon age of the peat in that particular depression. It does not indicate the age of the depression in which the peat accumulated, or the age of the entire thickness of peat. The ages of the swamp deposits probably are restricted to the Recent epoch.

Most swamps form by encroachment of aquatic and semiaquatic vegetation onto lakes and ponds that were formed in small and large kettles and in depressions along stream valleys where the water table is shallow. In time, the water becomes slightly acid with a low content of soluble mineral salts. Plants encroach and spread across low ridges in the lowland and move toward the center of the depression, filling it until only a small lake or pond remains a vestige of a larger lake (Dachnowski-Stokes, 1941, p. 53). The muskeg is restricted in height and lateral extent by an apparent inability to grow above the local water table. He states (1951, p. 4):

> The normal succession is from aquatic peat-forming plant communities to transitional stages dominated by sedges, rushes, and grasses. The later stages begin with the appearance of characteristic sphagnum mosses and their associates. This is correlated with marginal colonization by heaths and conifers. An increasing density in shrubs or trees may eventually kill out the sphagnum mosses in the ground cover.

DUNE SAND

Dunes extend discontinuously along the bluff of Turnagain Arm from Point Campbell to a position about a mile southeast of Furrow Creek. The only other dune mapped is one on the bluff north of the Eagle River Flats near Clunie Creek. In most places, the dunes are grass covered and stabilized. Where exposed in blow-outs or in sea-cliffs, they are composed of light-tan fine silty sand. The beds are inclined into the hill at about 30° to 40° and parallel the surface of the leeward side of the dune. Rootlets extend throughout and thin layers of peatlike material are commonly interbedded in the sand.

Along the bluff of Turnagain Arm, just east of the till hill in sec. 23, T. 12 N., R. 4 W., a layer of volcanic ash was exposed in a shallow hole in the upper 18 inches of the sand dune. Another ash layer

about 40 feet above beach level in the bluff along Turnagain Arm in the middle of sec. 7, T. 12 N., R. 4 W. is exposed in the dune sand 8 feet above the base of the dune and 6 feet above a carbon zone.

A narrow steepsided ridge parallel to the edge of the sea cliff is typical of the topography of the most recent sand dunes. The dune sand varies in thickness; on the sea-cliff along Turnagain Arm they range from 3 feet in thickness near the west side of sec. 9, T. 12 N., R. 4 W., to about 45 feet near Point Campbell. Winds carry sand from the fact of the bluff to the top. The sand drops and accumulates as dunes when the velocity diminishes. Near Point Campbell silty sand derived from the underlying delta deposits is being added to the dune at the present time. On the lee side the dune is encroaching on trees and shrubbery.

ESTUARINE SILT

Tidal deposits of estuarine silts are exposed almost from bluff to bluff along Turnagain Arm at low tide, except for the channel of the river that drains Turnagain Arm. Tidal deposits extend along Knik Arm as well, although their width at low tide is less than along Turnagain Arm. At high tide the estauarine silt is covered and only narrow beaches derived from sea-bluff materials extend along the shores of the arms. At low tide it is uncovered to Fire Island except for the narrow channels of streams draining Knik Arm.

The longest expanse of estuarine silt above high tide level is along Turnagain Arm from Potter to about 1½ miles beyond the mouth of Campbell Creek. The second largest expanse underlies the Eagle River Flats. A narrow band parallels the shoreline for about three-fourths of the distance from Point Campbell to Point Woronzof. The flats at the mouths of Fish Creek and Chester Creek, and between Ship Creek and the Elmendorf Moraine also are composed of estuarine silt that is not covered by high tides. The estuarine silts above and below high tide level is similar in appearance to the Bootlegger Cove clay. They are dark greenish gray and clayey with sand grains scattered throughout. They are plastic and sticky when wet.

The surfaces of the estuarine silts slope toward the center of the Knik and Turnagain Arms. Records of wells in the silt above high tide level indicate that peat or muskeg, locally as much as 10 feet thick, overlies the estuarine silt; the silt, which is about 50 feet thick, overlies the Bootlegger Cove clay (Corps of Engineers, unpublished well records Nos. *DH*–42, *DH*–7). The estuarine silt accumulated from the glacial flour carried into Knik and Turnagain Arms by the waters from the melting glaciers. This process of deposition is still continuing. The estuarine silt above high-tide level probably

was deposited by tides when the waters of the arms of Cook Inlet were higher.

ALLUVIUM

Alluvium is mapped along Clunie Creek, along the Eagle River, between Otter Lake and the Eagle River Flats, and along Sixmile, Ship, Chester, Campbell, Rabbit, and Little Rabbit Creeks. The determining factor in mapping alluvium was the scale of the map. Other streams in the area, as well as the upper reaches of the streams mentioned above, have thin narrow deposits of alluvium that are not mapped. As a generality, the particle size of the alluvium at any one place in the area is coarser than the material into which the stream channel is entrenched. When the entrenched material was reworked by the stream, the finer fraction was removed and carried downstream. The coarser particles remained in the channel alluvium. Seasonal increases in stream volume could accelerate such sorting as well as transport large particles downstream where they commonly are surrounded by deposits of smaller particle size. A 2-foot thick pebble to cobble gravel layer near Spenard Road and Chester Creek overlies sand where the outwash is sand or pebbly sand (Cederstrom and Trainer, 1953, No. 17). Similarly, pebble and cobble gravel is at the surface of a sandy gravel alluvium along Ship Creek that overlies a sand blanketing the Bootlegger Cove clay (Corps of Engineers, unpublished well log *DH*–28). The outwash in this area is a sandy pebble gravel.

Sandy pebble gravel constitutes the alluvium where Campbell Creek flows parallel to the Sand Lake Road. The alluvium is coarser where the creek flows through the lowlands east of the Seward to Anchorage Highway, and it is predominantly a cobble gravel where the stream flows on the Campbell Airstrip alluvial fan.

The alluvium varies in thickness from place to place; near Spenard Road it is 19 feet thick, along Ship Creek in the SE¼NW¼ sec. 9, T. 13 N., R 3 W., it is 17 feet thick. The surface of the alluvium along Ship Creek is flat and slopes from about 38 feet per mile between Walten Road and the Glenn Highway to about 41 feet per mile nearer Knik Arm. This slope is for a line distance parallel to the channel between two points on the alluvium and is not the gradient of the stream channel. It compares with a slope of 32 feet per mile for the Naptowne outwash, and a slope of about 36 feet per mile for the Naptowne abandoned-channel deposits south of Ship Creek.

Streams are slightly entrenched into the pre-Wisconsin deposits in the lowland area south of Anchorage, especially along Campbell Creek north of Dowling Road where the alluvium is below swamp level. Alluvium fills modern stream channels cut in underlying

deposits. Even though buried channels eroded into the Bootlegger Cove clay locally coincide in part with the courses of the modern streams, the alluvium is primarily a thin fill deposit that covers a surface cut on older materials. The stream cutting and deposition probably resulted from sea-level fluctuations since altithermal time.

LOESS

Loess is deposited over most of the glacial deposits in the Anchorage area, however, since it ranges in thickness from 0 to only about 3 feet it is not mapped. The source probably was the Knik and Naptowne outwash deposits. Today, clouds of silt can be seen along the flood plain of the Matanuska River as the winds pick up the fine fraction from the dry surface of the river bars. A similar origin is envisioned for the loess in the area.

GEOLOGIC HISTORY

GLACIAL HISTORY

The Cook Inlet area probably appeared different at the beginning of Pleistocene time than it does today. Capps (1940) concluded that the Inlet was narrower, had well-drained border lowlands probably marked by more or less equally spaced stream valleys separated by low hills and ridges. Turnagain Arm was likely a mountain valley, and Knik Arm was, in all likelihood, a stream valley that was above high tide. The north end of Cook Inlet may have extended northward over the area now occupied by the Susitna lowland delta.

Little is known about possible pre-Eklutna glaciations of the Anchorage area. Rounded summits and spurs at altitudes up to 4,400 feet on Mount Susitna, west of Anchorage, and at other places in the Cook Inlet area, and glacial deposits at altitudes of 3,000 feet near Tustumena Lake, south of Anchorage have been attributed by Karlstrom (in Péwé, and others, 1953) to two early Pleistocene glaciations. Smoothed spurs and ridges at altitudes of about 2,200 to 2,800 feet along the front of the Chugach Mountains east of Anchorage and deposits of the glacial drift, undifferentiated, may be related to one or both of these proposed advances, but they also may be related to the Eklutna glacier.

The Matanuska lobe of the Eklutna glacier of Illinoiian(?) age advanced down Knik Arm through the Anchorage lowland and in all likelihood coalesced below Anchorage with lobes of the Susitna Valley and Turnagain Arm glaciers. The oldest glacial deposits exposed in the Anchorage area were deposited by this glacier. Weathering that followed, oxidized the Eklutna drift to depths of at least 40 feet. Erosion locally truncated the Eklutna till and outwash and left benchlike remnants.

The Matanuska and Knik lobes of the Susitna Valley glacier of Knik (post-Sangamon?, pre-Wisconsin?) age later advanced through the Anchorage lowland and apparently coalesced with the Turnagain lobe. The Matanuska–Knik and Turnagain lobes probably became separated from the larger Susitna Valley lobe as they retreated up Cook Inlet from their point of farthest advance; the Matanuska and Knik lobe moved to a position north of Anchorage, whereas the Turnagain lobe moved an unknown distance up Turnagain Arm. The supply area to the Turnagain Arm glacier is smaller than that to the Matanuska and Knik glaciers, and the Turnagain glacier probably retreated faster and had little or no influence on the preserved features in the Anchorage area.

Accumulations of talus and rubble carried by the glacier, and sand and gravel carried by streams along the flanks of the Chugach Mountains, formed the lateral moraine. Melt water flowing along the margins of the ice reworked some of the glacial materials in the lateral moraine. The lower slopes of the Chugach Mountains were covered by the debris of the lateral moraine as the Knik glacier thinned. The melt-water streams eroded channels into the lateral moraine, and stratified deposits covered the bottoms of the short channel segments preserved in the lateral moraine. The Knik glacier probably withdrew gradually up Knik Arm, but such features as kames, eskers, and pitted outwash are numerous enough to indicate considerable stagnation in the Anchorage area.

Basal till was uncovered along the lower slope of the mountain front west of the lateral moraine as the glacier wasted away. Thin ablation moraine was deposited on the basal till as the area was deglaciated. Stagnation left scattered blocks of ice in the ground moraine. Melt-water streams were partly controlled by the ice in the area as they cut channels in the till; where the streams flowed on ice their channels are discontinuous, and segments of channels are all that remain in the ground moraine of the Knik glaciation.

Glacial materials of different lithologies and landforms were deposited or formed concomitantly. At this stage of deglaciation, much of the debris carried on the surface of the glacier was reworked into stratified drift by glacial streams flowing on the ice. Much of this stratified drift accumulated over the ground moraine of Knik age as ice-contact deposits. Some of the crevasses and depressions in the ice were filled with stream deposits, and others were filled by unsorted glacial debris that tumbled into the openings. Small lakes and ponds on the ice were filled with fluvial, deltaic, or lacustrine deposits. The end results were hills, ridges, and stratified drift in the form of glaciofluvial ice-contact deposits that cover parts of the Knik ground moraine. Melt-water streams that flowed over the lowland later eroded these deposits.

A glacier from the west or northwest dammed the waters coming from the Matanuska, Knik, and Turnagain glaciers. The waters accumulated in a basin and covered part of the ground moraine toward the center of what is now Knik Arm. Debris from the glacier deposited as a delta, and rock flour carried into the lake by rivers from the Matanuska and Knik glaciers formed the Bootlegger Cove clay.

The lake either filled and overflowed the delta, or a slight withdrawal of the lobe permitted the lake to overflow along depressions in the delta. The lake first overflowed between Point Campbell and Point Woronzof, but waters overflowing west of Point Woronzof cut into the delta faster and the lake drained along that channel. The lake drained parallel to the west edge of the delta deposits, cut the flat overflow channel surface, and truncated the earlier overflow channel deposits from the lake leaving a scarp separating the two channels. Whether waters from the Matanuska River eroded the Bootlegger Cove clay along the old preglacial valley to reform an ancestral Knik Arm is not known.

Though isolated blocks of glacier ice remained in the lowland area during deglaciation, the Knik glacier melted back to the north. Glacial streams that flowed into the Anchorage area covered parts of the ground moraine with outwash. A pitted surface resulted where outwash was deposited around ice knobs and blocks. There were at least four periods of outwash deposition north of the area. Outwash at the highest altitude was deposited when the source of the melt water was close to the area; two intermediate terracelike levels indicate base-level controls as the glacier melted northward, and the outwash at the lowest altitude was deposited when the source was further north of the Anchorage area.

During the interglacial period that followed, some of the freshwater lakes and ponds on the pre-Wisconsin glacial deposits became brackish and were filled with clay and peat. Also during this interval, diatomaceous clay (p. 18) was deposited in some of the shallow lakes and ponds on the glacial deposits. The surface of the Bootlegger Cove clay was weathered and oxidized.

A pre-Naptowne Wisconsin glacier occupied the Anchorage area and deposited till between the Bootlegger Cove clay and the Naptowne advance outwash. As the Matanuska–Knik lobe of the Naptowne glacier moved toward the Anchorage area, melt water deposited the advance outwash in front of the moving glacier and buried the Bootlegger Cove clay and till deposited by the earlier Wisconsin glacier. The Naptowne glacier then overrode the advance outwash and moved to about the position marked by the Elmendorf Moraine. The ice front fluctuated, but it was stationary for a sufficient time

to deposit the end moraine. It then retreated, leaving detached stagnant blocks. As these events were taking place, melt water flowed through or over the end moraine from a point west of Cairn Point and deposited the pitted outwash in front of the end moraine. The Matanuska–Knik lobe and its end moraine blocked the drainage of the Eagle River so that a lake formed in the lower part of the Eagle River valley. The lake overflowed and cut channels along the south side of the Eagle River valley. The lake water flowed toward the modern Knik Arm along the south side of the Elmendorf Moraine and cut channels into the Bootlegger Cove clay. The overflow channels along the south side of the Eagle River valley eventually were cut deep enough to drain the lake, and the Naptowne outwash was deposited as a flat plain parallel to the south side of the end moraine. The southwestern and western extents of the outwash beyond the Anchorage plain are not known. The outwash is graded either to a surface higher than modern sea level on Knik Arm, perhaps the northeast slope of the Point Campbell and Point Woronzof highland, or to sea level at some distance down the Arm. About the same time, the fan on the outwash plain in front of the end moraine was deposited by melt waters from the glacier. Contemporaneous with the deposition of the outwash, the melt water flowing from the smaller valley glaciers in the mountains cut channels through and reworked the glacial deposits along the western edge of the mountains. The alluvial fans at Ship, North Fork of Campbell, and South Fork of Campbell Creeks were formed as stream loads were dropped at the mountain front. Relieved of their loads, the streams were capable of cutting channels. Ship Creek or some other melt-water stream flowed across the outwash and cut channels and deposited the alluvium of the abandoned-channel deposits of Naptowne age. Silt and fine sand were available from the broad outwash plain, and winds carried the fine fraction southward and covered parts of the prodelta, delta, and pitted outwash deposits of the Knik glaciation with the windblown silt.

When the melt water flowing from the valley of the Eagle River cut a channel along what is now Fossil Creek, the major deposition of the Naptowne outwash from the Eagle River was stopped. Flow from Fossil Creek along the southern margin of the glacial ice to the west deposited the kame terrace, sequence 1.

The Eagle River changed its course periodically, at some time flowing along each of the abandoned channels that are tributary to the course of the modern Eagle River. These channels also had ice on one wall where the kame terrace, sequence 2, was formed. The channel of sequence 1 was abandoned when the valley of Sixmile Creek was cut. Uneven retreat and wasting of the Wisconsin glacier

left blocks of ice interspersed with ground moraine, and while the Eagle River was changing its course, small melt-water channels were incised into the ground moraine by streams flowing from the ice blocks. More or less parallel channels in the ground moraine north of the Eagle River were cut either by melt water from wasting ice north of the area or by melt water flowing in channels bounding the ice as the glacier retreated. These melt-water streams apparently joined water from the Eagle River valley and flowed westward into the area now covered by Knik Arm. The lowland at this junction was later (postglacial time) eroded to the embayment that is now the Eagle River Flats.

When most of the ice had wasted away, the streamflow from the Eagle River valley became integrated into a single stream with the result that the Eagle River entrenched itself through its melt-water channel and into the ground moraine and the underlying gravels of Knik age.

Complete wasting of the ice left the basal till of the Naptowne ground moraine covered by unsorted superglacial till. Stream flow became concentrated along the modern courses.

Those morainal deposits and glacial drift deposits, undifferentiated, that are related to the Wisconsin glaciation in the mountains, were deposited as outwash and end moraines from valley glaciers. Stagnation or retreat of the glaciers deposited the glacial drift in the valley bottoms.

POSTGLACIAL HISTORY

The maximum advance of the Wisconsin glacier in the Anchorage area left much of the area south of the Elmendorf Moraine uncovered by ice. The glacial deposits of Naptowne age either were exposed after the Wisconsin glacier retreated or at various intervals during deglaciation, at which times the glacial deposits were subjected to modification of their original forms by weathering, eolian deposition, plant growth, and erosion. Vegetation started to accumulate in kettles and other depressions. The deposition of loess, which started during the Wisconsin glaciation, for the most part covered the glacial deposits in postglacial times. Where this loess accumulated slowly, moderate podzol soils formed on the loess as well as on the upper part of the glacial deposits.

Erosion in postglacial time is confined, for the most part, to Turnagain and Knik Arms, and to the channels of the modern streams. The age of the erosion that formed the modern Knik and Turnagain Arms is not established, but the relationship of Knik Arm to the Naptowne outwash and the abandoned-channel deposits permits certain inferences. Knik Arm formed after deposition of the Naptowne

outwash, which was deposited about 11,000 years ago (p. 68), and apparently formed after the abandoned channels were cut into the outwash. The waters of the combined Matanuska and Knik River eroded an everwidening channel into the outwash during deglaciation, or soon after. The waters of Cook Inlet probably eroded the southern limits of the outwash, and shortened the course and steepened the gradient of the river channel, which resulted in downcutting into the outwash. Isostatic adjustment of the surface increased downcutting by the Matanuska-Knik River. The waters of Cook Inlet eventually rose, flooded the valley of the combined Matanuska–Knik River, and tidal waters widened the valley to form the modern Knik Arm. Similarly, erosion by river and tidal waters formed Turnagain Arm. Streams in the mountains are incised into the pre-Wisconsin glacial deposits of Knik age along the flanks of the mountains, and into the glacial drift and morainal deposits, undifferentiated. In adjusting to their new gradients, the postglacial streams eroded bedrock at several places in and near the Anchorage area. The postglacial South Fork of Campbell Creek cut through the overlying abandoned-channel deposits, through the till of the lateral moraine, and into the underlying rock to form a steepsided bedrock gorge about 150 feet deep that is, as far as can be determined, north of its preglacial channel. Likewise, the Eagle River has cut into a preglacial bedrock spur that forms the abutment of the bridge along the old Anchorage to Palmer Highway (Dobrovolny and Miller, 1950).

Streams in the lowland area have incised their channels slightly into the ground moraine, abandoned-channel deposits, outwash deposits, and locally into the muskegs. Streams that originate in the lowlands south of the end moraine have slightly integrated drainage in areas of large swamps and muskegs. North of the end moraine the drainage in the lowlands is not yet integrated. Kettles and depressions are undrained, and the only graded flow is by modern consequent streams that use as their courses the channels abandoned by the glacial melt waters.

Along Turnagain and Knik Arms steep sea cliffs are being cut as the waters of Knik and Turnagain Arms erode the north, south, and west sides of Point Woronzof and Point Campbell highlands. The rate of recent erosion at Point Woronzof is recorded indirectly in the descriptions of the U.S. Coast and Geodetic Survey[6] triangulation stations. The Woronzof station was first established on Point Woronzof about 32 feet south of the edge of the bluff in 1909. In 1918 the bluff had receded to the station and a second station,

[6] U.S. Coast and Geodetic Survey, Descriptions of triangulation stations, Cook Inlet, southwest Alaska.

Woronzof$_2$, was established about 41 feet southwest of the Woronzof station. By 1941 erosion had removed the 1909 station and the bluff had receded to a position about 13 feet north of the Woronzof$_2$ station. Two reference marks, Woronzof$_2$ 1918–41, 1 and 2, were established about 75 feet southwest and 65 feet south-southwest of Woronzof$_2$, respectively. By 1947 Woronzof$_2$ had been removed and the bluff had receded along a line about 24 feet and 30 feet, respectively, north of reference marks 1 and 2. In 1947 station mark Woronzof$_3$ was established about 67 feet east-southeast of the position of Woronzof$_2$. Woronzof$_3$ was about 21 feet south of the edge of the bluff. By 1954 Woronzof$_3$ had been removed by erosion of the bluff, reference marks 1 and 2 were recovered. In 1955 reference mark 1 could not be found, but reference mark 2 was recovered in position.

From its position in 1909 the bluff receded southward a total of about 95 feet by 1947 (fig. 6), or about 2 feet per year. Because the 1909 position of the bluff line north of Woronzof$_3$ is not known, the amount of erosion since 1947 is not estimated.

A trunk of a tree, 0.6 of a mile from the Fire Island triangulation station northeast along the sea bluff forming the southeast shore of Fire Island facing Turnagain Arm, was buried in an upright position by dune sand. Sampled for a radiocarbon analysis, the age of the tree was determined to be 620±200 radiocarbon years (Rubin, Meyer, U.S. Geological Survey, written communication, April 2, 1957 W–541). Modern sand dunes extend inland almost one-half mile near the Fire Island station. Dead trees extend through the sand about one-fourth mile inland, but partly buried trees further inland still bear foliage. Thus, assuming conditions were similar when the tree that was sampled died, the sea bluff has receded about one-fourth mile in about 600 years, or about 2 feet a year.

Constant undercutting of the sea bluffs by the waters of Knik and Turnagain Arms is slowly removing the materials in the bluffs and reworking them into modern beach deposits below high tides. In addition, spring thaws provide water that saturates the Naptowne outwash and the surface of the Bootlegger Cove clay along Knik Arm. Slumping and sliding of the saturated materials onto the beach, where tide water removes them, also slowly modifies the shoreline each year.

Winds blowing against the eroded bluffs, deposited, and are depositing, sand dunes along Turnagain Arm that parallel the tops of the sea bluff, and along the northshore bluffs facing the Eagle River Flats.

Interpretation of radiocarbon dates of apparent fluctuations in sea level, were made by T. N. V. Karlstrom for the Cook Inlet

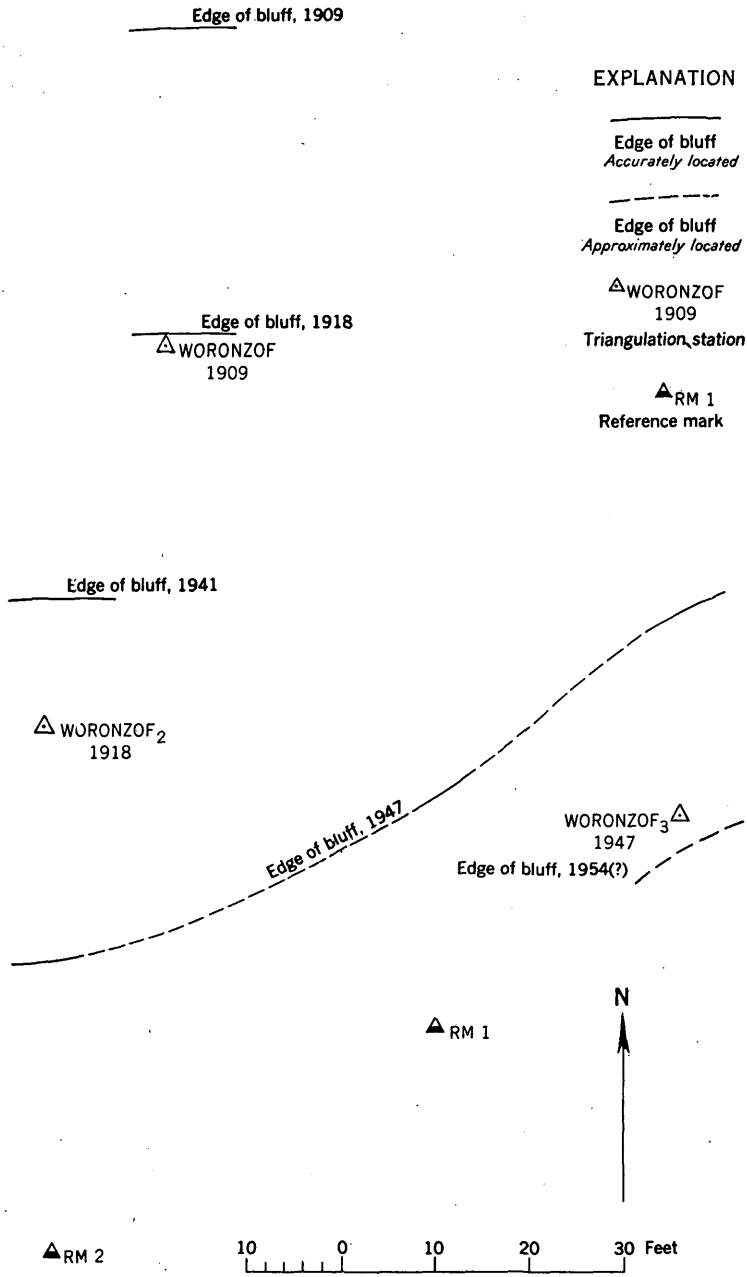

FIGURE 6.—Positions of receding bluff line at Point Woronzof from 1909 to 1954. Established by positions of bluff line in relation to U.S. Coast and Geodetic Survey triangulation stations Woronzof, Woronzof$_2$, and Woronzof$_3$.

region and are here briefly summarized. Collections from tidal bog sections are interpreted by Karlstrom to indicate at least one low level of the sea about 5,000 years ago (3000 B.C.) that corresponds to the Tustumena glaciation (fig. 2). He described a section (*in* Rubin and Suess, 1956, W-299, p. 445) from which he collected wood as follows:

> Wood from near base of forest peat unit exposed above low tide level and overlain in turn by 5 to 6 feet of tidal silt, 2 feet of forest and sedge peat, 6 to 8 inches of tidal silt, and 1.5 to 2 feet of peat with three distinct forest layers becoming distinctly silty near top of section. The tidal bog stratigraphy records a sequence of lower and higher sea-level phases in the Cook Inlet. The lower peat is interpreted as representing the eustatic low sea-level phase during the Tustumena glaciation, which has been dated from other evidence between 3000 and 1 B.C. The new date falls within the time boundaries of the Tustumena glaciation, and substantiates the belief that this glaciation was an important climatic event during the Recent epoch.

Another sample collected near Girdwood by Karlstrom and determined by Rubin and Suess (1955, W–175, p. 486) is dated as 700±250 radiocarbon years. The description and Karlstrom's interpretation (in Rubin and Suess, 1955, p. 486) of the sample reads:

> * * * Wood was from a tripartite forest zone overlying tidal silts presumed to be from a glacial minimum. The forests are believed to record a relatively low sea-level stand that was terminated by a period of higher sea level, during which the overlying tidal silts were deposited.

Thus, about 700 years ago a rise in sea level killed the forest. Karlstrom (1955, p. 1582) dates three Recent glaciations in radiocarbon years as between 4,400 years ago (3500 B.C.) and 1,400 years ago (A.D. 500), between 1,400 years ago (A.D. 500) and 400 years ago (A.D. 1500), and between 400 years ago (A.D. 1500) and the present.

The shoreline of Cook Inlet probably has been influenced by eustatic sea-level changes (owing to an increase or decrease of volume of water in the ocean), isostatic rebound (owing to changes in load on the land), and tectonic changes (from mountain building forces). Any of these conditions or combinations of conditions could result in deposits such as those described in the previous paragraphs.

Erosion by waters of Knik and Turnagain Arms have, for the most part, obliterated beaches, strand lines, or other evidences of sea-level fluctuations in the Anchorage area. Trainer (1953, p. 18) finds evidence in the gradients of stream terraces at about the level of the Matanuska River and Knik Arm that the sea into which those streams flowed was at a lower level than now. In addition, he cites bars as evidence of a higher sea level than at present.

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ECONOMIC GEOLOGY

MINERAL RESOURCES

The mineral resources in the Anchorage area are nonmetallic and, for the most part, are related to the glacial deposits that cover most of the lowlands and the flanks of the mountains. Though lode and placer deposits of metallic minerals have been worked along both sides of Turnagain Arm, no such deposits are known to exist in the area under investigation.

COAL

Coal was mined just east of the mapped area near the Alaska Railroad bridge that crosses the Eagle River. The mine is now abandoned and caved. Coal-bearing Tertiary rocks are exposed along the river from the Alaska Railroad bridge to the Glenn Highway bridge (Dobrovolny and Miller, 1950), but the seams disappear under the glacial deposits before reaching the mapped area. No coal beds are known to crop out in the Anchorage area. Coal probably underlies the area, though the depths to rocks of Tertiary age, as recorded in wells, range from about 230 feet near the mouth of the Ship Creek valley (U.S.G.S. No. 10, Ski Bowl Road, Corps of Engineers, written communication, February 1957), to 447 and 766 feet (Cederstrom and Trainer, 1953, No. 173; Corps of Engineers, unpublished well record, West Power Plant well), toward Knik Arm.

Coal reported at Point Campbell and Point Woronzof and in excavations or shallow wells in and around Anchorage, is not in seams, but is either in layers of water-transported coal fragments interbedded with sand and gravel of Pleistocene age, or occurs as large blocks of coal, some pieces of which are as much as 6 feet in longest dimension, that were likewise transported by water, or by glaciers.

LIMESTONE

Within the pre-Cretaceous(?) rocks, three areas of limestone exposures are mapped along Turnagain Arm and Little Rabbit Creek. The exposures extend up to Little Rabbit Creek from a point 300 feet north of the Seward to Anchorage highway. About three-fourths of a mile from the road, the limestone is so interlayered with graywacke that it is difficult to recognize.

In June 1949, one of the authors accompanied Mr. Thomas Mely to his 4 claims on Little Rabbit Creek where 3 assorted samples were collected from the south side of the creek. Mr. John J. O'Shea, assayer, Territorial Bureau of Mines, analyzed the samples and reported 51.1, 64.0, and 63.0 percent residue insoluble in hydrochloric acid.

Another small outcrop of limestone, metamorphosed almost to marble, is exposed on the mountain 70 feet below the Anchorage to Seward Highway one-fourth of a mile south of Little Rabbit Creek. It was also sampled, and O'Shea reported 4.2 percent of insoluble residue and 95.8 percent calcium carbonate. This exposure shows evidence of being worked years ago, and the remains of an old lime kiln near this outcrop suggests that this is the exposure reported by Martin (1919, p. 27) as being used for the local production of quicklime.

The limestone sample from this small exposure was badly fractured and not satisfactory for building stone.

A brief reconnaissance was made along the mountain area at an altitude higher than the glacial deposits, and although no other limestone beds were seen, the high quality limestone south of Little Rabbit Creek certainly suggests the possibility that other high quality limestones may be in the area.

PEAT

Peat deposits and muskegs are scattered throughout the lowlands around Anchorage. Because the humic horizon of the soil on the glacial deposits is weakly developed, the addition of peat is beneficial. Sphagnum and sedge moss peat constitute most of the muskeg deposits and can be removed from muskegs on hills and slopes with comparative ease. Shallow ditches through the muskegs provide drainage. The peat will settle as the water is removed, especially if the peat is coarse and fibrous and the ditches are deepened from year to year. The flat muskeg, common in the Anchorage area, is more difficult and expensive to drain than the raised or sloping type of muskeg because it is in a closed basin, and the outlet drains have to be trenched through the surrounding high ground. Such drains slump and fill and require frequent maintenance.

MARL

Marl was reported along the margins of Otter Lake by Martin (1919, p. 27), and in 1918 (1920, p. 27) agricultural lime was dug from the marl deposit. The only mention by Moxham and Eckhart (1956, p. 18) of marl in the Anchorage area is the deposit in Otter Lake. They show a measured section from the field notes of Martin that indicates 10 feet of marl over sand and gravel. No reserves were estimated for the Otter Lake deposit.

WATER

Anchorage obtains its water supply from Ship Creek, as do Elmendorf Air Force Base, and Fort Richardson. A report by the Anchorage City Planning Commission (1955) states that the average

daily consumption of water in the area served by the Anchorage water system was 7.4 million gallons per day, with the maximum consumption at over 9.0 million gallons per day. Twelve million gallons per day are taken from Ship Creek at the intake dam; however, in the winter the available flow has been as low as 6.7 million gallons per day.

Springs and seeps are common along Knik Arm, but the largest spring in the Anchorage area is the Russian Jack Springs in the lowland west of the Prison Farm. The flow from this spring is estimated at about 2.8 million gallons per day and has a constant temperature of from 37° to 38°F. (City Planning Commission, 1955, p. 14).

The geology in the Anchorage area is such that unconsolidated glacial materials fill the Cook Inlet trough to depths of over 500 feet. Not all of the unconsolidated material, however, is loose or permeable. Silty and compact glacial till, ponded deposits, and silty and compact gravel are all relatively impermeable. Conversely, within the till, above and below ponded deposits, and intermixed with silty gravel, permeable beds are common.

The U.S. Geological Survey has drilled test wells in the area and has collected well-log data as part of a study of the geology and ground-water resources of the Anchorage area. A 333-foot well put down in the till of the end moraine (Elmendorf Moraine) near Elmendorf Air Force Base penetrated little permeable material. Five feet of water-bearing sand and gravel was found between 105 feet and 110 feet (Cederstrom, 1952, p. 21).

At Mountain View, a well 154 feet deep through the Naptowne outwash and Bootlegger Cove clay has a flow of 104 gallons per minute; a shallow well, 51 feet deep, yields 35 gallons per minute to a pump; another well, 44 feet deep, yields 30 gallons per minute (Cederstrom, 1952, p. 21). Typically, many wells drilled in the outwash for domestic use are shallow—20 to 70 feet deep—(Cederstrom and Trainer, 1953, wells 26, 28, 29, 33, 34) and obtain their water from the perched-water table overlying the Bootlegger Cove clay. The well near the junction of Spenard Road and the KFQD Road is an exception. It passed through the Bootlegger Cove clay and obtained water from a gravel apparently interlayered with the underlying till. The well yields 13 gallons per minute with a drawdown of water table of 40 feet (Cederstrom and Trainer, 1953, well 46, table 1, p. 3). Another exception is the well at a trailer court west of Fish Creek where a well went through the Bootlegger Cove clay and yielded 10 gallons per minute, with a drawdown of only 3½ feet, from a sand and gravel beneath the clay (Cederstrom and Trainer, 1953, well 78, table 1, p. 5). Another well in Turnagain Heights penetrated a sand and gravel below (or within) the Bootlegger Cove

clay that yielded 40 gallons per minute of brackish water with a drawdown of 12 feet (Cederstrom and Trainer, 1953, well 50, table 1, p. 4).

The Spenard area is one of the largest areas bordering Anchorage that is not served (1956) by water or sewer service (City Planning Commission, 1955, p. 24). Much of the domestic water is obtained from gravel in shallow wells above the Bootlegger Cove clay. Cesspools return the waste materials to the same aquifer. The waste percolates downward until the surface of the Bootlegger Cove clay deflects the material laterally along with the ground water (fig. 7). Thus, one domestic water supply may be another's waste. Some drilled wells obtain water from beneath the Bootlegger Cove clay. More such deep wells, or water supplied by the City of Anchorage, would alleviate this situation, and remove unsanitary conditions.

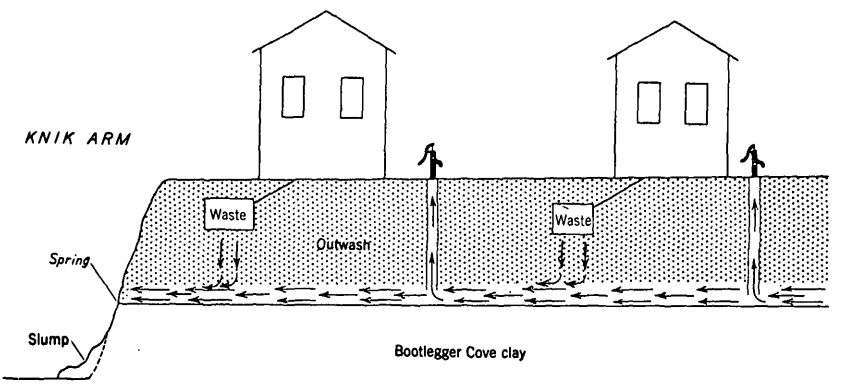

FIGURE 7.—Diagrammatic sketch showing relationship of ground-water movement to upper surface of the Bootlegger Cove clay where clay is overlain by outwash.

CONSTRUCTION MATERIALS

BRICK CLAY

In 1917, bricks were made in Anchorage from local clay (Martin, 1919, p. 27). It seems probable that the Bootlegger Cove clay was used then for this purpose, as it was in 1949 when the authors first visited the area. A small brick plant along Knik Arm then was manufacturing brick for local use. The bricks had good color and had bearing strength sufficient for low buildings.

RIPRAP

Riprap is the term used for large rocks piled in a layer to protect slopes, fills, or other embankments from erosion.

The undifferentiated metamorphic rocks are used for riprap where the Seward to Anchorage Highway and the Alaska Railroad

parallel Turnagain Arm. The ease of accessibility makes the material an economical source for riprap, although so badly fractured that specimens could not be obtained for toughness or compression tests.

A sample of the metamorphosed limestone exposed 1¼ miles north of Potter was tested by the Bureau of Public Roads. Mr. E. F. Kelley, chief, Physical Research Branch, reported (written communication, May 15, 1950) that the sample was badly fractured and not recommended for riprap. (See table 3.)

Boulders in glacial till are another source of riprap. The boulders range from 1 to 6 feet in the longest dimension and can be used as is, or can be broken into angular fragments.

CRUSHED AGGREGATE

The undifferentiated metamorphic rocks and the metamorphosed limestone are both satisfactory for use as crushed aggregate. The crushing operation would cause the rock to fracture along existing zones of weakness, and the final aggregate would be acceptable. E. F. Kelley reported (written communication, May 15, 1950) that both of these materials tested were acceptable as concrete aggregate. The glacially transported boulders should be equally suitable sources for crushed aggregate inasmuch as they are commonly composed of resistant argillite, graywacke, greenstone, and other metamorphic rock.

Most of the stratified deposits, regardless of age, contain a coarse fraction that can be crushed for use as aggregate. The primary constituents of the abandoned-channel deposits near Goose Lake and of the outwash, of Naptowne age, and the delta of Knik age are quartzite, greenstone, and vein quartz. (See table 4.)

Though not tested, the following stratified deposits contain materials suitable for use as crushed aggregate: the outwash and kame terraces of Naptowne age, the glaciofluvial ice-contact deposits, the delta deposits, and both cycles of the pitted outwash, all of Knik age.

E. F. Kelley reported (written communication, May 15, 1950) that the undifferentiated metamorphic rocks and the metamorphosed limestone are suitable as aggregate for bituminous construction if an antistripping additive is used with the undifferentiated metamorphic rocks. The abandoned-channel deposit exposed in the pit in the NW¼ sec. 28, T. 13 N., R. 3 W., was sampled and tested by the Alaska Road Commission. The crushed aggregate was reported as satisfactory for use in bituminous construction (table 3).

No additional tests of materials for bituminous construction are available, but it is probable that deposits of the outwash and kame terrace of Naptowne age, both sequences of the pitted outwash, the

TABLE 3.—*Selected samples tested for various types of construction and as a bituminous aggregate*

Sample No.	Location	Material	Tests for quality							Stripping tests					
			Los Angeles abrasion test percent loss	Water absorption (percent)		Bulk sp gr	Apparent sp gr	Toughness	Compressive strength	Accelerated soundness [1]	Oil [2]	Swell [3]	Material used as binder	Percent remaining coated after 24 hours in water at—		
														77° F	100° F	120° F
A-8	Eight miles southeast of Anchorage, 1¼ mi. north of Potter.	Metamorphosed limestone.	(Grading A) 29.1.	0.3		Dry 2.70. Saturated surface dry 2.70.	2.72	5	29,000 lbs per sq in (1 in cube).	0.8	----------	----------	MC-2 CB-asphalt.[4]	------	80	60
													RC-2 CB-asphalt.[5]	------	90	80
													200/300 penet. asphalt.	------	75	70
													85/100 penet. asphalt.	------	85	80
A-9	One-half mile south of Potter.	Metamorphic rock, undifferentiated.	(Grading A) 16.5.	.7		Dry 2.93. Saturated surface dry 2.95.	3.00	([6])	([6])	2.5	----------	----------	MC-2 CB-asphalt.	------	40	30
													RC-2 CB-asphalt.	------	50	40
													200/300 penet. asphalt.	------	40	30
													85/100 penet. asphalt.	------	50	40
				Fine	Coarse	Fine	Coarse									
S-11	NW¼NW¼ sec. 28, T. 12 N., R. 3 W.	Abandoned-channel deposits of Naptowne age.	(Grading B) 12.7. 500 rev.	1.3	0.8	2.69	2.71	----------			Percent equals 3.8.	Percent equals 0.007 inches-0.41	MC-2 asphalt	95	85	60

[1] Sodium sulfate solution. Loss weighed with respect to a uniform grading of material from 1½ inch to No. 4 size.
[2] Bituminous rating (Adjusted. Centrifuge kerosene equivalent), 150 penetration asphaltic cement.
[3] Method B (using 5.2 percent of MC-2), oil. Thickness of specimen 1.5 inches.
[4] Medium curing cut-back asphalt.
[5] Rapid curing cut-back asphalt.
[6] Sample was highly fractured so that specimens could not be obtained for the toughness or compression tests.

TABLE 4.—*Percentage of rock types, as determined by pebble count, in abandoned-channel deposits near Goose Lake and outwash, both of Naptowne age, and in prodelta deposits of Knik age*

Map unit [1]	Sample No.	Quartzite and greenstone	Vein quartz	Coarse greenstone and argillite conglomerate	Granite	Porphyry	Igneous rocks undifferentiated	Schist	Volcanic rocks undifferentiated	Enstatite	Sandstone at Eagle River	Ocher	Quartzite conglomerate	Coal	Total number pebbles	Location
Qo	A-10	83.0	8.2	3.3	4.5	1.0									215	NW¼SE¼ sec. 7, T. 13 N., R. 3 W
Qo	A-11	68.5	12.4	7.0	7.3	2.0	2.4	0.4							242	Do.
Qo	A-12	77.6	8.0	4.4	4.4	1.6	3.2		0.8						250	Do.
Qo	A-13	72.9	13.0	4.0	3.4	2.5	4.2								353	Do.
Qo	A-14	73.0	9.8	4.0	5.7	2.9	4.6								174	Do.
Qo	A-15	79.8	6.2	6.7	1.5	.5	3.8	.5		1.0					208	SW¼SE¼ sec. 31 T. 14 N., R. 2 W.
Qo	A-16	78.4	4.5	6.0	2.0	.5	5.7	.25		1.2	0.25	1.2			401	Do.
Qc	A-17	79.6	12.5	3.8	1.3	1.5	.8			.5					392	NW¼ sec. 28, T. 13 N., R. 2 W.
Qc	A-18	76.5	12.6	5.3	2.3		2.3				.3		0.7		302	Do.
Qpd	A-19	70.5	15.0	3.4	2.4	1.4	3.4					2.4	1.0	0.5	207	NW¼NW¼ sec. 10, T. 12 N., R. 4 W.
Qpd	A-20	72.3	13.1	2.0	3.0	3.5	4.5				.3		1.0	.3	397	Do.

[1] Qo=outwash of Wisconsin age.
Qc=abandoned-channel deposits of Wisconsin age.
Qpd=prodelta deposits of pre-Wisconsin age.

glaciofluvial ice-contact deposits, the prodelta and delta deposits of Knik age would test as suitable for use in bituminous construction, though perhaps with the use of antistripping additive.

SAND AND GRAVEL

Deposits of sand and gravel (pebble size or larger) are abundant throughout the area. Those deposits that contain fractions predominantly smaller than 1 inch are chiefly dune sand, and alluvium along the lower course of Campbell Creek, both of Recent age; the outwash, especially west of Chester Creek, and pitted outwash, both of Naptowne age; and locally the outwash, prodelta deposit, delta, and the glaciofluvial ice-contact deposits of Knik age. These deposits are the most likely sources of blending sand, fine aggregate for concrete, and mortar sand (table 5).

Coarser fractions are common in deposits of the Naptowne kame terrace, outwash, especially east of Chester Creek, and locally in the Knik delta deposit, prodelta deposit, and glaciofluvial ice-contact deposits. These deposits are the most likely sources for material for use in subbase course, base course, surfacing, coarse aggregate for concrete, and road metal.

FILL

Material used for highway fill in the Anchorage area consists of till of the end moraine, Naptowne ground moraine, Knik ground moraine, and the undifferentiated metamorphic rocks. The till, where allowed to stand over winter before surfacing, settles and compacts. Alluvial fan deposits, and channel deposits in the Knik ground moraine are other possible sources of fill.

BALLAST

The ballast of the Alaska Railroad along Turnagain Arm is broken undifferentiated metamorphic rock. The coarse fraction of the stratified drift in the area should prove satisfactory as ballast, especially when crushed.

SOIL BINDER

Binder for use with aggregate in road surfacing materials must be predominantly silt- and clay-size materials. A possible though untested source of binder is the silt in the vicinity of the International Airport. Some of the silt layers in the delta deposit may also be satisfactory.

ENGINEERING PROBLEMS

FOUNDATION CONDITIONS

Most of Anchorage is built on the smooth flat surface of the outwash plain of Naptowne age. The residential and business struc-

TABLE 5.—*Mechanical analyses of selected samples*

Sample No.	Location	Cubic yards available	Average thickness (ft)	Thickness of overburden (ft)	Material sampled	Map unit	Liquid limit	Plasticity index	Sieve analysis—percent smaller than—								Hydrometer—percent smaller than (mm)—						
									¾ in	½ in	No. 4	No. 10	No. 50	No. 60	No. 80	No. 100	No. 200	0.0500	0.0370	0.0190	0.0090	0.0050	0.0036	0.0010
S-1	NW¼NW¼ sec. 27, T. 14 N., R. 3 W.				Till	Qem					95	91	78	74		66	56							
S-2	NE¼NW¼ sec. 32, T. 12 N., R. 3 W.				do	Qg			97	94	86	82	68		60	56	42							
S-3	SW¼SW¼ sec. 17, T. 12 N., R. 3 W.				do	Qg			80	77	71	68	61	61		58	52	42	40	34	24	17	12	3
S-4	SE¼SW¼ sec. 33, T. 13 N., R. 3 W.			4	do	Qg	18.2	2.3	72	66	57	52	40	38		35	30	30	28	21	13	9	6	0
S-5	NE¼SE¼ sec. 32, T. 12 N., R. 3 W.				Gravel	Qao			82	77	66	58	27		14	10	3							
S-6	SW¼NE¼ sec. 7, T. 12 N., R. 4 W.				do	Qd			48	37	22	18	9		6	5	3							
S-7	SW¼SE¼ sec. 26, T. 13 N., R. 2 W.				do	Qp[2]			87	84	48	21	12		11	10	9							
S-8	NW¼NW¼ sec. 28, T. 13 N., R. 3 W.				do	Qc		[1] NP	48	40	22	13					0.9							
S-9	NW¼SE¼ sec. 8, T. 12 N., R. 3 W.	162,000	15	3	do	Qg			56	50	31	20	7		4	3	2							
S-10	SE¼SE¼ sec. 18, T. 12 N., R. 3 W.	37,200	27	3	do	Qgi			70	66	53	44	18		15	14	13							
S-11	NE¼SW¼ sec. 33, T. 12 N., R. 3 W.	12,700	8	3	do	Qoc			77	73	61	48	13		7	5	3							
S-12	NW¼NW¼ sec. 28, T. 13 N., R. 3 W.	3,000	10	3	do	Qc			39	34	25	18	2		1	1	1							
S-13	SW¼SE¼ sec. 4, T. 12 N., R. 4 W.	1,000,000	22	3	do	Qd			55	47	33	26	6		5	4	3							
S-14	SW¼SW¼ sec. 9, T. 12 N., R. 4 W.				Sand	Qds							99		89	79	13							
S-15	SE¼SW¼ sec. 9, T. 12 N., R. 4 W.				do	Qd							100		98	96	58							
S-16	NE¼NE¼ sec. 36, T. 13 N., R. 4 W.	14,350	15	3	do	Qpi			86	83	72	64	31		17	12	6							
S-17	NW¼NE¼ sec. 11, T. 12 N., R. 4 W.				do	Qpi					100	99	75	66		43	22							
S-18	NE¼NE¼ sec. 9, T. 12 N., R. 4 W.				do	Qpd						100	92	81		43	11							
S-19	NE¼SW¼ sec. 25, T. 13 N., R. 4 W.		0-5		do	Qo	NP	NP	100	99	96	92			22		3							

S–20	SE¼SE¼ sec. 9, T. 12 N., R. 4 W.				do	Qd						100	46	33		13	4									
S–21	NW¼SE¼ sec. 24, T. 13 N., R. 4 W.		0–3.0		Silty sand	Qo	NP	NP	100	98	91	83			26		19.5									
S–22	SW¼NW¼ sec. 21, T. 13 N., R. 4 W.				Silt	Qd							100		100	99	89	61	37	11	3	2	1	1		
S–23	SW¼NE¼ sec. 24, T. 13 N., R. 3 W.		0–3.5		Silty clay	Qal	46	26		98	96	94					80		78	75						
S–24	NE¼NW¼ sec. 18, T. 12 N., R. 3 W.				Clay	Qbc					100	99	97	97		96	95	92	90	80	63	51	41	19		
S–25	SW¼SW¼ sec. 3, T. 11 N., R. 3 W.	(3)			do	Qbc	55	32.9						100		100	98	94	90	78	71	65	60	41		
S–26	SW¼SE¼ sec. 11, T. 12 N., R. 4 W.				Till	Qbc	20.9	6.3					97		94	92	82	81	69	49	31	23	19	12		
S–27	SE¼SW¼ sec. 13, T. 14 N., R. 2 W.	(3)			Lake clay		39	19.6										100	99	97	93	83	72	29		

[1] Nonplastic. [2] Unsurveyed. [3] Off map.

tures built on and founded in the outwash show no failures. The outwash is well sorted and stabilized, and is considered a good foundation material. In general, most of the stratified drift deposits can be considered as good foundation material for small structures.

Underlying much of Anchorage beneath the outwash is the Bootlegger Cove clay (pl. 5). An undisturbed sample of the clay (A–28) collected from the NE¼NW¼ sec. 23, T. 13 N., R. 4 W., by the authors in 1949 was tested by C. R. Fricke, Laboratory Soil Engineer, Soils Laboratory of the State Highway Commission of Kansas, for physical properties and triaxial compression. The results are tabulated as follows:

Liquid limit	Plastic limit	Plastic index	Sp gr	Shrinkage limit	Shrinkage ratio	Volumetric change (percent)	Lineal shrinkage (percent)	Field moisture content	Angle of internal fracture (degrees)	Cohesion (lbs per sq ft)
39	22	17	2.73	20	1.68	33	9	35	22	1,150

The relatively low cohesive strength should be taken into consideration in the design of large structures that are to have footings in the Bootlegger Cove clay.

The Bootlegger Cove clay also underlies much of the Elmendorf Air Force Base, the area around the International Airport, and the outlying suburbs of Anchorage. South of Jewel Lake it is comparatively thin, however, and can be penetrated so that footings of the larger structures could be placed in the underlying sand and gravel.

Two other materials that are potential troublemakers are the tills of both the Knik and Naptowne glaciations, and the windblown silt around the International Airport area. The till, though commonly compact, locally contains an excess of silt that might cause settlement if wetted to extremes. No tests were made and inasmuch as no failures of residential structures built on till were noted by the authors, the till may provide a satisfactory foundation for small structures. The silt is similar to loess and, though not tested, would probably settle if wetted excessively.

Small homes have been constructed successfully on the margin of swamps in the outlying areas around Anchorage. Rafts are used as a type of floating foundation and the residential structures are built on the raft. Those structures seen by the authors appeared to be successful. In some cases the muskegs can be drained by ditches and the peat allowed to settle before construction is started. The foundations should still be placed on the material underlying the peat wherever possible. Other muskegs have been excavated and backfilled where conventional construction was planned. Complete

removal of the peat deposit is the only certain way to safeguard the structure in such an area.

EXCAVATION

All of the unconsolidated materials in the Anchorage area can be excavated with the use of power equipment. The well-sorted and stratified deposits, such as outwash, glaciofluvial ice-contact deposits, kame fields, and kame terraces, can be excavated with a power shovel or bulldozer. The less well-sorted unstratified drift, such as the ground moraine, and end moraine of the Naptowne glacier, and the lateral moraine, and the ground moraine of the Knik glacier, may be more compact, but can still be excavated with power shovels or bulldozers. Large boulders within the till may require breaking before removal and loading by the power equipment.

The Bootlegger Cove clay is tough and resistant to power shovels, but can be excavated by scraping with a bulldozer, and, with more difficulty, with power shovels. The clay is compact, and breaks with conchoidal fractures into chunks and blocks when dry; when wet it is soft and sticky, adheres to the equipment, and is difficult to remove. Power equipment may bog down when the clay is wet and saturated.

SLUMPS AND FLOWS

Conspicuous slump and earthflow (Varnes, D. J., 1958) areas are indicated on plate 1. Movement of a mass is considered slump where the earth mass moves downslope, or rotates with little downward sliding, as a unit or several subsidiary units; the movement is considered an earthflow where the mass is predominantly fine-grained material in which the moisture content is sufficiently great to cause viscous movement downslope. Seasonal slumps, slides, and flows, are active along Knik Arm from about Fish Creek to the western limit of the Bootlegger Cove clay (pl. 10) and north of Anchorage. An old slide block, with recurring movement, forms the "bench" along Knik Arm between Chester Creek and Ship Creek. Other ancient slump blocks extend along the bluffs bordering Chester and Ship Creeks, along the bluff west of Fish Creek, along the bluff of Knik Arm where another "bench" extends from about the Government Dock to the Elmendorf Moraine.

In each area mentioned, the Bootlegger Cove clay—an unstable material when wet, that can be dislodged by some triggering action—underlies stratified sand and gravel. Slumps and flows along Knik Arm are generally caused by seasonal saturation of the Bootlegger Cove clay. The outer 3 to 5 feet of the clay is hard and frozen during the winter, but becomes wet and plastic during the spring thaw from the moisture within the clay. In addition, when the

snow cover melts, much of the melt water moves downward through the sand and gravel to the surface of the clay. Lateral movement of the water produces seeps and springs in the bluff at the contact between the sand and gravel and the Bootlegger Cove clay. This additional water completely saturates the already wet outer few feet of the clay. In 1949, one of the authors started a slump and flow by merely walking along the edge of the bluff. Stabilization would eventually result as the debris accumulated along the toe of the bluff. Such an accumulation would tend to prevent further slippage by acting as an opposite force, but unfortunately, much of the slump and flow debris is removed by the tides in Knik Arm, so that an unstable condition is maintained or aggravated. Thus, the position of the bluff along the arm is slowly moving landward each year, slowly in most places, but locally as much as 3 feet a year.

Some of the slumping and flowage could be forestalled, or perhaps prevented, by the installation of drains in the catchment area behind the bluff. Such drains could divert the flow of melt water, and much of the normal ground water, to controlled outlets along the bluff. This would reduce the amount of water saturating the clay during the spring thaw.

Groins or pilings placed along the beach line might aid in preventing the removal of the slump and flow debris on the beach by breaking the force of the tidal waters and changing the currents. Careful study should be made before installation of groins or pilings, however, as deposition might result on one side of the groin whereas erosion might remove the beach on the other side.

Shocks, such as those associated with earthquakes, will start moving material that under most conditions is stable. Mild shocks may be sufficient to free contained water in a saturated or nearly saturated material, thereby providing the necessary lubricant for the slide or slump surface. Stronger shocks may be strong enough to exceed the shear strength of dry material and cause it to move.

Anchorage is in an earthquake region, and numerous tremors and shocks of varying intensity have been reported or recorded. (See table 6). Earthquakes are reported by the degree of intensity. One of the most used intensity scales is the Modified Mercalli Scale of Wood and Neumann. Byerly (1942, p. 57–58) abridges Wood and Neumann (1931) as follows:

I. Not felt except by a very few under especially favorable circumstances.

II. Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.

III. Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.

IV. During the day felt indoors by many, outdoors by few. At night some

awakened. Dishes, windows disturbed; walls made cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.

V. Felt by nearly everyone; many awakened. Some dishes, windows, and so forth broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.

VI. Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.

VII. Everybody runs outdoors. Damage *negligible* in buildings of good design and construction; *slight* to moderate in well-built ordinary structures; *considerable* in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.

VIII. Damage *slight* in specially designed structures; *considerable* in ordinary substantial buildings with partial collapse; *great* in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving motor cars disturbed.

IX. Damage *considerable* in specially designed structures; well designed frame structures thrown out of plumb; *great* in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.

X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.

XI. Few, if any (masonry), structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.

XII. Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

In October 1954, a strong earthquake damaged structures in Anchorage. One of the buildings damaged was the International Airport Building; damage was minor and consisted only of cracking of concrete blocks, no structural damage was done to the load-bearing walls.[7] In addition to damage to masonry buildings; i.e., fallen plaster and cracked concrete walls, there were several slides along the Alaska Railroad in the Anchorage area. Slides in fill at miles 102.8 and 103.1[8] along the steep till bluff of Turnagain Arm left 140 feet of track suspended 15 to 20 feet[9] in air. In addition, part of the subgrade slid out on the Bootlegger Cove clay between Chester Creek and Ship Creek.

Movement not related to earthquakes was noted along the road in the NE¼SE¼ sec. 8, T. 13 N., R. 4 W., where a timber retaining wall was displaced by a combination of slumping of the Bootlegger Cove clay and slumping in the oversteepened slope cut into the overlying outwash.

[7] Anchorage Daily Times, October 6, 1954.
[8] T. L. Péwé, oral communication.
[9] Anchorage Daily Times, October 4, 1954.

TABLE 6.—*Records of earthquakes reported in Anchorage,*[1] *1936–54*

Date	Location or epicenter	Intensity[2]	Date	Location or epicenter	Intensity
Sept. 18, 1936	Anchorage	III.	Oct. 19, 1946	Anchorage	Light shock.
Sept. 29, 1936	do	IV.	June 5, 1947	do	Lights swung.
Oct. 22, 1936	61.4° N. 149.7° W.	VI.	Aug. 4, 1947	do	Light shock, swaying motion.
Oct. 23, 1936	Anchorage	Slight.	Oct. 16, 1947	64.5° N, 148.8° W.	IV.
Oct. 25, 1936	Seward	Felt.	May 29, 1948	Anchorage	Windows rattled.
Oct. 26, 1936	Anchorage	Do.	July 15, 1948	do	Slight tremor NE-SW.
Oct. 27, 1936	do	Do.	Aug. 19, 1948	do	Fixtures swayed, NW-SE.
Oct. 29, 1936	do	E-W motion.	Aug. 29, 1948	do	Light shock.
Nov. 2, 1936	do	Do.	Sept. 3, 1948	do	Fixtures swayed N-S.
Nov. 5, 1936	do	Do.	Oct. 8, 1948	do	Hanging plants swayed NW-SE.
Nov. 11, 1936	do	Do.	Nov. 20, 1948	do	Fixtures swayed.
Nov. 24, 1936	do	IV.	Dec. 5, 1948	do	Fixture swayed NW-SE.
Nov. 29, 1936	do	Slight.	Feb. 23, 1949	do	Fixtures swayed E-W.
Dec. 14, 1936	do	III.	Feb. 26, 1949	do	Slight shock.
Dec. 16, 1936	do	III or IV.	Mar. 12, 1949	do	Fixtures swayed.
July 22, 1937	64.6° N, 147.1° W.	Slight damage.	Apr. 3, 1949	do	Trembling motion.
Nov. 24, 1937	Anchorage	Slight.	Apr. 7, 1949	do	Windows rattled.
Nov. 30, 1937	do	Do.	June 6, 1949	do	Slight shock.
Dec. 7, 1937	do	Do.	June 19, 1949	do	Dishes rattled,
Feb. 24, 1938	do	Slight shocks.	July 8, 1949	do	Fixtures swayed NW-SE.
Feb. 26, 1938	do	Do.	Aug. 26, 1949	do	Small shocks.
Mar. 17, 1938	do	Do.	Aug. 31, 1949	do	Do.
Nov. 10, 1938	do	Felt.	Sept. 2, 1949	do	Fixtures swayed.
Dec. 30, 1938	do	Slight shock.	Sept. 15, 1949	do	Very light shock.
Apr. 27, 1939	do	Do.	Sept. 27, 1949	do	Dishes rattled, objects swayed.
July 9, 1939	do	Moderate shock.	Jan. 29, 1950	61.5° N, 150° W.	Strong and light tremors.
Aug. 6, 1939	do	Do.	Mar. 9, 1950	61° N, 151° W.	Fixtures swayed NE-SW.
May 4, 1940	do	Slight.	May 23, 1950	Anchorage	Motion E-W, doors rattled.
July 19, 1940	do	VI.	May 24, 1950	do	Fixtures swayed.
Oct. 10, 1940	do	Objects swung.	Aug. 7, 1950	do	Pans rattled.
Feb. 2, 1941	do	Slight.	Oct. 10, 1950	63° N, 160° W.	Buildings shaken.
June 11, 1941	do	Do.	Oct. 13, 1950	Anchorage	Windows rattled.
July 29, 1941	60.9° N, 149.2° W.	Dishes broken windows cracked, plaster fell.	Jan. 16, 1951	do	Do.
Sept. 19, 1941	Anchorage	Slight.	Jan. 22, 1951	do	Objects swayed.
Sept. 21, 1941	do	Do.	Feb. 8, 1951	do	Felt.
Sept. 22, 1941	do	Do.	June 25, 1951	61° N, 150° W.	V.
Oct. 26, 1941	do	Slight shocks, rattled clock.	Aug. 16, 1951	Anchorage	Light shock.
Dec. 14, 1941	do	Slight.	Nov. 15, 1951	do	Felt.
Dec. 28, 1941	do	Slight shocks.	Feb. 22, 1952	do	Objects swayed
May 19, 1942	do	Light shocks.	July 17, 1952	do	Felt.
June 4, 1942	do	Slight shock.	Oct. 5, 1952	do	Objects swayed E-W.
Dec. 5, 1942	do	Dishes rattled.	Oct. 9, 1952	do	Felt.
Apr. 9, 1943	do	People awakened.	Nov. 5, 1952	do	Do.
July 6, 1943	do	Trembling vibration.	Dec. 29, 1952	do	Cups swayed.
July 27, 1943	do	Windows rattled.	Feb. 18, 1953	do	IV.
Aug. 25, 1943	do	Windows rattled.	Mar. 3, 1954	61.5° N, 146.5° W.	Buildings wobbled.
Sept. 26, 1943	do	Slight tremor.	Apr. 5, 1954	5 miles SW Anchorage.	Objects rattled, buildings creaked
Nov. 3, 1943	62° N, 151° W.	Windows rattled, doors swung.	July 3, 1954	do	Do.
Jan. 26, 1944	Anchorage	Wall barometer swung NE-SW.	Aug. 23, 1954	61° N, 148.5° W.	Awakened people, swaying motion.
Feb. 26, 1944	do	Wall barometer swung N-S.	Oct. 3, 1954	60.5° N, 161° W.	Concrete buildings cracked, plaster fell, windows broke.
July 18, 1944	do	Slight tremor.	Dec. 10, 1954	5 miles SW Anchorage.	Felt.
July 30, 1944	do	Slight shock.			
Oct. 20, 1944	do	Felt.			
Jan. 16, 1945	do	Light shock.			
Feb. 8, 1945	do	Do.			
Feb. 10, 1945	do	Do.			
Apr. 11, 1945	do	Light tremor.			
Oct. 10, 1945	do	Very light shock.			
Dec. 1, 1945	do	Sharp bump.			
Jan. 12, 1946	do	Felt strongly.			
Mar. 11, 1946	do	Windows rattled.			
Apr. 18, 1946	do	Light shock.			
Aug. 28, 1946	do	Sharp shock.			

[1] Data collected from the Coast and Geodetic Survey series of United States Earthquakes, the years 1936–54.
[2] Numerical ratings are Modified Mercalli Scale intensities.

Within Anchorage, slumps and slope failures along Fifteenth Street between K. and L.[10] caused a retaining wall to fail owing to the weight of the material moving outward from an oversteepened slope. Another contributing factor here could have been the presence of Bootlegger Cove clay along the south bluff of Ship Creek. The clay may have acted as a barrier to water movement and saturated the lower part of the sand and gravel as well as the upper part of the clay.

DRAINAGE

No tests were made to determine permeability or drainage characteristics of the glacial deposits, but certain generalities can be drawn from field observations.

The stratified drift is permeable in most places, although any silt content reduces the permeability to some extent. Silty till, the Bootlegger Cove clay, and the windblown silt are most consistently impermeable in the Anchorage area. These deposits block the downward migration of water and can deflect the movement laterally along the surface, as in the case of the Bootlegger Cove clay, or can maintain a high water table and cause ponds or swamps to form in depressions, as is common on the surface of the ground moraine.

The use of drains in connection with the lateral movement of water along the upper surface of the Bootlegger Cove clay, has been suggested as a remedy for slumps and flows. One of the most common drainage problems in the area, however, involves swamps and muskegs. Because of the vegetative growth in the muskegs and lack of lateral water movement through the peat, deep and widely separated ditches will not prove completely satisfactory. Dachnowski-Stokes (1941, p. 77) describes drainage ditches that have been successfully used in muskegs.

> A good drainage outlet and shallow open ditches used as mains and laterals or cross drains are preferable to a few deep ones, since the effects of a drain extend only a short distance from the walls of the ditch. * * * The distance between parallel lines of ditches depends on rainfall and on the type and texture of peat materials, the thickness and nature of the underlying peat layers, and the bottom relief of the mineral substratum. Peat areas with a convex or raised surface and those with a sloping surface can be drained as deep as the fibrous layers are found. Flat and valley deposits, however, which lie in water basins, can be drained only at great expense.

The deepening of the ditches from year to year will clean out any slump, and lower the level of the water table so that the peat will settle as the muskeg is drained.

Care should be taken in till areas during construction of roads. Between the coarse-grained subbase and the silty till, water can

[10] Anchorage Daily Times, September 6, 1955.

accumulate and may result in breaking of the surface as the moisture freezes and thaws with the change in seasons. Backfilling and installation of subdrains may alleviate problems where cuts are required in silty till.

FROST HEAVE

Seasonal frost action is detrimental where abrupt differential heaving takes place. The upward displacement is caused by the growth and accumulation of ice crystals into lenses or layers of ice. Homogeneous frozen soil, in which the water is frozen within the natural spaces and voids with no visible ice segregation, does not normally have upward displacement. Stratified or nonhomogeneous frozen soils, in which ice segregations visibly occupy spaces greater in size than the original voids, cause heaving of the surface (Johnson, 1952, p. 8). The actual process by which the ice accumulates in lenses is not agreed upon by all authors, but Taber (1929, p. 460) demonstrated, in part by the use of materials that freeze with a decrease in volume (benzine and nitrobenzine), that frost heaving was caused by pressure which he attributes to growth of ice layers. He also states (1929, p. 458) that molecular cohesion is responsible for the uplift of the water through the capillary passages and its concentration in ice layers. In 1953 he restated these views. Other workers (Ruckli, Robert, 1950; Jumikis, 1954; and Winterkorn, 1947, 1954) applied the concepts of "thermo-osmosis" and suction force in soils to cause an upward flow of soil moisture and accumulation in lenses.

Studies over the years have shown that the deposits potentially dangerous with regard to frost-heaving are those with small particle sizes, such as fine sands, silty sands, or silty clays (Burton and Benkelman, 1931, p. 262; Morton, Tremper, Stokstad, and Casagrande, 1938, p. 356; Johnson, 1952, p. 108 referring to Watkins and Aarons, 1931, Otis, 1952, p. 272; Stokstad, 1952, p. 278). As a result, different workers have attempted to delimit by particle size materials susceptible to frost-heaving from materials nonsusceptible to frost-heaving. Casagrande (1931, p. 169) in a discussion that followed the 1932 paper by Benkelman and Olmstead made early mention of the role particle size plays in frost-heaving when he referred to a report by the Massachusetts Institute of Technology in which it was stated that ice segregation should be expected in—

> * * * nonuniform soils containing more than three percent of grains smaller than 0.02 mm., and in very uniform soils containing more than ten percent smaller than 0.02 mm.

The Corps of Engineers Manual (1951, *in* Johnson, 1952, p. 170) agrees with Casagrande that inorganic materials containing 3 per-

cent or more of grains finer than 0.02 mm in diameter by weight are considered frost-susceptible. Ruckli (1955, p. 656–5 to 656–6) modifies this classification as follows:

Tests performed in Zürich and elsewhere have shown that it is not possible to trace an exact limit between frost-heaving and non-frost-heaving soils or aggregates merely on a granulometric basis. Soils, even those which satisfy the famous criterion by A. Casagrande, can, under favorable conditions, show ice segregation. * * * The experience of many years indicates that well-graded aggregates containing more than 3% of particles finer than 0.02 mm do not cause damage to roads by frost, regardless of the fact that the subsoil and the climatic conditions were favorable for the formation of ice lenses. This leads one to consider not only the technological composition of the aggregates but also the hydrological and geotechnical condition of the site in question.

Johnson (1952, p. 171) refers to a list in which the seasonal frost-susceptible soils are classified into four groups, in order of their increasing susceptibility. Certain of the deposits in the Anchorage area are placed opposite the groups in which they fall as determined from the percentage of the small-particle size. Although this classification does not take into account Ruckli's hydrological and geotechnical conditions, the classification is suitable for the purposes of this report. (See table 7.)

TABLE 7.—*Relative susceptibility of geologic units in the Anchorage area to frost action*

Group [1]	Description [2]	Critical geologic units in part or entirety
F1	Gravelly soils containing between 3 and 20 percent of material finer than 0.02 mm by weight.	Local parts of Naptowne kame terraces and kame fields; locally till of Knik ground moraine, till of Naptowne ground moraine; part of Naptowne pitted outwash.
F2	Sands containing between 3 and 15 percent of material finer than 0.02 mm by weight.	Dune sand, locally glaciofluvial ice-contact deposits; local part of Knik pitted outwash; local parts of Naptowne outwash.
F3	(a) Gravelly soils containing more than 20 percent of material finer than 0.02 mm by weight and sands, except fine silty sands, containing more than 15 percent of material finer than 0.02 mm by weight. (b) Clays with plasticity indexes of more than 12, except varved clays.	Till of Knik ground moraine, till of Naptowne ground moraine, local glaciofluvial ice-contact deposits; parts of prodelta deposits.
F4	(a) All silts including sandy silts. (b) Fine silty sands containing more than 15 percent of material finer than 0.02 mm by weight. (c) Lean clays with plasticity indexes of less than 12. (d) Vavred clays.[3]	Windblown silt, unmapped surface loess, parts of delta, Bootlegger Cove clay.

[1] Listed in order of increasing susceptibility.

[2] After Johnson (1952, p. 171) from Corps of Engineers Manual (1951).

[3] Varved clays may combine the undesirable properties of silts and soft clays; varved clays are likely to soften more readily than homogeneous clays with equal average water contents.

Detrimental effects from frost-heaving occur where abrupt differential heaving takes place. Dependent upon the soil texture, moisture in the soil, and depth to ground water, all of which are variable, the frost heaves are uniform in types or effects. Damage to roads takes place in two ways; by actual heave, which can permanently fracture the pavement, or by the secondary effect of softening the roadbed and reducing the load-carrying capacity. Cracks in pavements, raised or tilted pavement slabs, breaking of pavement edges, reduction in load-carrying capacity, flowage of the saturated material with the resultant removal of support or the sliding of slopes are characteristics of frost heaves and frost boils. Explaining certain failures of pavements, Watkins (1945, p. 302) states that thawing progresses downward so that saturated silt overlies a frozen layer. The silt is not stable and gives away or flows beneath a flexible surface, and under light loads. If the saturated silt is "worked" by traffic, a free-flowing mud forms frost boils that are forced out along edges of pavements or through the riding surface.

Concrete pavements fracture or heave owing to frost action in the winter months when the ground is frozen. Skelton (1940, p. 464) considers the critical period for a concrete pavement to be when the subgrade and pavement are frozen solidly together. Any differential heaving will fracture the pavement. Though heaves in the flexible pavement can be severe, and take place in the winter, the greatest break-up of flexible pavements takes place during the spring thaw when the load carrying capacity of the subgrade is low (Johnson, 1952, p. 4).

In a study of locations of heaves, Burton and Benkelman (1931, p. 263) reported that of 500 heaves, 76 percent were in cuts, 10 percent were in fills, and 14 percent were in the transition zone between cuts and fills. Of 141 heaves in the cuts, 80 percent were in cuts 4 or more feet deep. This seems to indicate that materials in cuts need to be examined carefully. Heaves or frost boils seen by the authors in the Anchorage area were in cuts or on the edge of cuts in the glacial silt or silty till of ground moraine.

Methods of preventing frost heaving and the resulting damage are discussed by many workers (Burton and Benkelman, 1931; Benkelman and Olmstead, 1932; Beskow, Gunnar, 1938; Morton, Tremper, Stokstad, and Casagrande, 1938; Winn, 1940; and many others), as well as in "Frost Action in Soils, a Symposium" by K. B. Woods, Chairman, Highway Research Board (1952, spec. rept. no. 2). In his review of the literature Johnson (1952, p. 159–216) compiled the most used design methods for preventing or alleviating detrimental frost action, and the various construction practices relative to frost action. Some of the common design practices included change in

road location, change in grade elevation, subsurface drainage, excavation and replacement—in some places with drains—and the use of insulation. Attempts to counteract frost action include the use of soluble admixtures, such as calcium chloride, sodium chloride, sulfuric acid, sulfite liquors, resinous materials, sodium silicate, and liquid binders such as road oils and tar.

In order to prevent frost heaving in fine-grained materials that contain capillary water, which can not be drained by artificial methods, it is necessary to remove these materials and replace them with materials having good drainage. Coarser materials are improved by merely installing properly designed drainage systems (Benkelman and Olmstead, 1932, p. 162). Table 5 shows what surficial units in the Anchorage area should be considered potentially susceptible to frost-heaving.

Well logs cited in text (Cederstrom and Turner, 1953)

Description	Thickness (feet)	Depth (feet)
Well 17, Chester Creek and Spenard Road; Muellers Kennels		
Altitude, 18 feet		
Top soil and gravel	2	2
Sand	10	12
Gray clay and gravel	7	19
Till	47	66
Gravel; water	1	67
Well 26, C St. and Fireweed Lane; Nat Smith		
Altitude, 104 feet		
Sand and gravel	18	18
Brown sticky clay	2	20
Gravel	50	70
Brown clay	.5	70.5
Well 28, Fireweed Lane; Spenard Public School		
Altitude, 100 feet		
Sand	42	42
Fine gravel (trace of water)	2	44
Blue clay and gravel	1	45
Gravel and sand	2	47
Coarse gravel, clay, and sand (till?)	5	52
Sand and medium gravel	13	65
Gravel; water	7	72
Clay		

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 29, Fireweed Lane; Federal Bureau of Investigation		
Altitude, 100 feet		
Sand	12	12
Gravel	6	18
Clean coarse gravel	22	40
Sand	5	45
Clean coarse gravel	16	61
Sand and gravel; water	11	72
Well 33, Fireweed Lane, near Spenard Road; B. Irvin		
Altitude, 99 feet		
Sand and gravel	22	22
Blue clay and gravel (till?)	12	34
Loose gravel	8	42
Sand and gravel	7	49
Gravel and clay (till?)	15	64
Sand and gravel	5	69
Well 34, Spenard Road; Romig Park Subdivision		
Altitude, 102 feet		
Sand and fine gravel	19	19
Blue clay	42	61
Black sand and gravel	11	72
Coal	3	75
Sand and fine gravel	4	79
Well 46, Spenard Road, near KFQD Road; Piggly Wiggly Store		
Altitude, 100 feet		
Sand	35	35
Blue clay and gravel	8	43
Quicksand	12	55
Blue clay	4	59
Quicksand	10	69
Blue clay	8	77
Gravelly sand; some water	2	79
Record missing	9	88
Coarse sand and gravel	2	90
Till	30	120
Gravel; some water	1	121
Till	6	127
Gravel; water	1	128

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 48, KFQD Road, near Alaska Railroad; La Honda Trailer Court		
Altitude, 56 feet		
Fine brown sand	15	15
Silt	20	35
Sandy clay	40	75
Sandy clay with hard streaks	40	115
Till	26	141
Black sand	1	142
Till	9	151
Gravel with pebbles as much as 1-inch diameter; water		
Well 50, Turnagain Heights; R. Atwood		
Altitude, 74 feet		
Sand	8	8
Sand and gravel	15	23
Coal	1	24
Blue clay	117	141
Sand and gravel	6	147
Blue clay	3	150
Well 69, Spenard and McRae Roads; Trailer Roost		
Altitude, 89 feet		
Top soil and clay	4	4
Gravel and clay	12	16
Brown sandy clay	16	32
Gray sand; some water	25	57
Gray clay	24	81
Gray silt	13	94
Gray clay	7	101
Small gravel; dry	2	103
Till	31	134
Gray silt	4	138
Till	12	150
Sand and gravel	2	152
Well 73, McRae Road, west of Fish Creek; Tope Construction Co.		
Altitude, 59 feet		
Brown sand	15	15
Soft blue clay, no stones, with thin layer of sand at base	45	60
Soft blue clay with stones	34	94
Heaving fine gray sand	45	139
Coal	1	140
Sand	8	148
Sand and gravel; water	17	165
Blue silty clay	23	188
Floating fine sand	5	193
Coal and sand	6	199
Fine gray sand	25	224
Blue clay	4	228
Fine sand	7	235
Clay	1	236
Pebbly sand; water	2	237

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 78, Spenard Road, west of Fish Creek; Grizzly Trailer Court		
Altitude, 64 feet		
Top soil	2	2
Gray sand	16	18
Gray clay	14	32
Gray gravel	9	41
Gray clay	4	45
Heaving sand; water	6	51
Hard sandy clay	4	55
Heaving sand; water	24	79
Gray clay	2	81
Gravel and sand; water	2	83
Well 80, at road forks east of Lake Spenard; Lake Motel		
Altitude, 72 feet		
Yellow sand	3	3
Soft gray silty clay	120	123
Tough gray clay	7	130
Gray silt	142	272
Gray clay	4	276
Dark gravel, ranging in size from small grains up to pebbles 2 inches in diameter. About 75 percent of gravel is larger than one half inch diameter. Water	2	278
Well 81, near east shore of Lake Spenard; W. W. Fultz		
Altitude, 67 feet		
Sand	35	35
Gray clay	17	52
Hardpan	13	65
Coarse gravel with pebbles as much as 2 inches in diameter; water	2	67
Well 83, Southeast shore of Lake Hood; 10th Sea and Air Rescue Base		
Altitude, 72 feet		
Sand	24	24
Glacial silt	23	47
Quicksand	11	58
Glacial silt	93	151
Gravel, coarse sand; water	11	162

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 86, Terminal Building; International Airport		
Altitude, 88 feet		
Silt	10	10
Blue clay	10	20
Sandy silt	10	30
Coarse sand	10	40
Blue clay	20	60
Blue clay and silt	60	120
Fine sand	20	140
Blue clay	60	200
Sand and some gravel	5	205
Fine sand; water	85	290
Medium coarse sand; water bearing	18	308
Well 88, International Airport and Sand Lake Roads; International Trailer Park		
Altitude, 76 feet		
Sand and gravel	58	58
Blue-gray clay and silt, with occasional stones	155	213
Hard layer	1	214
Gravel; water	2	216
Well 90, Sand Lake Road, east of De Long Lake; Doyle Clover,		
Altitude, 100 feet		
Sandy clay	12	12
Brown water sand	22	34
Glacial silt	37	71
Till	12	83
Sandy clay	6	89
Gray silt	34	123
Gray clay	5	128
Gray quicksand	28	156
Gray clay	8	164
Gray silt	2	166
Gray quicksand	9	175
Fine gravel; dry	8	183
Till	60	243
Dry sand	4	247
Gray clay	30	277
Till	12	289
Quicksand	5	294
Till	22	316
Sand and gravel; water	1	317

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 93, Northeast shore of Sand Lake; Ellis Crawford		
Altitude, 106 feet		
Sandy brown clay	32	32
Blue clay	24	56
Gravel and clay (till?)	3	59
Blue clay	11	70
Sand and silt	48	118
Quicksand	11	129
Gray clay	7	136
Running silt and sand	61	197
Hard clay and gravel (till?)	92	289
Sand	7	296
Hard clay and gravel (till?)	19	315
Gravel; water	1	316
Sandy gravel; water	2	318
Well 97, Two and three-fourths mile southwest of Lake Spenard; (West Raspberry Road, extended); Alaska Communications System		
Altitude, 140 feet		
Yellow clayey sand	30	30
Gravel and clay (till?)	10	40
Yellow clay and gravel (till)	10	50
Semiconsolidated sand with coal granules	11	61
Hard yellow sand	27	88
Yellow sand with coal	12	100
Yellow clay with coal streaks	20	120
Sand with some clay	10	130
Sandy gravel	4	134
Sandy with coal	6	140
Sandy gravel; a little water	1	141
Gravel hardpan (till)	1	142
Fine sand	5	147
Sand and gravel; a little water	4	151
Hard packed sandy gravel; a little water	3	154
Sand and gravel	6	160
Gray clay with small gravel (till?)	4	164
Hark packed fine sand	6	170
Gray clay with gravel (till?)	5	175
Green sand; a little water	5	180
Tough clay	2	182
Sand; a little water	4	186
Clay	1	187
Gravel and sand	2	189
Small gravel	2.5	191.5
Hard gravel and green sand; a little water	8.5	200
Clayey till	1.5	201.5
Gravelly till; a little water	7.5	209
Hard clay and gravel with clay (till?)	7	216
Small gravel; yields about 5 g.p.m	6	222
Coarse gravel with cobbles	11	233
Cemented gravel, "rock-like" (till?)	2	235
Coarse water gravel	5	240

Well logs cited in text—Continued

Description	Thickness (feet)	Depth (feet)
Well 101, North Jewel Lake Road, near west Strawberry Road; I. Evenson		
Altitude, 104 feet		
Blue clay	85	85
Medium sand	2	87
Coarse sand	2	89
Very coarse sand	4	93
Gravel; water	3	96
Well 173, Oilwell Road off the Palmer Highway at U.S. Army Fire Control Station; U.S. Geological Survey Test Well 8		
Altitude, 200 feet		
Soil	3	3
Gravel	15	18
Bouldery gravel	27	45
Clay	2	47
Gravel	11	58
Till	28	86
Silty medium sand; water	12	98
Soft till	11	109
Sand; water	2	111
Hard till	8	119
Gray clay	4	123
Fine to medium sand; water	16	139
Hard till	14	153
Silty medium to coarse sand	13	166
Harder medium to coarse sand pumped 6 hrs. from open end hole at 70 g.p.m. with 18 ft. of drawdown. Static 8½ ft. below surface	9	175
Coarse sandy gravel. Short bailer test yielded 14 g.p.m. with 50 ft. of drawdown	6	181
Brown till (?)	33	214
Gray till, very hard. Short pumping test yielded 30 g.p.m. with 9 ft. of drawdown. Water comes from sandy streaks in interval between 217 and 247 ft	38	252
Brown till, very hard	96	348
Sticky gray clay	22	370
Coal layers in clay	5	375
Sticky gray clay	15	390
Hard sandy clay	2	392
Sand	2	394
Gray sandy clay. Bottom of casing at 397 ft	53	447
Brown shale with coal streaks and organic matter. In an 8 hour pumping test yielded 42 g.p.m. with 17 ft. of drawdown. Static level is 75 ft. below surface	63	510
Gray to black shale with some coal streaks; black shale contains much organic matter; sticky when wet. 1 ft. layer of friable fine-grained green sandstone at 555 ft	92	602
Fairly hard gray fine- to medium-grained sandstone	7	609
Gray to black shale, as in interval from 510 to 602 ft. Pumping test at 617 ft. yielded 42 g.p.m. with 12 ft. of drawdown at end of 6 hours' pumping; static level is 75 ft. below surface	8	617

U.S. Corps of Engineers, Well Logs[1,2]

Description	Thickness (feet)	Depth (feet)
Campbell Point ACS Receiver Station, Drilled July 1–18 1952, by J. C. Merrington, Sec. 33, T. 13 N., R. 4 W.		
Altitude 142 feet		
Sandy silt	20	20
Silt	10	30
Gravelly silt	10	40
Silty sand	21	61
Medium-fine sand	44	105
Silt, hydrostatic water level, 120 feet	25	130
Fine sand	2	132
Sandy gravel	2	134
Fine sand	7	141
Silty gravel	1	142
Fine sand	5	147
Gravelly sand	13	160
Clayey sand	4	164
Silt	6	170
Sandy clay	5	175
Medium-fine sand	5	180
Lean clay	3	183
Sand	3	186
Sandy clay	1	187
Gravelly sand	2	189
Medium-fine sand	3	192
Sandy gravel	8	200
Sandy gravelly silt	2	202
Silty gravel	7	209
Silt	7	216
Gravelly sand	6	222
Silty gravel	13	235
Sandy gravel	5	240

[1] By permission of the District Engineer, U.S. Corps of Engineers, Alaska District.
[2] Descriptive logs converted from graphic logs by the authors.

U.S. Corps of Engineers, Well Logs—Continued

Description	Thickness (feet)	Depth (feet)
West Power Plant Well, Elmendorf Air Force Base, Drilled by McInroy and C. P. Lewis, SE¼ sec. 8, T. 13 N., R. 3 W. (N 107,076–E 105,078)		
Altitude 140.05 feet		
Gravelly sand	13.5	13.5
Sandy gravel	11.5	25.0
Gravelly sand	28	53
Medium sand	4	57
Gray clay	130	187
Quicksand	4	191
Gray clay	17	208
Gravelly sand	15	223
Hard till with sand streaks	13	236
Soft sticky clay	26	262
Blue estuarine clay	39	301
Gravel hardpan	2.5	303.5
Angular sand lenses	2.5	306
Sand grading into clay size	5.5	311.5
Sand grades from coarse to fine, coarse gravel with Crustacean fragments	11	322.5
Glacial till, high percentage of fines	17.5	340
Hard cementlike clayey till	2.5	342.5
Glacial till with sand and gravel lenses	108.5	451
Lens of sand and gravel with some clay	8	459
Glacial till consisting of tan clay and silt with subrounded pebbles and rocks, several thin lenses of sand and gravel were encountered but no water	81	540
Gray silt and clay with some pebbles	40	580
Gray silt, no rocks or pebbles, pieces of coal at about 610 and 645 feet	92.5	672.5
Blue gray clay	11	683.5
Placer coal with gray silt	12.5	696
Gray sand clay	7	703
Hard sandy clay (shale?)	63	766
Contact between Quaternary and Tertiary (tentative)		766
Hard sandstone	12	778
Thin beds of coal and shale with a few beds of sandstone	72	850

U.S. Corps of Engineers, Well Logs—Continued

Description	Thickness (feet)	Depth (feet)
International Airport, Anchorage, National Guard Facilities Water Well, Drilled April 1954 by McInroy Drilling Co., NW¼ sec. 3, T. 12 N., R. 4 W. (N 83,252-E 81,666)		
Altitude 106.2 feet		
Silt, some organic material, small amount of sand	13.5	13.5
Gravelly, silty sand	3.5	17
Lean clay, semiplastic	28	45
Fine sand	5	50
Silty sand with placer coal; static water level, 79 feet	40	90
Silt	7	97
Fine sand, occasional fragments of coal	17	114
Medium to fine sand, 11 percent gravel	4	118
Silty sand	12	130
Lean clay grading to sandy silt lower 12 feet	34	164
Fine sand, grading downward to medium sand	12	176
Gravel	2	178
Gravelly sand	2	180
Sandy gravel	5	185
Silty sand	5	190
Silty sandy gravel, cemented tight	8	198
Sandy gravel (60 percent) [3]	6	204
Sand	9	213
Gravelly sand (67 percent)	8	221
Sandy gravel (56 percent)	7	228
Gravelly sand (78 percent)	3	231
Sandy gravel (64 percent)	6	237
Gravelly sand (70 percent)	4.5	241.5
Sandy gravel (64 percent)	5.5	247
Gravelly sand (74 percent)	11	258
Sandy gravel (53 percent)	5	263
Sand, medium to coarse (92 percent) (0.8 percent gravel)	5	268
Silty gravel, tight, impervious	2	270

[3] As used by the Corps of Engineers, the percentage is the amount of the principal material, or the percentage of the material that the figure immediately follows.

DH-3, Drilled Sept. and Oct. 1950 by J. P. March, NE¼ sec. 6, T. 13 N, R. 2 W. (N 113,715-E 130,240)

Altitude 298.6 feet

Silt	1	1
Gravelly sand (50 percent)	13	14
Sandy gravel (56 percent); water table 35 feet, Oct. 17, 1950	34	48
Silty (37 percent) gravelly sand (40 percent)	5	53
Gravelly sand (58 percent)	4	57
Sandy gravel	4.3	61.3

U.S. Corps of Engineers, Well Logs—Continued

Description	Thickness (feet)	Depth (feet)
DH-4, Drilled Sept.-Oct. 1950, by J. P. March, NW¼ sec. 6, T. 13 N., R. 2 W. (N 112,820-E 128,150)		
Altitude 280.5 feet		
Silt	2	2
Silty (16 percent) gravelly sand (51 percent); top of perched water table 13 feet, bottom 29 feet, Sept. 19, 1950	9	11
Gravelly sand (52 percent)	18	29
Gravelly sandy silt (54 percent)	5	34
Gravelly sandy clay (63 percent)	2	36
Sandy gravel (54 percent)	4	40
Silty (18 percent) sandy gravel (42 percent); water table 45.5 feet, Oct. 6, 1950	5	45
Gravelly sand (50 percent)	5	50
Silty (11 percent) sandy gravel (52 percent)	6	56
Sandy gravel (62 percent)	4	60
DH-7, Drilled Dec. 4-15, 1950, by J. P. March, NW¼ sec. 7, T. 13 N., R. 3 W. (N 109,560-E 96,050)		
Altitude 15.0 feet		
Silt	49	49
Lean clay (100 percent)	52.5	101.5
DH-28, Drilled Sept.-Oct. 1952, by Chapman Drilling Co., NE¼ sec. 9, T. 13 N., R. 3 W. (N 107, 270-E 107, 215)		
Altitude 100 feet		
Sandy gravel	17	17
Fine sand	14	31
Blue clay	.5	31.5
DH-42, Drilled, March 27, 1953, NW¼ sec. 7, T. 13 N., R. 3 W. (N 108,373-E 97,250)		
Altitude 17.4 feet		
Peat, muskeg; saturated	8	8
Lean clay, blue, stiff	52	60
DH-43, Drilled Nov. 3-13, 1953, by McInroy Drilling Co., NW¼ sec. 12, T. 13 N., R. 3 W. (N 108,630-E 120,410)		
Altitude 222.5 feet		
Sandy gravel	3	3
Medium fine sand, occasional pebbles	22	25
Sandy gravel	2	27
Gravelly sand	10	37
Sandy gravel; water encountered at 37 feet	7	44
Gravelly sand	6	50

U.S. Corps of Engineers, Well Logs—Continued

Description	Thickness (feet)	Depth (feet)
No. 55, Well No. 6, Drilled by Alaska District Engineers (no date available), NW¼NW¼, sec. 12, T. 13 N. R. 3 W.		
Altitude approx. 248.0 feet		
Till; probable high water level, 223.5 feet; probable low water level 216.5 feet	32.5	32.5
Blue clay with dry gravel	20.0	52.5
Till	23.0	75.5
Till, impervious	41.5	117.0
Sandy silty gravel	4.5	121.5
Gravelly sand	2.5	124.0
Silt layers in sand and gravel	36.0	160.0
No. 62, Well No. 3, Drilled by Alaska District Engineers (no date available), NE¼NW¼ sec. 12, T. 13 N., R. 3 W.		
Altitude approx. 247.0 feet		
Fill	5.0	5.0
Gravel	5.0	10.0
Till; probable high water level, 223.5; probable low water level, 216.5	22.0	32.0
Blue clay with pebbles	12.0	44.0
Coarse gravel	2.0	46.0
Till	17.0	63.0
Gravelly sand with clay	45.0	108.0
Blue clay with gravel	8.0	116.0
Gravelly sand	19.0	135.0
Sand with occasional gravel	10.0	145.0

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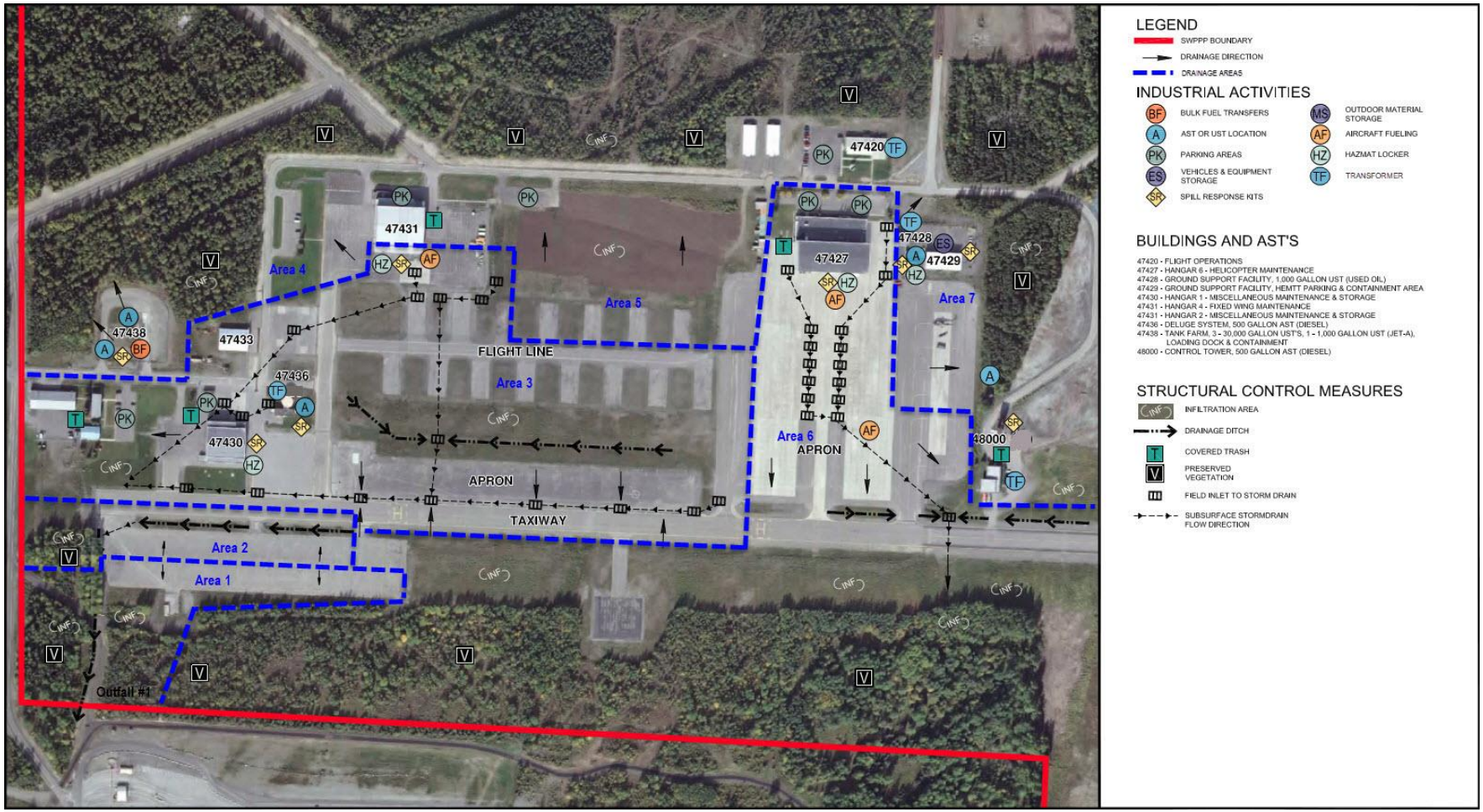
4.2 - Site Diagram(s)

4.2.1 - Site-Wide Diagram

Diagram identifies the location of POL storage and distribution systems located throughout the Bryant AASF.



Division of Spill Prevention and Response
CONTAMINATED SITES

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Per- and polyfluoroalkyl substances are a large and complex class of human-made compounds often referred to collectively as PFAS. PFAS have been widely used in numerous industrial and residential applications since the 1950's. Their stability and unique chemical properties produce waterproof, stain resistant, and nonstick qualities in products. They are found in some firefighting foams and a wide range of consumer products such as carpet treatments, non-stick cookware, water-resistant fabrics, food packaging materials, and personal care products.

In Alaska, spills or releases of PFAS into the environment are primarily associated with the use of aqueous film-forming foams (AFFF) during firefighting or fire training activities. PFAS of concern where AFFF has been used include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Although these two compounds are the most studied, a growing body of research indicates additional PFAS may have similar health or environmental effects and may be co-contaminants. In 2016, The Alaska Department of Environmental Conservation (ADEC) published cleanup levels for PFOS and PFOA and the Environmental Protection Agency (EPA) issued lifetime health advisory (LHA) levels for these compounds in drinking water. In 2018, ADEC set action levels for six PFAS, including PFOS and PFOA. These action levels serve as thresholds for determining when responsible parties need to provide water treatment or alternative water sources for impacted water supplies.

EPA is currently evaluating whether to establish Maximum Contaminant Levels (MCLs) in drinking water for one or more PFAS. To learn more about the MCL development process, visit: Setting Maximum Contaminant Levels for PFAS

Because PFAS are persistent in the environment and soluble in water, large plumes of groundwater contamination can form where these compounds have been released. When releases occur in areas served by private or public drinking water wells, the well water is susceptible to contamination. When PFAS contamination is found in the environment, the responsible party must evaluate the extent of the contamination in the soil and groundwater, determine whether and to what extent drinking water supplies are impacted, provide treatment or alternative water if action levels are exceeded, and begin cleanup with ADEC's oversight. The responsible party is typically the entity that caused the release or the landowner where the release occurred.

ADEC is proposing new cleanup levels for six PFAS in soil and groundwater in regulations issued for public comment on October 1, 2018. The comment period closed November 13, 2018. The department is now reviewing comments prior to adoption of the proposed changes.

In November 2018, ADEC developed a PFAS Action Plan to provide a coordinated response by the agency's environmental programs to address this emerging public health concern. The action plan will be updated over time as progress is achieved, new information becomes available, or additional actions are needed. To review the plan, visit: DEC PFAS Action Plan.

CURRENT PFAS RESPONSES

ADEC is currently involved with the following groundwater cleanups associated with the use of AFFF:

Eielson Air Force Base and Moose Creek
ADEC Project Manager: Dennis Shepard, 907-451-2180

City of Fairbanks Regional Fire Training Center
ADEC Project Manager: Robert Burgess, 907-451-2153
See also the **City of Fairbanks Project Website**

Fairbanks International Airport
ADEC Project Manager: Robert Burgess, 907-451-2153
See also the **DOT&PF Project Website**

ADOT&PF Gustavus Airport Crash Fire and Rescue Station
ADEC Project Manager: Danielle Duncan, 907-465-5207
See also the **DOT&PF Project Website**

PFAS Investigation in North Pole Groundwater
ADEC Project Manager: Jim Fish, 907-451-2117

MORE INFORMATION

- Tech Memo Action Levels for PFAS in Water (PDF)
- ADEC Frequently Asked Questions about PFAS Action Levels - August 2018 (PDF)
- ITRC PFAS Sampling Fact Sheet (PDF)
- ADEC PFAS Tri-fold Fact Sheet August 2018 (PDF)
- Alaska Department of Health and Social Services Information
- EPA PFAS website
- EPA PFAS Infographic (PDF)
- EPA Reducing PFAS in Drinking Water with Treatment Technologies
- Agency for Toxic Substances and Disease Registry (ATSDR) PFAS site
- ADEC Responding to Drinking Water Concerns Prompted by Emerging Contaminants (PDF)
- EPA National Leadership Summit and Engagement to Address PFAS
- ATSDR PFAS in the U.S. Population (PDF)
- ADEC Advisory Letter and AFFF Fact Sheet

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DHSS, Health Related Information
DHSS Division of Public Health
Kristin Bridges
Public Health Scientist
907-269-8028

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Other

Facility: Bryant ~~Hangar 4~~ Hangar 6 AASF
Interviewer: [redacted]
Date/Time: 8/28/18

p1/1

Interviewee: [redacted] **Title:** Retired Guardsman **Phone Number:** [redacted] **Email:**	Can your name/role be used in the PA Report? Y or N (N circled) Can you recommend anyone we can interview? Y or N

Roles or activities with the Facility/Years working at the Facility: Been in AK since 92

Q: 70s/80s?

Think used same in 90s training on the ramp - storm drains dates unknown

Hangar 1 AASF helicopter ramp only place known training. Maybe used some of the ~~AFFF~~ or dish soap. Don't remember

90s HazWaste was Fire Marshall in charge of extinguishers, I know [redacted] wo...

PFAS Use: [redacted] accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

Q: old firestation, built in early 90s, not his thing

Nome 88-92 - Never sprayed to his knowledge. May have used Dish soap @ Ft. Rich

In Nome, 5 gal buckets in flame cabinet

Known Uses

- Use
- Procurement
- Disposition
- Storage (Mixed)
- Storage (Solution)
- Inventory, Off-Spec
- Containment
- SOP on Filling
- Leaking Vehicles
- Nozzle and Suppression System Testing
- Dining Facilities
- Vehicle Washing
- Ramp Washing
- Fuel Spill Washing and Fueling Stations
- Chrome Plating or Waterproofing

[redacted]

PA Interview Questionnaire - Other

Facility: Hanscom
Interviewer: [redacted]
Date/Time: 8/28/18

P 1/1

Interviewee: [redacted] → Automotive Supervisor **Title:** Haz Materials Exp **Phone Number:** **Email:**	r name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

Roles or activities with the Facility/Years working at the Facility:

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
Fire Suppression System H_2O	Use
	Procurement
ABC Fire Extinguishers	Disposition
	Storage (Mixed)
B extinguishers in Machine Shop	Storage (Solution)
	Inventory, Off-Spec
	Containment
	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

Hangar 6

PA Interview Questionnaire - Environmental Manager

Facility: BRYANT AF [redacted]
Interviewer: [redacted]
Date/Time: 8/28/2018/0930

Interviewee: [redacted]
Title: HAZ. MAT. ORDER/MANAGER
Phone Number:
Email:

Can your name/role be used in the PA Report? Y or N
Can you recommend anyone we can interview?
(Y) or N [redacted]

1. Roles or activities with the Facility/years working at the Facility.
   Hazardous Materials Manager/Orderer

2. Where can I find previous facility ownership information?
   Historical Documents

3. What can you tell us about the history of PFAS including aqueous film forming foam (AFFF) at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.

   Maintenance
   Fire Training Areas
   Firefighting (Active Fire)
   Crash
   Fire Suppression Systems (Hangers/Dining Facilities) ← MSDS photo of TRI-MAXES
   Fire Protection at Fueling Stations
   Non-Technical/Recreational/ Pest Management
   Metals Plating Facility
   Waterproofing Uniforms (Laundry Facilities)
   Other

   water in hangar Cicely

4. Fill out CSM Information worksheet with the Environmental Manager.

5. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? NO
   What are the AFFF/suppression system test requirements? What is the frequency of testing the AFFF/suppression system? Do you have "As Built" drawings for the buildings?
   NEVER AFFF
   ↳ [redacted]

FIRE EXT. had/have HALON

photo South @ 0948 CHEMGUARD BLIZZARD (IN LOT EAST OF 47429)
SE +1 behind fishtote Chemguard
South +1 Location of previous storage of Chemguard
3 photos N, inside bldg 47429, trimaxes, NO leaks, some rusty fittings

PA Interview Questionnaire - Environmental Manager

Facility: BAAF Hangar 6
Interviewer: [redacted]
Date/Time: 8/28/18

6.	Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam? If retrofitted, when was that done? NO
7.	How is AFFF procured? Do you have an inventory/procurement system that tracks use? Spreadsheet ~~[illegible] ~1992~~
8.	What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?
9.	Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material? photos ~~[illegible]~~ 5gal Buckets, Old,
10.	How many FTAs (Fire Training Areas) are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them? NO. everything is done in classroom ~~[illegible]~~ have to do [illegible] training

No Known leaks

[redacted]

PA Interview Questionnaire - Environmental Manager

Facility: [redacted]
Interviewer: [redacted]
Date/Time: 8/28/2018

11. When a release of AFFF occurs during a fire training exercise, now and in the past, how is the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

releases unknown [redacted]

12. Can you recall specific times when city, county, and/or state personnel came on-post for training? If so, please state which state/county agency or military entity? Do you have any records, including photographs to share with us?

13. Did military routinely or occasionally fire train off-post? List the units that you can recall used/trained at various areas.

unknown

14. Did individual units come with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

NO / NA

15. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

No
just for Spill

[redacted] did [redacted] job before him for 30 yrs

PA Interview Questionnaire - Environmental Manager

Facility: BAF Hangar 6
Interviewer: [redacted]
Date/Time: 8/28/18

16. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

No/NA

17. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

No/NA

18. Are there mutual aid/use agreements between county, city, and local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement?

get mutual aid agreem
from Fire Station
AIR FORCE [redacted]
CFMO, real estate

19. Can you provide any other locations where AFFF has been stored, released, or us[redacted] buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste treatment plants, and AFFF ponds)?

Hangar 4, each Hangar had trucks
1 Hangar ?
maybe drums left by contractor

20. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?

NO

[redacted] Asst. Chief

PA Interview Questionnaire - Environmental Manager

Facility: [redacted] Hangar 6
Interviewer: [redacted]
Date/Time: 8/28/18

21. Are there past studies you are aware of with environmental information on plants/animals/ groundwater/soil types, etc., such as Integrated Cultural Resources Management Plans or Integrated Natural Resources Management Plans?

[redacted]

22. What other records might be helpful to us (environmental compliance, investigation records, admin record) and where can we find them?

purchase request for
- Simplex granelle
- Mutual Aid agreement

they would send them back empty, AKARNG would refill

23. Do you have or did you have a chrome plating shop on base? What were/are the years of operation of that chrome plating shop?

pain shop over CSMS

[redacted]

24. Do you know whether the shop has/had a foam blanket mist suppression system or used a fume hood for emissions control? If foam blanket mist suppression was used, where was the foam stored, mixed, applied, etc.?

NO

25. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?

NA

BRYANT p 1/3

PA Interview Questionnaire - Other

JBER HISTORIAN

Facility: Hangar 6 47427
Interviewer: [redacted]
Date/Time: 8/29/18 @ 1344

Interviewee: [redacted] Title: A.F. OEH Safety Phone Number: Email:	Can your name/role be used in the PA Report? Y or N Can you [redacted] n interview? ← he will reach out Y or N [redacted] [redacted] → Retired, [redacted], Asst. Fire Chief

Roles or activities with the Facility/Years worki[redacted]

Former POL AKARNG was Fuele Photos?

Fulltime TECH till July 2018 (CC) From Feb 98 - M978 HEMMT

Fuel Handler M978 hemmts

Fuel handler since 1978 - weekend solider @ Bryant

on post since '78

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
GUARD TECH: weekend side → TRIMAX - DID DISCHARGE.	Use
Req. to go through training.	Procurement
yearly req. though not done	Disposition
yearly because of expense.	Storage (Mixed)
Trimax on station as refuled.	Storage (Solution)
HOT Refuelling, too.	Inventory, Off-Spec
procedures of Trimax important!	Containment
	SOP on Filling
Fuel truck: TRIMAX.	Leaking Vehicles
crack extinguisher, spray hemmitt: shoot it off to	Nozzle and Suppression System Testing
1x/year for 3YRS	Dining Facilities
get every tech 2-3 second.	Vehicle Washing
• Only on side of hemmit	Ramp Washing
FUEL TRUCK, outdoors. on corner of	Fuel Spill Washing and Fueling Stations
- Joked about it "washing the truck" hangar 6 47427	Chrome Plating or Waterproofing

Corner facing F.S. 5

Did for 2-3 years.
then learned that it was corrosive, stopped using it.

PA Interview Questionnaire - Other [redacted]

pg 2/3

Facility: BAAF Hangar 6
Interviewer: [redacted]
Date/Time: 8/29/18

had trimex ext. all over the facility,
only place actually used
was @ SE. Corner of hangar

then pulled product out for a new product
that didn't freeze or corrode.

Stored 4 on pad - tie down
(always on pavement) kept ~4, 1 ext for every 2 helis
Thinks & they had frozen : leaked, it
would have been seen

Used to train the crew from Ft Wainright
Feb 1978 - underground tank farm, refuelled
trucks ; Nome, Bethel, Juneau ; inspectors for
fuel inspectors.

Practice extractions w/out FOAM on the
pad, infront of Hangar 6
OR where they parked the C23s. ← 47431 hangar 4 no foam

When were 3 ~~yrs~~ of testing? 2004-2008 ish
Foam in 70's/80's → water systems from water tank as today
F.S. South ~~NORTH OF A.F.~~ ??
↳ ~~unknown~~, ACTIVE, primarily to
support Flightline, or other Status.
Rotational F.S. Manned all the time, on-call -
Civilians w/ Air Force. Joint since 2005. prior to 2005
don't know about F.S. North of Runway.
Bryant Always relied ON F.S. #5

[redacted] Foam in 70's/80's
would know

PA Interview Questionnaire - Other

[redacted]

Facility: BAAF Hangar 6
Interviewer: [redacted]
Date/Time: 8/29/2018

Army had a portion of Camp Carroll (Hangar 4, 2, 1) until the late 80's.
Turned it over to us when they took assets to FAIRBANKS

Guard had fixed wings
Mid 2008 - landed C-12s.

→ C23 went off Bryant runway south, just barely.
No Fire, unknown if foam used.

→ Smoke & Dye tests on drains Hangar 6, etc ipad
Some led to south Runway done in early 2000s.

→ MACHINE SHOP - TOOLS, MOTORS, who?
MOTOR POOL - was GUARD, moved out when Army built oil canteen.

AASF Hangar 6

PA Interview Questionnaire - Other

Facility: Bryant #474
Interviewer: [redacted]
Date/Time: 8/28/2018 1030am

Interviewee: [redacted]	Can your name/role be used in the PA Report? Y or N (Y) P1/1
Title: Sgt MAJOR / ELECTRONICS Mechanic Supervisor	Can you recommend anyone we can interview? Y or N [redacted] - Safety NCO
Phone Number: [redacted]	
Email: [redacted]	

Roles or activities with the Facility/Years working at the Facility:

ON post Started in Avi shop as tech in dec 91, for 15 years elec. Mech Supv. Since '07.

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
Bulk storage - White tank - photo. handled only when tested, emptied sent out, refilled. Don't really touch them. Never seen discharged with AFFF. Have trained w/ Dish soap.	Use
	Procurement
	Disposition
	Storage (Mixed)
	Storage (Solution)
	Inventory, Off-Spec
Not witness to other training or crashes using AFFF	Containment
	SOP on Filling
	Leaking Vehicles
[redacted] helped fill/empty	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
	Ramp Washing
"Hangar 6" has been "I" and "S"	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

Hangar 6 BLD# 47427 Bryant AF

PA Interview Questionnaire - Other

Facility: Hangar 6 BLD# 47427

Interviewer: [redacted]

Date/Time: 8/28/18 / 0956

pg 1/1

Interviewee: [redacted] **Title:** Aviation [illegible] Support Tech **Phone Number:** [redacted] **Email:** [redacted]	Can your name/role be used in the PA Report? (Y) or N Can you recommend anyone we can interview? Y or (N) [redacted]ept 27 is last day

Roles or activities with the Facility/Years working at the Facility:

was working in Supply, 1986 full time guard. until 2000 then into current position. ordered tools & parts for aircraft

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

in Fire Extinguishers, Unaware of any accidents or use. used dishwasher soap for training. AFFF is only FOAM ON-site.

Unaware of any use during training.

[redacted] Old/Expired foam was emptied into a Drum & then refilled the extinguishers. (using funnel)

Servicer Recieves empty extinguishers & returns empty extinguishers.

OG. Came in 5 gal buckets

got [illegible] in 92

[redacted] [illegible] in water

Known Uses
Use
Procurement ←
Disposition
Storage (Mixed)
Storage (Solution)
Inventory, Off-Spec
Containment
SOP on Filling
Leaking Vehicles
Nozzle and Suppression System Testing
Dining Facilities
Vehicle Washing
Ramp Washing
Fuel Spill Washing and Fueling Stations
Chrome Plating or Waterproofing

Only Ordered & Refilled one time.

[redacted] got it in his eye

Only ordered it 1x

PA Interview Questionnaire - Other

Facility: Elmendorf Hangar 6
Interviewer: [redacted]
Date/Time: 10/1/18

P 1/2

Interviewee: [redacted] **Title:** Safety Officer/ 1-207 AVN REGT **Phone Number:** **Email:**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

Roles or activities with the Facility/Years working at the Facility:

Safety officer current → for 1-207 AVN REGT
: facility safety officer R-AASF
Safety officer for NG fixed wing in Hangar 6
April 2013 – May 30th, 2018

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

→ Spray test area on map
(3) RMT 2000 auto-portable Fire extinguishers
~~for AIR FORCE~~ Haul with a truck
→ Active Duty NG Regional Flight Center
NOT ~~[illegible]~~ AKARNG

Summer of 2014 when Reg Flight center was turning in RMT 2000s
[redacted] + 2 people; they ~~[illegible]~~ emptied
↓ as an observer 673rd Fire prevention contact, contractor
Regional Flight Center Safety Officer
Have photos.
emptied to send in for them to be taken away for funding of disassembly.

Known Uses
- Use
- Procurement
- Disposition
- Storage (Mixed)
- Storage (Solution)
- Inventory, Off-Spec
- Containment
- SOP on Filling
- Leaking Vehicles
- Nozzle and Suppression System Testing
- Dining Facilities
- Vehicle Washing
- Ramp Washing
- Fuel Spill Washing and Fueling Stations
- Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility: ELmendorf Hangar 6
Interviewer: [redacted]
Date/Time: 10/1/18

P2/2

Did not get thumbback.

"Replaced" w/ 150lb Halon extinguishers

~~No~~ TRI-MAXes @ hangar 6 currently

→ ANGARNG never had AFFF on Hangar 6 site ←

Halotron could be a replacement, but it is corrosive.

AF uses Halon. or JET-X

~~JET-X~~

PA Interview Questionnaire – Fire Station

Facility: Air Force F.S. 5
Interviewer: [redacted]
Date/Time: 8/29/2018

Interviewe[redacted] Title: lead fire inspector	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N ____________

1. Roles or activities with the Facility/years working at the Facility.

Left F.S. in 2005 — this position 1 year, Prior plans review, State inspector, firefighter/driver operator Since 1995. Former Chief then Chief Swen (Army)

2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.

Maintenance (e.g., ramp washing)
Fire Training Areas
Firefighting (Active Fire)
Crash
Fire Suppression Systems (Hangers/Dining Facilities)
Fire Protection at Fueling Stations
Non-Technical/Recreational/ Pest Management

~~practice~~ since 1995, never used for practice ~~fires~~ (CO). No crashes on ~~the~~ Bryant under his watch. #48010

3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?

in '95 old F.S. used for storage only. Used Bld. for training 96-97 came down

4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?

In 2005 Firefighters filled the trucks w/ 5 gal buckets, a few gallons kept on hand. "Rarely" did they use it, maybe used for a car fire?

Trucks changed out in all vehicles 2017 — Vehicle Maintenance Shop on Elmendorf, shipped off site

5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?

AFFF change overs across JBER. None on Guard Side Fire Station - AFFF on Crash Truck only if an actual fire

PA Interview Questionnaire – Fire Station

Facility: AF FSS
Interviewer: [redacted]
Date/Time: 8/29/18

6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

white container, green lettering

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?

8. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

9. How is the AFFF transferred to emergency response vehicles, suppression systems, flightline extinguishers? Is/was there a specified area on the facility where vehicles are filled with AFFF and does this area have secondary containment in case of spills? How and where are vehicles storing AFFF cleaned/decontaminated?

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?

~~Three~~ Two vehicles did carry foam

11. Any vehicles have a history of leaking AFFF? Do you/did you test the vehicles spray patterns to make sure equipment is working properly? How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?

Since 9/11 he has not seen leaking, parked inside firestation

Vehicle fire, 1st water, then may be a 'li'l foam, manual needed. Leave what is in the tank, top it off

PA Interview Questionnaire – Fire Station

Facility: AFFS 5
Interviewer: [redacted]
Date/Time: 8/29/18

12. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

No practice with foam
Annual testing after 2005 - Not a part of this testing.

13. What types of fuels/flammables were used at the FTAs?

14. What was the frequency of AFFF use at each location? When a release of AFFF occurs during a fire training exercise, now and in the past, how is/was the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

15. Are there mutual aid/use agreements between county, city, local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement? Can you recall specific times when city, county, state personnel came on-post for training? If so, please state which state/county agency, military entity? Do you have any records, including photographs to share with us?

Army 1st responder Elmondorf 2nd
~~Richardson~~
Anchorage 3rd responder.

16. Did individual units come on-post with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

Did not have other agencies use foam on Bryant

PA Interview Questionnaire – Fire Station

Facility: AFFS 5
Interviewer: [redacted]
Date/Time: 8/29/18

17. Did military routinely or occasionally fire train off-post? List units that you can recall used/trained at various areas.

AF - AFCEC - mock up Aircraft,
Yes on Elmondorf, but not using foam (by rail road tracks)

18. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

19. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

No

20. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

No

21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

PA Interview Questionnaire – Fire Station

Facility: AIRFORCE F.S. 5
Interviewer: [redacted]
Date/Time: 8/29/18

22. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?
23. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?
24. Do you recommend anyone else we can interview? If so, do you have contact information for them?

- annual nozzle testing after 2005 on Elmendorf side
- No other agencies have data + trng at Bryant

JBER 1/1

PA Interview Questionnaire - Other

Facility: [redacted]
Interviewer:
Date/Time: 9/13 2018

Interviewee: [redacted] **Title:** **Phone Number:** 753-2859 **Email:**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N JBER F.D., JBER Real Estate in BLDG 724

Roles or activities with the Facility/Years working at the Facility:

USACE. Real ESTATE, formerly AK ANG — currently training

Fire Station?

left Msg 9/13 @ 1430

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

"FB was new ars"
thought was operational ~ 1985 → Not sure
@ end, take fire extinguishers there for service to recharge ←
Harold maps at that area. Will look for Bldg, will call if found.
- it was used for training; storage (cabinets)

Known Uses	
Use	
Procurement	
Disposition	
Storage (Mixed)	
Storage (Solution)	
Inventory, Off-Spec	
Containment	
SOP on Filling	
Leaking Vehicles	
Nozzle and Suppression System Testing	
Dining Facilities	
Vehicle Washing	
Ramp Washing	
Fuel Spill Washing and Fueling Stations	
Chrome Plating or Waterproofing	

P 1/2

PA Interview Questionnaire - Other

Facility: CEMO
Interviewer: [redacted]
Date/Time: 8/28/1415

Interviewee: [redacted] **Title:** Master Planner / Real ESTATE **Phone Number:** **Email:**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

Roles or activities with the Facility/Years working at the Facility:

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
the old F.S. (WWII) N. of BRYANT & MOTOR Shop,	Use
would have been owned by (cc) (outside current Natl guard boundaries)	Procurement
operated by the Army	Disposition
DURING the time of	Storage (Mixed)
operation. Operational	Storage (Solution)
from WWII until	Inventory, Off-Spec
Late 80's / early 90s.	Containment
AIRFORCE CURRENTLY provides	SOP on Filling
all firefighters - Stated in	Leaking Vehicles
lease agreement	Nozzle and Suppression System Testing
Nat'l guard license started in late	Dining Facilities
60's / early 70's.	Vehicle Washing
	Ramp Washing
AF gave lease in mass for	Fuel Spill Washing and Fueling Stations
Camp Carrol, Bryant, Camp Denali	Chrome Plating or Waterproofing

License to be on: operate on AF Land

→ all but 2 bldgs: F.S. & criminal investigations

PA Interview Questionnaire - Other [redacted]

Facility: CRMO
Interviewer: [redacted]
Date/Time: 8/28/18

D.O.T provides Firefighting for Kotzebue, Bethel, Nome, ~~Wainwright~~ CCC

Juneau - Muni provides Fire support

Wainwright - Army provides fire support

→ D.O.T. Building @ Ted Steven's Int'l CST

April 2012 became Federally supported by army Guard

P1/2

PA Interview Questionnaire - Other

Facility: CFMO
Interviewer: [redacted]
Date/Time: 8/28/18/14:15 Bryant

Interviewee: [redacted] **Title:** Cultural Resources Manager **Phone Number:** **Email:**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

Roles or activities with the Facility/Years working at the Facility:

Cultural Resources

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

INFO - Electronic JBER Base Dev.
several Docs w/ Narrative
Camp Carrol Hist, etc
; Base

1967 - Camp Carrol designated as such

1957 Bryant AF est
used by Natnal Guard
in 60's/70's
tells when all Hangars built

Bryant uses Army Airfield BY
Nat'l Guard

HQ 14 Jun ear BY JBER

Known Uses
Use
Procurement
Disposition
Storage (Mixed)
Storage (Solution)
Inventory, Off-Spec
Containment
SOP on Filling
Leaking Vehicles
Nozzle and Suppression System Testing
Dining Facilities
Vehicle Washing
Ramp Washing
Fuel Spill Washing and Fueling Stations
Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

[redacted]

Facility: OFMO
Interviewer: [redacted]
Date/Time: 8/28/18

Has stuff on Bethel
Juneau
None

Armenes only if fire stations

[redacted] → Highly unlikely that we shipped AFFF to any place but hangars

IN Bryant Hist. Doc.
p. [redacted] - history of Natl guard; AF

Shared use ~~sometimes~~ ☺ until '97

Appendix B.2
Visual Site Inspection Checklists

CSMS

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: 8/28/18

Method of visit (walking, driving, adjacent): walking

Source/Release Information

Site Name / Area Name / Unique ID: CSMS - PAINT SHOP

Site / Area Acreage:

Historic Site Use (Brief Description):

Current Site Use (Brief Description):

Physical barriers or access restrictions:

1. Was PFAS used (or spilled) at the site/area? **Y / N**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

2. Has usage been documented? **Y / N**

2a. If yes, keep a record (place electronic files on a disk):

3. What types of businesses are located near the site? **Industrial / Commercial / Plating / Waterproofing / Residential**

3a. Indicate what businesses are located near the site

4. Is this site located at an airport/flightline? **Y / N**

4a. If yes, provide a description of the airport/flightline tenants:

None on site

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? Y / N

1a. If yes, indicate which type of AFFF has been used:

1b. If yes, describe maintenance schedule/leaks:

1c. If yes, how often is the AFFF replaced:

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? Y / N

1a. If so, note observation and location:

2. Is there channelized flow within the site/area? Y / N

2a. If so, please note observation and location:

3. Are monitoring or drinking water wells located near the site? Y / N

3a. If so, please note the location:

4. Are surface water intakes located near the site? Y / N

4a. If so, please note the location:

5. Can wind dispersion information be obtained? Y / N

5a. If so, please note and observe the location.

6. Does an adjacent non-ARNG PFAS source exist? Y / N

6a. If so, please note the source and location.

6b. Will off-site reconnaissance be conducted? Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **Y / N**

1a. If so, please describe change (ex. Structures no longer exist):

2. Is the site/area vegetated? **Y / N**

2a. If not vegetated, briefly describe the site/area composition:

3. Does the site or area exhibit evidence of erosion? **Y / N**

3a. If yes, describe the location and extent of the erosion:

4. Does the site/area exhibit any areas of ponding or standing water? **Y / N**

4a. If yes, describe the location and extent of the ponding:

Receptor Information

1. Is access to the site restricted? **Y / N**

1a. If so, please note to what extent:

2. Who can access the site? **Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological**

2a. Circle all that apply, note any not covered above:

3. Are residential areas located near the site? **Y / N**

3a. If so, please note the location/distance:

4. Are any schools/day care centers located near the site? **Y / N**

4a. If so, please note the location/distance/type:

5. Are any wetlands located near the site? **Y / N**

5a. If so, please note the location/distance/type:

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

HANGAR 1

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: 8/28 1310

Method of visit (walking, driving, adjacent): walking

Source/Release Information

Site Name / Area Name / Unique ID: 47430

Site / Area Acreage:

Historic Site Use (Brief Description): Hangar

Current Site Use (Brief Description): Hangar

Physical barriers or access restrictions: Fence

1. Was PFAS used (or spilled) at the site/area? **Y / N**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

unknown (UK)

2. Has usage been documented? **Y / N**

2a. If yes, keep a record (place electronic files on a disk):

UK

3. What types of businesses are located near the site? **Industrial / Commercial / Plating / Waterproofing / Residential**

3a. Indicate what businesses are located near the site

Military [illegible] (CC)

4. Is this site located at an airport/flightline? **Y / N**

4a. If yes, provide a description of the airport/flightline tenants:

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? Y / N H_2O

1a. If yes, indicate which type of AFFF has been used:

1b. If yes, describe maintenance schedule/leaks:

1c. If yes, how often is the AFFF replaced:

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? Y / N

1a. If so, note observation and location:

2. Is there channelized flow within the site/area? Y / N

2a. If so, please note observation and location:

Ditch on W side - Stormdrain

3. Are monitoring or drinking water wells located near the site? Y / N

3a. If so, please note the location:

UK

4. Are surface water intakes located near the site? Y / N

4a. If so, please note the location:

UK

5. Can wind dispersion information be obtained? Y / N

5a. If so, please note and observe the location.

6. Does an adjacent non-ARNG PFAS source exist? Y / N

6a. If so, please note the source and location.

Fire station - East

6b. Will off-site reconnaissance be conducted? Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / N

1a. If so, please describe change (ex. Structures no longer exist):

N/A

2. Is the site/area vegetated? Y / N

2a. If not vegetated, briefly describe the site/area composition:

grass/asphalt

3. Does the site or area exhibit evidence of erosion? Y / N

3a. If yes, describe the location and extent of the erosion:

4. Does the site/area exhibit any areas of ponding or standing water? Y / N

4a. If yes, describe the location and extent of the ponding:

Receptor Information

1. Is access to the site restricted? Y / N

1a. If so, please note to what extent:

2. Who can access the site? **Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological**

2a. Circle all that apply, note any not covered above:

Military : visitors

3. Are residential areas located near the site? Y / N

3a. If so, please note the location/distance:

4. Are any schools/day care centers located near the site? Y / N

4a. If so, please note the location/distance/type:

5. Are any wetlands located near the site? Y / N

5a. If so, please note the location/distance/type:

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

HANGAR 4

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: 8/28/2018 @ 1238

Method of visit (walking, driving, adjacent): walking

Source/Release Information

Site Name / Area Name / Unique ID: 5

Site / Area Acreage: BRYANT HANGER 4 Bldg 47431 (map)

Historic Site Use (Brief Description): Hangar.

Current Site Use (Brief Description): → Aircraft Refueling Hanger

Physical barriers or access restrictions: Chain link fence around perimeter

1. Was PFAS used (or spilled) at the site/area? **Y / N**

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

NOT Suspected

2. Has usage been documented? **Y / N**

2a. If yes, keep a record (place electronic files on a disk):

N/A

3. What types of businesses are located near the site? **Industrial / Commercial / Plating / Waterproofing / Residential**

3a. Indicate what businesses are located near the site

MILITARY ~~military~~ (cc)

4. Is this site located at an airport/flightline? **Y / N**

4a. If yes, provide a description of the airport/flightline tenants:

11 TRI MAX units ~~inside~~ south side of Hanger ~~storage~~.

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? **(Y) / N**

1a. If yes, indicate which type of AFFF has been used: H_2O

1b. If yes, describe maintenance schedule/leaks:

1c. If yes, how often is the AFFF replaced:

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? **Y / N**

1a. If so, note observation and location:

Flat. No offsite flow in Bryant airfield. Only during thaw: heavy rain in Spring - Frozen ground

2. Is there channelized flow within the site/area? **Y / N**

2a. If so, please note observation and location:

ditches by roadside

3. Are monitoring or drinking water wells located near the site? **Y / N**

3a. If so, please note the location:

unknown

4. Are surface water intakes located near the site? **Y / N**

4a. If so, please note the location:

unknown

5. Can wind dispersion information be obtained? **Y / N**

5a. If so, please note and observe the location.

unknown

6. Does an adjacent non-ARNG PFAS source exist? **Y / N**

6a. If so, please note the source and location.

firestation 5

6b. Will off-site reconnaissance be conducted? **Y / N**

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **Y / N**

1a. If so, please describe change (ex. Structures no longer exist):

2. Is the site/area vegetated? **Y / N**

2a. If not vegetated, briefly describe the site/area composition:

GRASS & Asphalt

3. Does the site or area exhibit evidence of erosion? **Y / N**

3a. If yes, describe the location and extent of the erosion:

4. Does the site/area exhibit any areas of ponding or standing water? **Y / N**

4a. If yes, describe the location and extent of the ponding:

Receptor Information

1. Is access to the site restricted? **Y / N**

1a. If so, please note to what extent:

2. Who can access the site? **Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological**

2a. Circle all that apply, note any not covered above:

SECURED Secured (CC)

3. Are residential areas located near the site? **Y / N**

3a. If so, please note the location/distance:

4. Are any schools/day care centers located near the site? **Y / N**

4a. If so, please note the location/distance/type:

5. Are any wetlands located near the site? **Y / N**

5a. If so, please note the location/distance/type:

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Hangar 6
Bryant

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: 8/28/18

Method of visit (walking, driving, adjacent):

Source/Release Information

Site Name / Area Name / Unique ID: Bryant Hangar Co

Site / Area Acreage:

Historic Site Use (Brief Description): Hangar

Current Site Use (Brief Description): Aircraft Hangar

Physical barriers or access restrictions: Fence

1. Was PFAS used (or spilled) at the site/area? Y / N (N circled)

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

2. Has usage been documented? Y / N (Y circled)

2a. If yes, keep a record (place electronic files on a disk): Locations of AFFF on a spreadsheet filling

3. What types of businesses are located near the site? Industrial / Commercial / Plating / Waterproofing / Residential

3a. Indicate what businesses are located near the site

Military, Landfill

4. Is this site located at an airport/flightline? Y / N (Y circled)

4a. If yes, provide a description of the airport/flightline tenants:

[redacted] did the paperwork to have Trimaxes serviced through

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? (Y) / N

1a. If yes, indicate which type of AFFF has been used:

water

1b. If yes, describe maintenance schedule/leaks:

1c. If yes, how often is the AFFF replaced:

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

Transport / Pathway Information

Migration Potential:

Slight slope N of storage, may settle in Field

1. Does site/area drainage flow off installation? Y / N

1a. If so, note observation and location:

Flat. Stored on Asphalt.

2. Is there channelized flow within the site/area? Y / (N)

2a. If so, please note observation and location:

stormwater plan

3. Are monitoring or drinking water wells located near the site? Y / N

3a. If so, please note the location:

MW in FTA East/Adjacent, maybe MW are near Runway

4. Are surface water intakes located near the site? Y / N

4a. If so, please note the location:

unknown

5. Can wind dispersion information be obtained? Y / N

5a. If so, please note and observe the location.

unknown

6. Does an adjacent non-ARNG PFAS source exist? (Y) / N

6a. If so, please note the source and location.

Fire stations map

6b. Will off-site reconnaissance be conducted? Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? Y / N — Hangar 6. Built when?

1a. If so, please describe change (ex. Structures no longer exist):

2. Is the site/area vegetated? Y / N

2a. If not vegetated, briefly describe the site/area composition:

3. Does the site or area exhibit evidence of erosion? Y / N

3a. If yes, describe the location and extent of the erosion:

4. Does the site/area exhibit any areas of ponding or standing water? Y / N

4a. If yes, describe the location and extent of the ponding:

Receptor Information

1. Is access to the site restricted? Y / N

1a. If so, please note to what extent:

always Military Clearance or DBIDS or Visitor

2. Who can access the site? **Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological**

2a. Circle all that apply, note any not covered above:

MILITARY

3. Are residential areas located near the site? Y / N

3a. If so, please note the location/distance:

4. Are any schools/day care centers located near the site? Y / N

4a. If so, please note the location/distance/type:

5. Are any wetlands located near the site? Y / N

5a. If so, please note the location/distance/type:

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: *Joint Base Elmendorf-Richardson*

Why has this location been identified as a site?

The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS) (a suite of related chemicals), primarily in the form of aqueous film forming foam (AFFF) released during firefighting activities or training, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

Are there any other activities nearby that could also impact this location? *Adjacent sites with known PFAS use or presence include the AT029 Ruff Road FTA, Air Force Fire Station 5, and Elmendorf Hangar 6.*

Training Events

Have any training events with AFFF occurred at this site? *Yes, at BAAF Hangar 6*

If so, how often? *1x/year for 3 consecutive years*

How much material was used? Is it documented? *Minimal material used due to expense, documented in an interview.*

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? *Yes*. Any direct pathways to larger water bodies? *During times of snowmelt, when the ground is still impervious, surface melt from the facility can travel farther distances to water bodies.*

Surface Water:

Surface water flow direction? *Surface water flows to the south and west, into Ship Creek and out to the Cook Inlet. Surface water runoff at Bryant Airfield is directed towards a network of stormwater drains and drainage ditches that discharge to infiltration areas at the airfield.*

Average rainfall? *Approximately 16.57 inches per year*

Any flooding during rainy season? *Flooding during the rainy season is possible*

Direct or indirect pathway to ditches? *Both direct and indirect pathways exist*

Direct or indirect pathway to larger bodies of water? *Indirect pathways exist to Ship Creek and the Cook Inlet, and can be more direct during times of snowmelt, when the ground is still impervious and surface melt can travel farther distances to water bodies.*

Does surface water pond any place on site? *Possibly in ditches during rain and melting seasons*

Any impoundment areas or retention ponds? *No*

Preliminary Assessment – Conceptual Site Model Information

Any NPDES location points near the site? *Unknown*

How does surface water drain on and around the flight line? *It is believed to drain south*

Groundwater:

Groundwater flow direction? *Groundwater flow is from east to west; highly variable localized flow likely*

Depth to groundwater? 80 ft bgs to the locally confined aquifer, 130 ft bgs to the deeper confined system. Moving from south to north through BAAF Hangar 6 (Building 47427), the locally confined aquifer changes from confined to semiconfined to unconfined, causing the upper confining unit to pinch out and merge the shallow unconfined and locally confined aquifers

Uses (agricultural, drinking water, irrigation)? *Drinking water wells are screened in the deeper aquifer*

Any groundwater treatment systems? *Unknown*

Any groundwater monitoring well locations near the site? *Yes*

Is groundwater used for drinking water? *Some drinking water comes from wells*

Are there drinking water supply wells on installation? *Yes*

Do they serve off-post populations? *No*

Are there off-post drinking water wells downgradient? *Yes, some drinking water wells are used off-post and associated with municipal use, rural housing development, and schools*

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? *Unknown*

If so, do we understand the process and which water is/was treated at the plant? No

Do we understand the fate of sludge waste? *All wastewater from JBER gets transferred to the Anchorage Waste Water Utility (AWWU).*

Is surface water from potential contaminated sites treated? *Unknown*

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? *N/A. Air Force provides fire services to ARNG. It is unknown where the Hemtt truck (mentioned below) was washed, or if it was washed*.

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after

Preliminary Assessment – Conceptual Site Model Information

use? Where does the rinse water flow after cleaning nozzles? *There was testing of Tri-Max CAFs performed outside of BAAF Hangar 6, one time per year for three years in the early 2000s. AFFF was sprayed onto the side of a Hemtt fuel truck.*

3. Other?

Identify Potential Receptors:

Site Worker ***X***

Construction Worker ***X***

Recreational User/Trespasser ***X***

Residential ***X***

Child ***X***

Ecological ***X***

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)? *Military offices and training areas. Alaska Military Youth Academy is located on Camp Carroll*.

Documentation

Ask for Engineering drawings (if applicable).

Has there been a reconstruction or changes to the drainage system? When did that occur? *The storm water drainage system was traced recently and reported in the SPCCP of 2018.*

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 1

Description:

Chemguard Tote. Taken at Bryant Hangar 6 facing south.

Date Taken:

28 August 2018: 0948

Photograph No. 2

Description:

Chemguard 5gal, 1 drum. Taken at Bryant Hangar 6 facing southwest.

Date Taken:

28 August 2018: 0949

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 3

Description:

Previous placement of AFFF shown in photo No. 2. Taken at Bryant Hangar 6 facing south.

Date Taken:

28 August 2018: 0950

Photograph No. 4

Description:

Three Tri-Max Compressed Air Foam Fire Suppression Systems (CAFs). Taken at Bryant Hangar 6.

Date Taken:

28 August 2018: 1015

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 5

Description:

Air Force Fire Station #48010. Taken at Bryant AF fire station facing northwest.

Date Taken:

28 August 2018: 1111

Photograph No. 6

Description:

Old Fire Station location, NW of Bryant Airfield. Taken at Bryant – Old fire station location facing north.

Date Taken:

28 August 2018: 1117

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 7

Description:

Taken at Bryant facing north.

Date Taken:

28 August 2018: 1122

Photograph No. 8

Description:

Low point between FTA & Bryant. Taken at Bryant facing west.

Date Taken:

28 August 2018: 1123

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 9

Description:

11 Trimaxes in Hangar 4. Taken at Bryant Hangar 4 facing west.

Date Taken:

28 August 2018: 1254

Photograph No. 10

Description:

West of Hangar 4. Taken at Bryant Hangar 4 facing south.

Date Taken:

28 August 2018 1301

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 11

Description:

Trimax next to Hazlocker HZ428. Taken at Bryant Hangar 1 facing south.

Date Taken:

28 August 2018: 1329

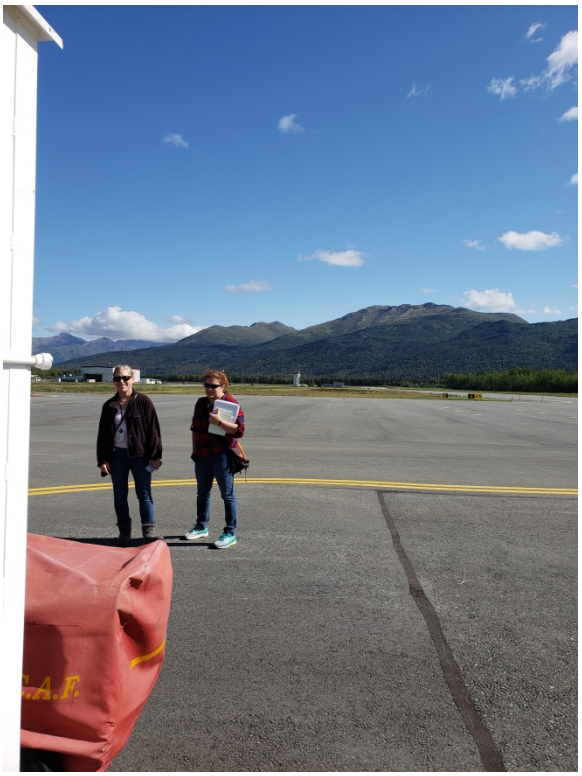
Photograph No. 12

Description:

Overview from Trimax location. Taken at Bryant Hangar 1 facing east.

Date Taken:

28 August 2018: 1329



APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 13

Description:

Hangar 4,6 and fire station. Taken at Bryant Hangar 1 facing northeast.

Date Taken:

28 August 2018: 1331

Photograph No. 14

Description:

Hangar 2, Bryant. Taken at Bryant.

Date Taken:

28 August 2018: 1306

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Joint Base Elmendorf-Richardson	Anchorage, Alaska

Photograph No. 15

Description:

Alaska Regional Flight Center – Hangar 6, Building #9311. Taken at Elmendorf Hangar 6 facing west.

Date Taken:

28 August 2018: 1514