FINAL
Preliminary Assessment Report
Army Aviation Support Facility #2, Louisville, Tennessee

Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) Impacted Sites
ARNG Installations, Nationwide

October 2020

Prepared for:

Army National Guard Bureau
111 S. George Mason Drive
Arlington, VA 22204

UNCLASSIFIED

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Acronyms and Abbreviations

ºF	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
ANGB	Air National Guard Base
AOI	area of interest
ARNG	Army National Guard
AST	above ground storage tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
CW3	Chief Warrant Officer 3
EDR™	Environmental Data Resources, Inc.™
FAA	Federal Aviation Administration
FTA	Fire Training Area
HA	United States Environmental Protection Agency Health Advisory
OWS	oil water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PRL	potential release location
SI	Site Inspection
TNANG	Tennessee Air National Guard
TNARNG	Tennessee Army National Guard
UPS	United Parcel Service
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WWTP	wastewater treatment plant

Executive Summary

The Army National Guard (ARNG) is performing Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide. A PA for per- and polyfluoroalkyl substances (PFAS)-containing materials was completed for Army Aviation Support Facility (AASF) # 2 in Louisville, Blount County, Tennessee, to assess potential PFAS release areas and exposure pathways to receptors.

AASF #2 is situated on 21.19 acres of land at the McGhee Tyson Municipal Airport. As such, the AASF #2 property is owned by the City of Knoxville, leased to the US Air Force, and licensed for Tennessee Army National Guard use.

The performance of this PA included the following tasks:

- Reviewed available administrative record documents and Environmental Data Resources, Inc.™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a 1-day site visit on 24 May 2018 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used or disposed;
- Interviewed personnel during the site visit associated with AASF #2 activities including the AASF #2 Fire Marshall/ Chief Warrant Officer 3 (CW3), AASF #2 Safety Officer/ CW3, and AASF #2 Facility Manager/ Sergeant First Class;
- In November 2018, interviewed a Shift Captain with the Metropolitan Knoxville (McGhee Tyson) Airport Authority Aircraft Rescue and Firefighting Facility (with the Airport Authority site since 1994); and,
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

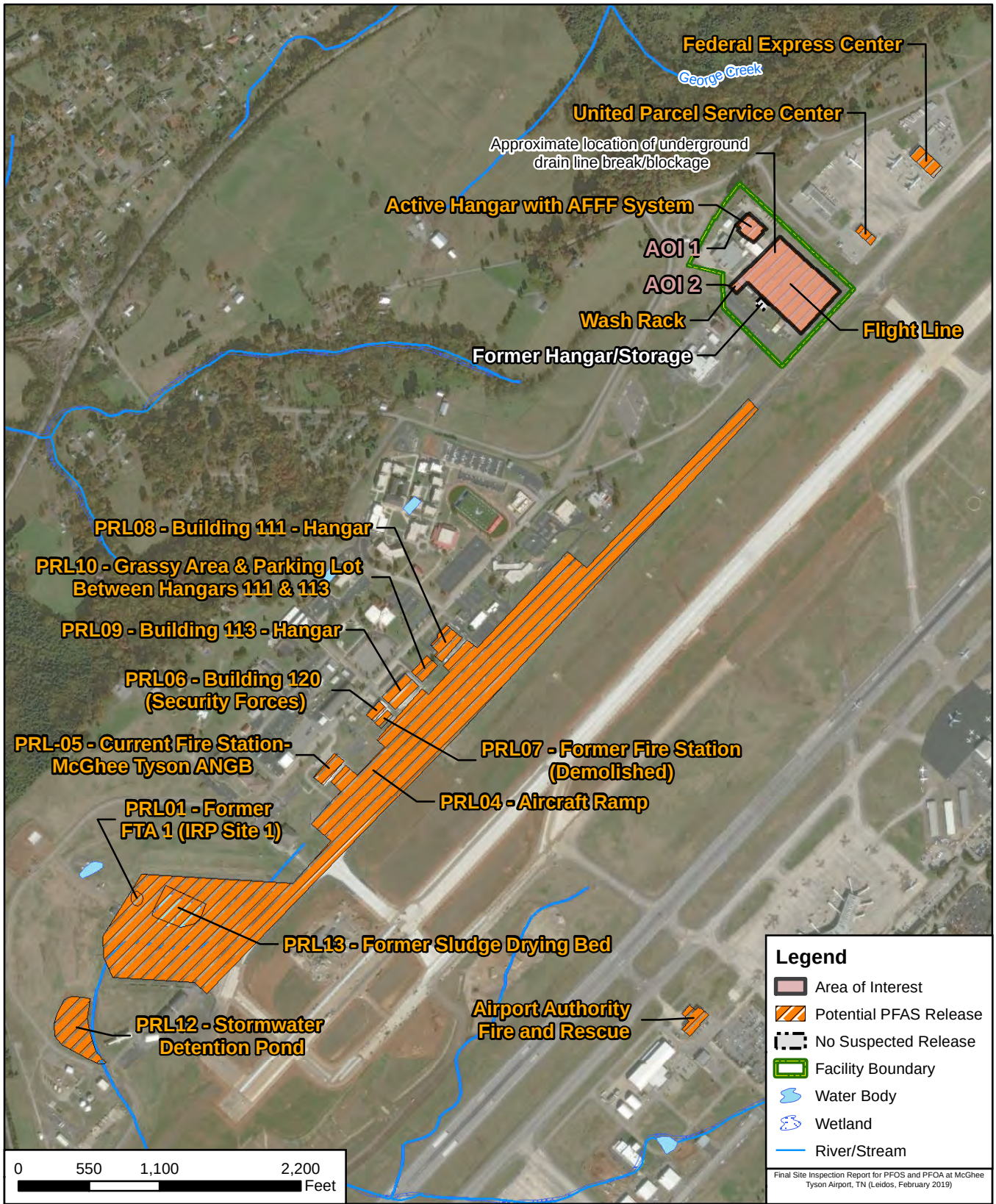
Two AOIs related to potential PFAS releases were identified at AASF #2 (also referred to as the "facility") based on PA data. The AOIs are shown on **Figure ES-1** and described in **Table ES-1** below.

Table ES-1 AOI at AASF #2 TNARNG

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Active Hangar	TNARNG	2008 - present
AOI 2	Flight Line and Wash Rack	TNARNG	1978 - present

Based on the potential PFAS releases at AOI 1 and 2, there is potential for exposure to PFAS contamination in media at AASF #2. The preliminary CSM is shown on **Figure ES-2**. ARNG will evaluate the need for an SI based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources. The Tennessee Air National Guard is investigating documented PFAS releases at their adjacent property (Leidos, 2019).

Based on the US Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, no PFAS were detected in a public water system above the USEPA Health Advisory (HA) within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today



Final Site Inspection Report for PFOS and PFOA at McGhee Tyson Airport, TN (Leidos, February 2019)

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
REVISED	3/20/2020	GIS BY	MS	3/20/2020
SCALE	1:13,200	CHK BY	SS	3/20/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/20/2020

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Summary of Findings

AECOM
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Figure ES-1

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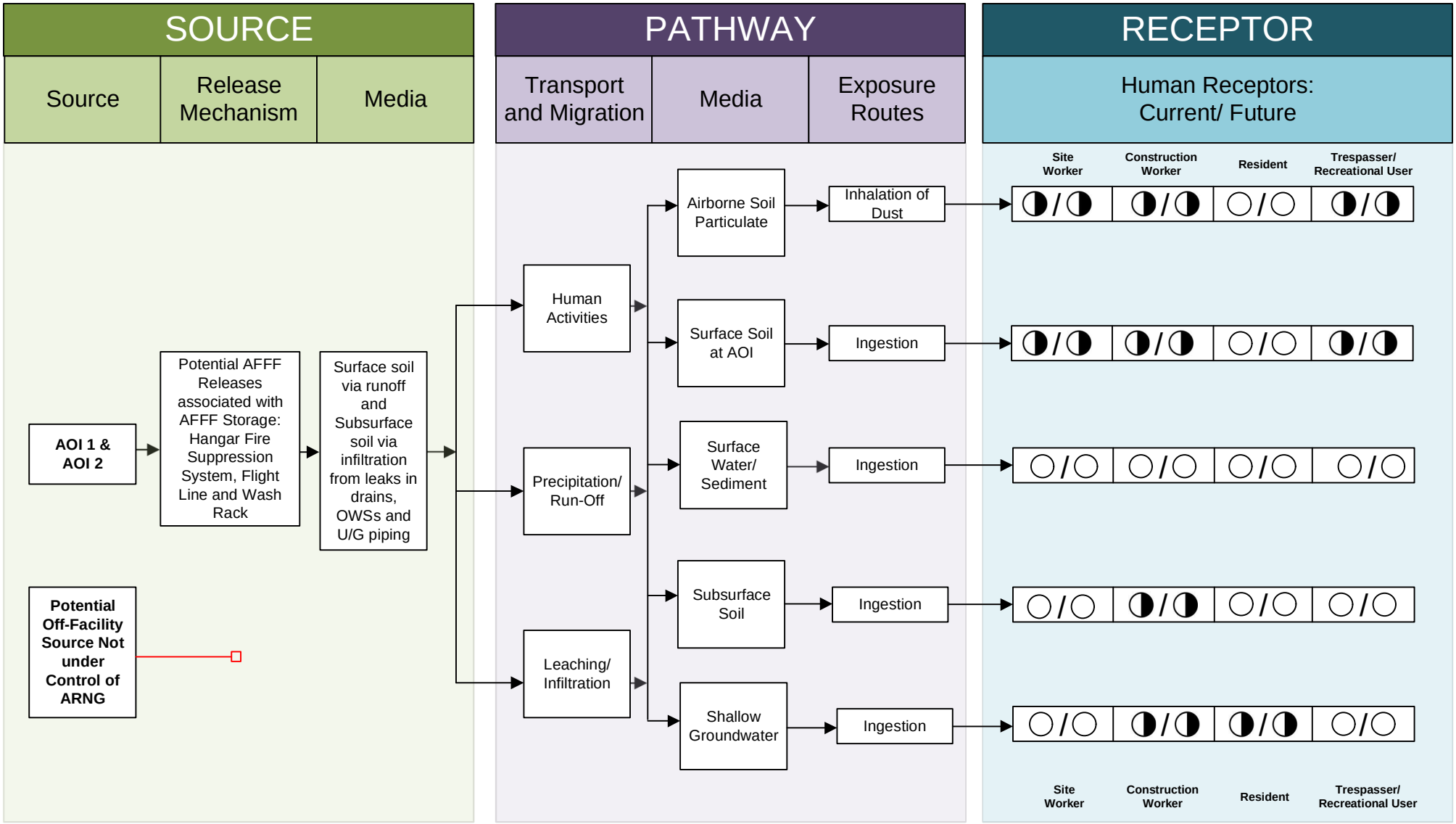


LEGEND

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

Figure ES-2
Conceptual Site Model
AOI 1 & AOI 2 Potential AFFF Releases from AFFF Storage, TNARNG
AASF #2, Louisville TN

1. Introduction

1.1 Authority and Purpose

The Army National Guard (ARNG) G9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) at Impacted Sites at ARNG Facilities Nationwide. This work is supported by the United States (US) Army Corps of Engineers (USACE) Baltimore District and their contractor AECOM Technical Services, Inc. (AECOM) 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), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, 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 will vary. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisory (HA) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined.

This report presents findings of a PA for PFAS-containing materials at Army Aviation Support Facility (AASF) #2 (also referred to as the “facility”) in Louisville, Blount County, Tennessee, 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 Army requirements and guidance.

This PA documents the locations where PFAS may have been stored or released into the environment at AASF #2. 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 available administrative record documents and Environmental Data Resources, Inc. (EDR™) report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a 1-day site visit on 24 May 2018 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used or disposed;
- Interviewed personnel during the site visit associated with AASF #2 activities including the AASF #2 Fire Marshall/ Chief Warrant Officer 3 (CW3), AASF #2 Safety Officer/ CW3, and AASF #2 Facility Manager/ Sergeant First Class;

- In November 2018, interviewed a Shift Captain with the Metropolitan Knoxville (McGhee Tyson) Airport Authority Aircraft Rescue and Firefighting Facility (with the Airport Authority site since 1994); and,
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment 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 potential PFAS releases at the facility identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of potential AFFF release at the facility, specifically in response to emergency situations
- **Section 5** – **Adjacent Off-Site Sources:** describes sources of potential PFAS release adjacent to the facility that are not under the control of ARNG
- **Section 6** – **Preliminary 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

AASF #2 is in northern Blount County Tennessee, approximately 3 miles east of Louisville, and approximately 10 miles south of Knoxville. As shown on **Figure 1-1**, the facility, encompassing 21.19 acres, is situated at the northwest corner of McGhee Tyson Municipal Airport (the airport). As such, the property is owned by the City of Knoxville, leased to the US Air Force, and licensed for Tennessee ARNG (TNARNG) use.

The facility is home to an ARNG medical evacuation unit. To the southwest of AASF #2 is the McGhee Tyson Air National Guard Base (ANGB). The airport terminal building, Airport Authority Aircraft Rescue and Firefighting Facility (Airport Fire and Rescue), and maintenance hangars, as well as the fixed base operator and other commercial facilities, are situated on the south side of the airport, southeast of AASF #2.

The airport opened with commercial airline service in 1937. From 1942 to 1945, the US Navy controlled airport operations. In 1952, the McGhee Tyson Air Force Base opened at the site. The Base closed, and facilities turned over to the Tennessee Air National Guard (TNANG) in 1960 (McGhee Tyson Airport, 2018). Contract listings and expiration dates for all real property agreements for AASF #2 are included in **Appendix A**.

1.5 Facility Environmental Setting

AASF #2 lies within the Valley and Ridge physiographic region of Tennessee. The Valley and Ridge is a low land that has alternating linear ridges and valleys oriented southwest to northeast and parallel to the Great Smoky Mountains (Elder, et al., 1959). The topography at AASF #2 is flat to gently rolling; elevation ranges from 992 to 1,015 feet mean sea level.

1.5.1 Geology

AASF #2 is underlain primarily by Dewey silty clay and loam and Linside silt loam soils, which derived from the carbonate bedrock (USDA, 2019). The bedrock is Cambrian/Ordovician age Knox Group (**Figure 1-2**), which is primarily composed of limestone and dolomite. The Chepultepec dolomite is the primary bedrock type. The Chepultepec dolomite is lower Ordovician in age and is derived from the larger Knox Group. The dolomite is characterized as light-gray to light olive-gray and mostly fine-grained. White, oolitic, chert nodules are present in some beds (Hardeman et al, 1966). The Ordovician Knox Group carbonates underneath the facility are weathered along bedding planes and joints. Weathering has produced an undulated and pinnacled (karst) bedrock surface (USGS, 2018).

The geology throughout the Valley and Ridge consists of folds, faults, and structural deformations associated with regional compressional forces associated with Appalachian Orogeny that occurred in the late Paleozoic era. The airport is located in an area between two major regional thrust faults. This fault block is bounded to the northwest by the Chestuee fault and to the southeast by the Dumplin Valley fault (Hardeman et al, 1966).

1.5.2 Hydrogeology

Groundwater recharge in the immediate vicinity of the facility likely occurs by infiltration of precipitation through the overlying soil. The majority of the area is overlain by impervious materials, such as asphalt and concrete. Shallow groundwater gradient likely follows the topographic gradient, which is northwest. Potable water for the facility and surrounding area is supplied by City of Alcoa, with its intake downstream of the facility on the Little River, approximately 4 miles northeast (Blount County Regional Planning Commission, 2003).

A query of Tennessee Department of Environment and Conservation's water well database was performed by EDR™, with results included in **Appendix A**. Using additional online resources, such as state and local GIS databases, wells were researched to a 4-mile radius of the facility. A total of 13 water-supply wells (eight residential, two agricultural, and three other uses) were identified within 1 mile of AASF #2 (note: 11 wells are grouped on **Figure 1-2** at a single location northwest of the facility). Wells include a 300-foot deep geothermal well at AASF #2. EDR™ reported well depths range from 125 to 570 feet.

Based on the USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the HA within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.

1.5.3 Hydrology

As shown on **Figure 1-3**, surface water at AASF# 2 drains into two watersheds: the Roddy Branch-Little River Watershed, which drains the majority of AASF #2, and the Lackey Creek Watershed. The Middle Fort Loudoun Lake Watershed drains the area north of the AASF #2 facility. Little River is located approximately 3 miles to the east of AASF #2 and drains into the Tennessee River at Fort Loudoun Lake. The Lackey Creek Watershed drains the westernmost portion of AASF #2. The Lackey Creek Watershed drains directly into the Tennessee River (Fort Loudoun Lake) (Blount County Regional Planning Commission, 2003).

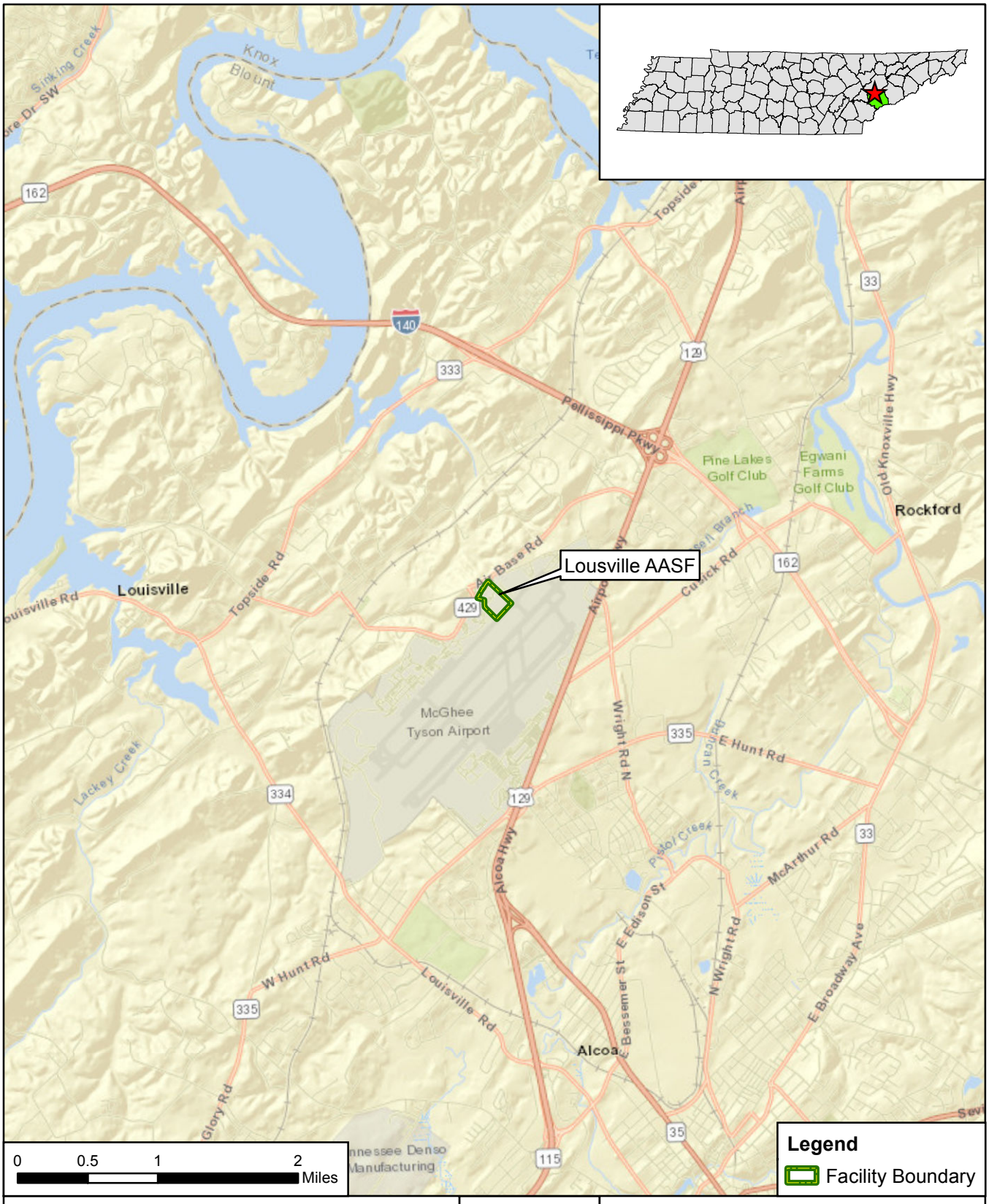
Local storm water surface runoff at AASF #2, in the vicinity of the flight line, flows south and east toward the runway and, on the northwest side of the hangar and office buildings, drainage flows north and west to the parking lot. Wastewater at AASF #2 is conveyed through oil water separators (OWSs) and discharged to the Town of Maryville wastewater system.

1.5.4 Climate

Data from the airport indicate that a mean annual temperature of 59.2 degrees Fahrenheit (ºF) (National Oceanic and Atmospheric Administration, 2018). The warmest months are July and August, with normal daily mean temperatures of 78.4 ºF and 77.8 ºF, respectively. January is the coldest month, with a mean temperature of 38.2 ºF. The average reported annual precipitation at the airport is 47.86 inches. Rainfall is heaviest during winter, with a seasonal average of 13.08 inches; September and October are the driest months. Average monthly precipitation ranges from 2.51 inches in October to 5.08 inches in July.

1.5.5 Current and Future Land Use

Land use south and east of AASF #2 is commercial/industrial (airport and associated services) and military, with surrounding residential, agricultural, and commercial parcels to the north and west of AASF #2. Land use in the area is not anticipated to change in the future.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
REVISED	4/23/2019	GIS BY	MS	4/23/2019
SCALE	1:63,360	CHK BY	SS	4/23/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	4/23/2019

Facility Location

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Figure 1-1

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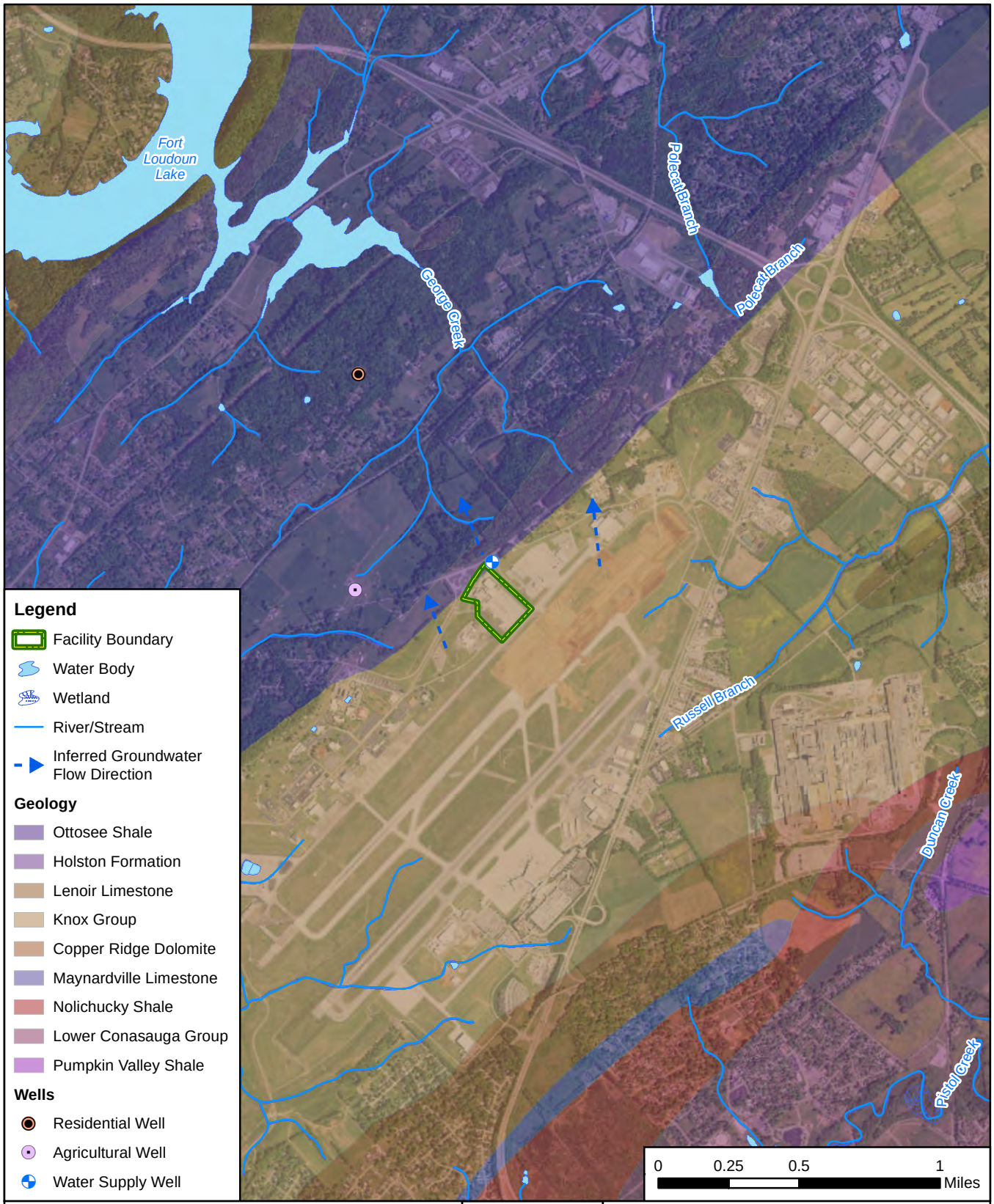

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NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
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SCALE	1:31,680	CHK BY	SS	4/23/2019
Base Map: National Agricultural Imagery Program, 2016		PM	RG	4/23/2019

Groundwater Features

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Figure 1-2

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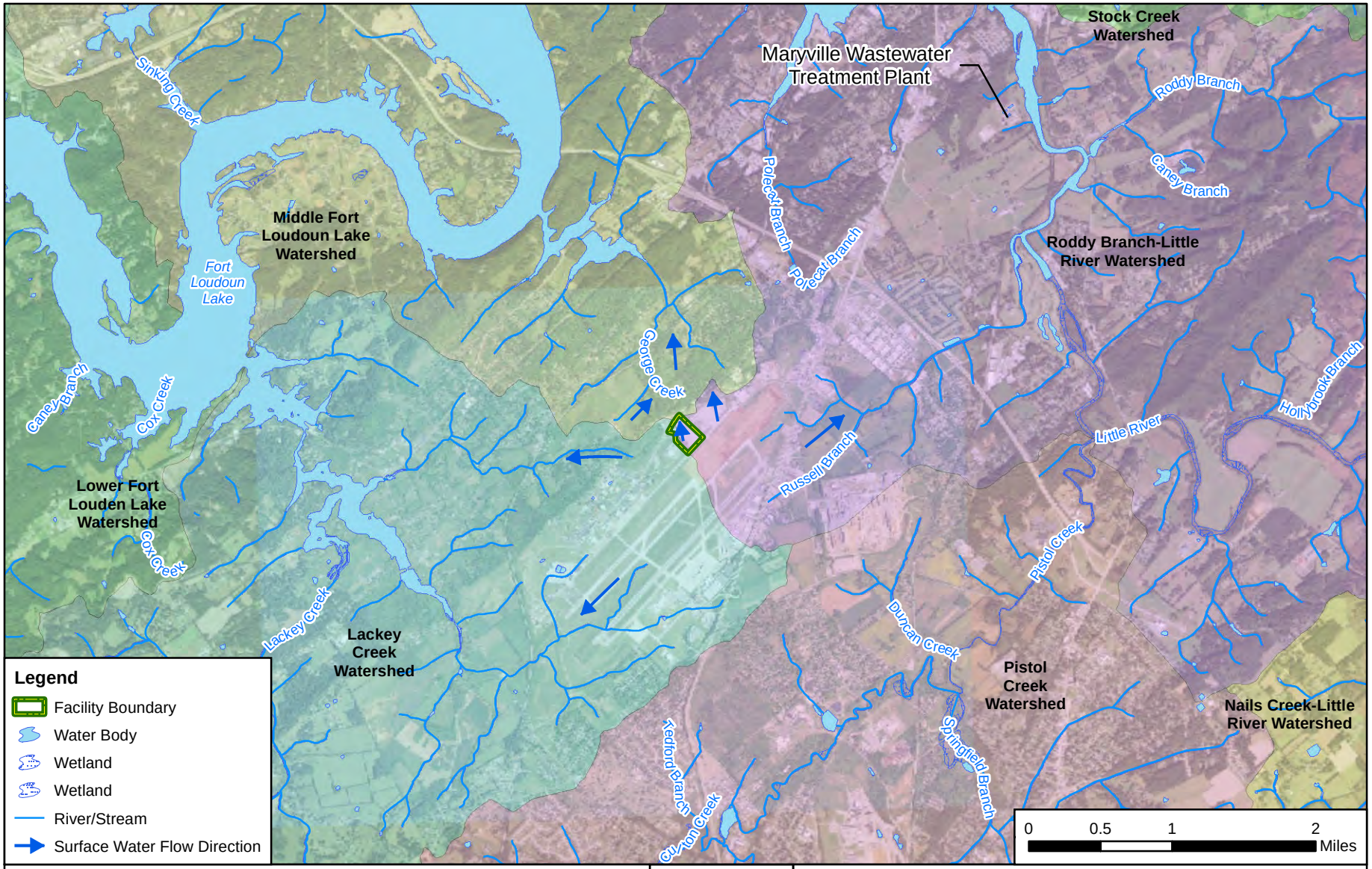

CLIENT	ARNG			
PROJECT	Preliminary Assessment for PFAS at Louisville AASF, TN			
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SCALE	1:63,360	CHK BY	SS	4/23/2019
Base Map: National Agricultural Imagery Program, 2016		PM	RG	4/23/2019

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Surface Water Features

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Figure 1-3

Q:\Projects\ENV\GEARS\GEO\MAES 2012 Unrestricted\Fort Meade\E. Data Management\GIS\MXDs\Chisholm_6th\March2017\ Fig_1-3_Louisville_AASF_Surface_Water_Features.mxd

2. Fire Training Areas

No FTAs were identified at AASF#2 during the PA. The AASF #2 Fire Marshal (on site since 2011) noted the possibility of a US Air Force-operated FTA on the airport property that is discussed in **Section 5**.

3. Non-Fire Training Areas

Non-FTAs at AASF #2 were investigated during the PA. Based on interviews of personnel who have been onsite since as early as 1995, no known releases of AFFF have occurred at these areas. A description of each non-FTA is presented below. Non-FTAs are shown on **Figure 3-1**, with photographs in **Appendix C**. Other facilities at AASF #2, including offices in the Readiness Center and adjoining building, were not assessed, as AASF #2 personnel onsite since 1995 noted no history of AFFF storage in these areas.

3.1 Active Hangar

The active AASF #2 hangar is located on the northwestern end of the facility. The hangar was reported to have been constructed in 2008-2009, and it is used for maintenance, storage, and training purposes. The hangar is equipped with an AFFF fire suppression system that was installed when the hangar was constructed. The system is charged but has never been deployed during training or in an emergency situation. The system is fed by a 500-gallon AFFF above ground storage tank (AST) that is housed in a separate storage room, located in the northeast corner of the building, and accessed from the north building exterior. With the exception of annual testing conducted by a service contractor, where an AFFF product sample is collected from the AST, the fire suppression system has never undergone testing, and the associated AST has never required refilling. One or more of the facilities' eight mobile AFFF carts are stored in the hangar. In the event of an emergency, the mobile carts would be engaged before the hangar fire suppression system. The hangar and AST storage room are equipped with floor drains connected to an OWS. Waste liquids are conveyed from the OWS to the airport wastewater collection system. To the best of their knowledge, AASF #2 personnel report no releases of AFFF have occurred at the active hangar. The AFFF system and mobile carts showed no evidence of corrosion or signs of leakage during the site visit. The geographic coordinates are 35°49'17.78"N; 83°59'33.51"W.

3.2 Flight Line

The AASF #2 flight line is located to the south and east of the active hangar, occupying the majority of the AASF #2 facility. The concrete paved flight line is used for staging helicopters. Several of the facilities' eight mobile AFFF carts are stored on the flight line. To the best of their knowledge, AASF #2 personnel report no releases of AFFF have occurred on the flight line. While no releases are suspected, facility personnel reported the presence of a break/blockage in an underground drain pipe located under the flight line, in a discrete area shown on **Figure 3-1**. The damage has been remotely inspected but not repaired due to the cost associated with replacing the overlying flight line concrete pad. The geographic coordinates are 35°49'12.99"N; 83°59'29.31"W.

3.3 Wash Rack

The wash rack is located south of the flight line and is used to clean aircraft and equipment. The wash rack is constructed with a concrete pad, tie downs to secure equipment, and drains connected to an OWS that discharges to the airport wastewater collection system. One or more of the facilities' eight mobile AFFF carts are stored at the wash rack. To the best of their knowledge, AASF #2 personnel reported no releases of AFFF have occurred at the wash rack. The geographic coordinates for the wash rack are 35°49'13.35"N; 83°59'34.92"W.

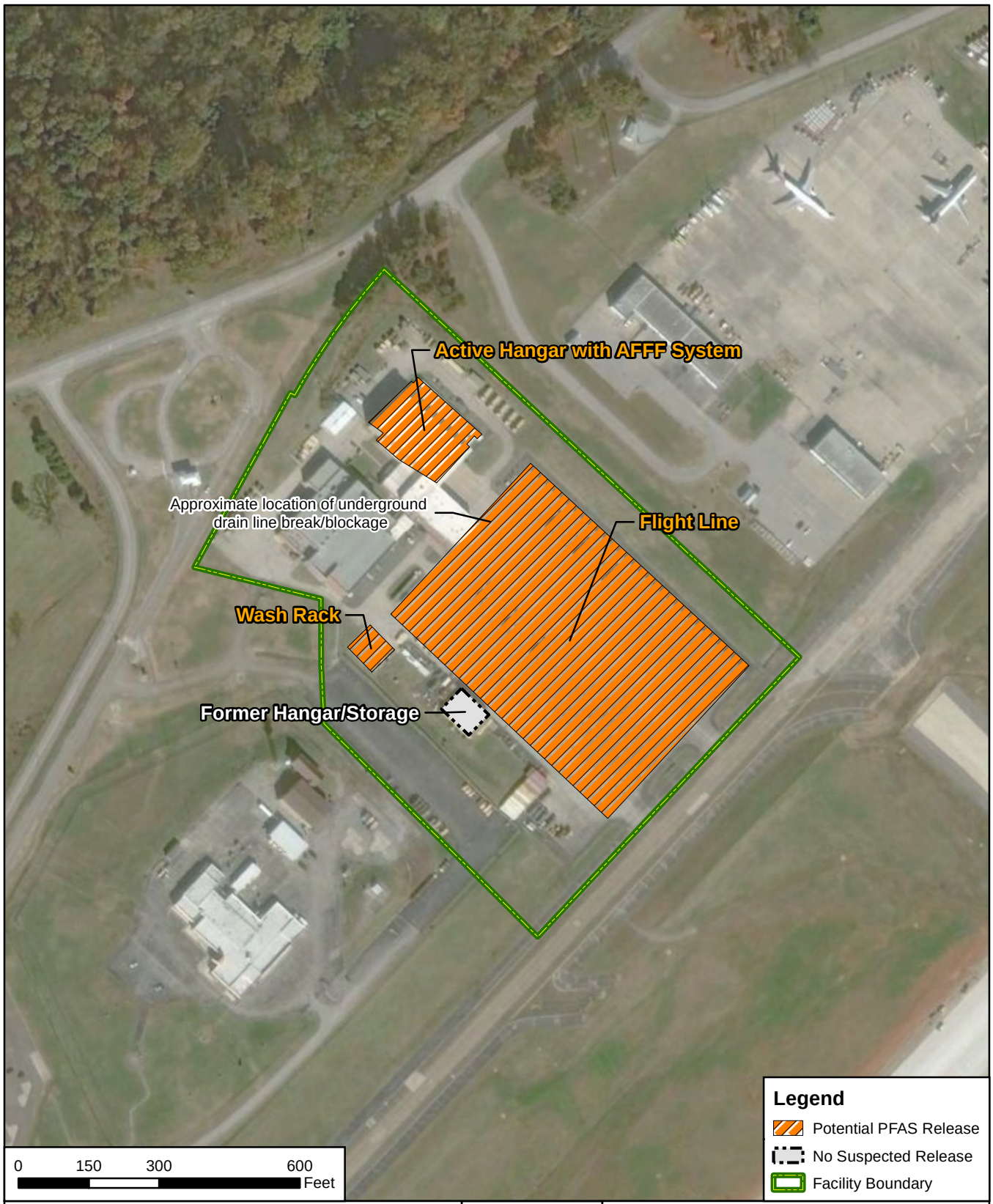
3.4 Former Hangar/Storage

The former hangar is located southeast of the active hangar and flight line. Personnel reported the former hangar was constructed in approximately 1978 and is currently used for storage. The former hangar has never been equipped with a fire suppression system. In an emergency, wall-mounted fire extinguishers would be deployed. To the best of their knowledge, AASF #2 personnel reported no releases of AFFF have occurred at the former hangar. The geographic coordinates are 35°49'11.80"N; 83°59'32.76"W.

3.5 Landfills

During PA interviews, AASF #2 personnel confirmed that there are no current or former landfills at the facility.

Landfills are not usually a primary release area of PFAS, but materials disposed of in landfills may create a secondary source of contamination. Such materials, to name a few, may include sludge from a wastewater treatment plant (WWTP) that processes PFAS-laden water, used AFFF storage containers, or products associated with waterproofing uniforms or boots.



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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/20/2020

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Non-Fire Training Areas

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Figure 3-1

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4. Emergency Response Areas

No emergency response areas at the facility were identified during the PA. As presented in **Section 5**, facility personnel reported a small aircraft crash at the airport.

5. Adjacent Sources

Based on site visit observations, interviews and review of available reports including Leidos (2019), numerous potential sources of PFAS are located in the vicinity of AASF #2. These facilities are described below and shown on **Figure 5-1**.

5.1 Airport Authority Aircraft Rescue and Firefighting Facility

The Airport Authority Fire and Rescue Facility is located on the east side of the airport, near the main terminal building. A facility Shift Captain who has worked in fire and rescue operations for the Authority since 1998 was interviewed during the PA. The Shift Captain identified three AFFF storage locations under the Airport Authority's control, including the new facility, which opened in 2009, and two aircraft maintenance hangars (unknown construction dates). Both hangars are equipped with AFFF fire suppression systems. The interviewee noted that the bladders of the AFFF tanks had been replaced in recent years. During such tank maintenance, AFFF from the storage tanks was removed, containerized, then used to refill the tanks after the work was completed. The interviewee reported a combined storage of approximately 11,000 gallons of 3 percent AFFF. Further details regarding the Authority's procurement of AFFF, including the supplier/manufacturer and the hangar fire suppression system specifications and maintenance, was not readily available. Based on the Shift Captain's 24-year tenure at the airport and to the best of his knowledge, there have been no AFFF releases associated with the hangar fire suppression systems.

Two Airport Authority firetrucks, each equipped with 205-gallon AFFF tanks, are parked inside the facility garage bays. Two 265-gallon AFFF storage totes, also stored inside the facility garage bays, are used to refill the two firetrucks. The firetrucks are equipped with pumps that draw AFFF from the storage totes directly. The garage bays are equipped with floor drains, which facility personnel believed to convey wastes to the airport wastewater treatment collection system. To the best of the Shift Captain's knowledge during his 24-year tenure, no leaks from the firetruck AFFF tanks or AFFF spills have occurred. When nozzle testing is conducted (location[s] not specified), AFFF is drained from the truck lines and containerized; then the lines are filled with dish soap used for testing purposes. Following the testing, the dish soap is removed, and containerized AFFF returned to storage.

The Airport Authority does not operate an FTA, and AFFF is never used for training purposes. Federal Aviation Administration (FAA) drills (emergency response readiness demonstrations) are conducted every three years, with the most recent drill conducted in October 2018. During the drill, the FAA inspector places a traffic cone in the grass along a taxiway, and responders are required to demonstrate deployment of foam to the traffic cone. AFFF released during the drill is allowed to infiltrate at the location specified by the FAA inspector, which varies for each drill.

The Airport Authority has primary responsibility for responding to commercial aircraft emergencies; the ANGB fire station has responsibility for responding to military aircraft emergencies. Both entities provide secondary support to each other during emergencies. The Shift Captain has no knowledge of any areas at the airport used for fire training

Based on his 24-year tenure and to the best of his knowledge, with the exception of the FAA drills, the Airport Authority Fire and Rescue Shift Captain reported no leaks, spills, or other AFFF releases at the airport. The Shift Captain further reported no crashes or other emergencies at the airport where foam has been deployed. During the PA interviews, the AASF #2 Safety Officer recalled a small aircraft crash at the airport that possibly occurred in 1997 but did not recall the location, or whether AFFF were used to fight a fire related to the crash. An internet search identified a report of a 1992 crash at the Airport (included in **Appendix A**); however, no information

was available regarding the associated emergency response, including potential use of AFFF. The AASF #2 Safety Officer did confirm that all the old runways have since been excavated. Aerial photographs dated March 2016-March 2017 show significant ground disturbance where the westernmost runways had been excavated (USDA, 2019). The final disposition of the excavated material is unknown.

5.2 Air National Guard Base

The McGhee Tyson ANGB is southwest of AASF #2. The ANG recently conducted a PFAS PA and identified 13 Areas of Concern at the installation, with ten potential release locations (PRLs) (shown on **Figure 5-1**) advancing to the SI phase (BB&E, 2016). SI results indicate exceedances of screening criteria for PFOS and PFOA in soil, groundwater, and surface water media. Exceedances of the 70 micrograms per liter health advisory level were detected in surface water and groundwater samples collected downgradient of the PRLs and along the installation boundary. These results indicated the potential for off-Base migration in surface water and groundwater. The SI findings recommended further investigation at all ten PRLs to determine the nature and extent of PFAS/PFOA-impacted groundwater and surface water, including groundwater investigation downgradient of the installation boundary, to the south southwest (Leidos, 2019). The PA and SI reports are included in **Appendix A.** Based on the groundwater gradient reported in the SI, AASF #2 is upgradient and therefore unlikely to be affected by PFAS-impacted environmental media at the ANGB.

5.3 United Parcel Service Facility

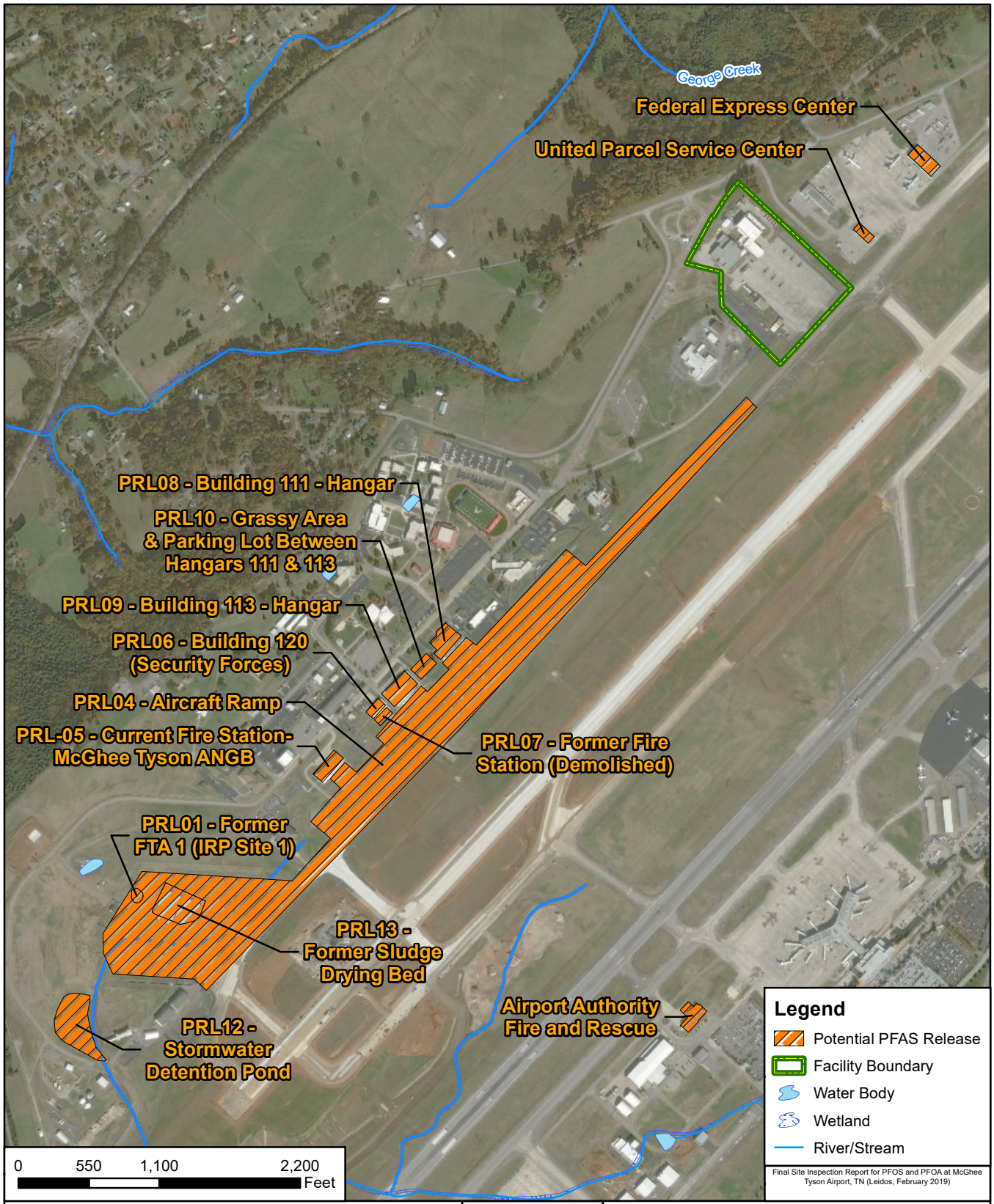
United Parcel Service (UPS) operates an air freight transport facility adjacent to and north of AASF #2. Use and storage of AFFF at the UPS facility was not assessed during this PA.

5.4 Federal Express Facility

Federal Express operates an air freight transport facility adjacent to and north of the UPS facility. Use and storage of AFFF at the Federal Express facility was not assessed during this PA.

5.5 Wastewater Treatment Plant

The City of Mayville operates a WWTP on Wheeler Road, approximately 3 miles northeast of AASF #2.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
REVISED	2/27/2020	GIS BY	MS	2/27/2020
SCALE	1:13,200	CHK BY	SS	2/27/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	2/27/2020

N

Adjacent Sources

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, two AOIs were identified at AASF #2: AOI 1 Active Hangar and AOI 2 Flight Line and Wash Rack. The AOIs are shown on **Figure 6-1**. The following sections describes the CSM components and the specific preliminary CSMs developed for AOIs 1 and 2. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (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 are sparse and continue to be the subject of PFAS toxicological study. Receptors for AASF #2 include site workers, construction workers and off-facility residents. The preliminary CSM for AASF #2 indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1 Active Hangar

AOI 1 is the Active Hangar which contains an AFFF fire suppression system. While AFFF is stored in the hangar, no releases have been reported.

If AFFF were to be released in the hangar: flow could migrate outside the building and drain to adjacent grassy areas; and, infiltrate downward to the subsurface from surface soil outside the building or through floor cracks/drains inside the building. PFAS are water soluble and can migrate readily from soil to groundwater via leaching Groundwater is anticipated to flow northwest. It is possible that PFAS could have migrated to water wells identified within 1 mile of the facility boundaries. Reported well depths range from approximately 125 to 570 feet bgs. Wells located downgradient of the facility are classified as residential, agricultural, and other/unknown based on information in the EDR^{TM} report (**Appendix A**).

The preliminary CSM for AOI 1 is shown on **Figure 6-2**. Potential PFAS exposure pathways resulting from releases at AOI 1 are described in **Table 6-1**:

Table 6-2: Exposure Pathways at AOI 1

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to site workers, construction workers and trespassers via ingestion or inhalation of dust
Subsurface Soil	Considered a potentially complete pathway to construction workers via ingestion or inhalation of dust
Groundwater	Considered a potentially complete pathway to construction workers and off-facility users of groundwater for potable water (residents and workers) via ingestion

6.2 AOI 2 Flight Line and Wash Rack

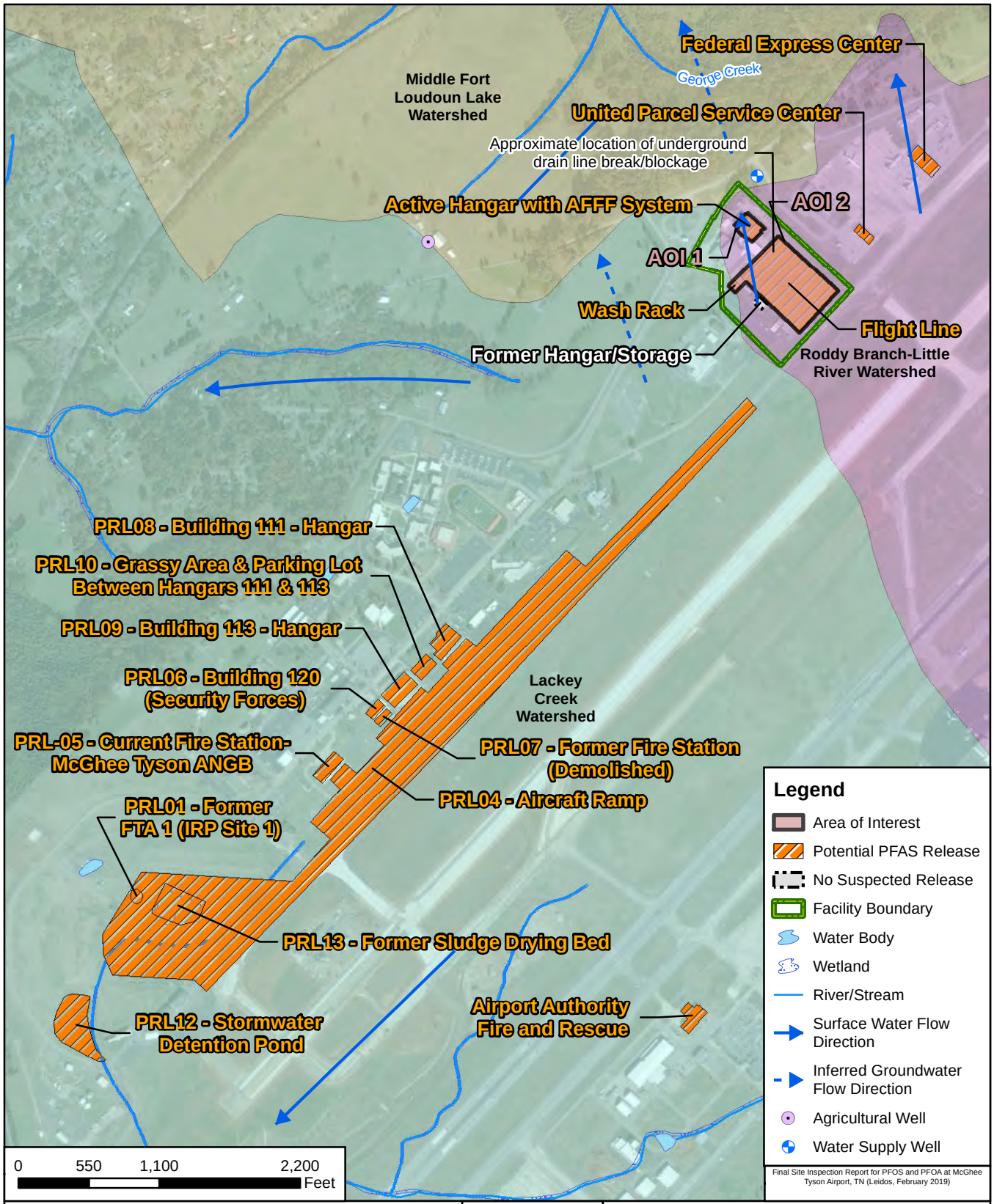
AOI 2 is associated with mobile cart storage on the flight line and wash rack. While mobile carts are staged in these areas, no releases have been reported. In the event of any PFAS releases on these paved areas, flow could migrate to adjacent unpaved areas to surface soil. AFFF may have also infiltrated directly to subsurface soil, or via cracks in pavement or piping or joints between

areas that are paved with different materials. PFAS are water soluble and can migrate readily from soil to groundwater via leaching.

The preliminary CSM for AOI 2 is presented on **Figure 6-3.** Potential PFAS exposure pathways resulting from releases at AOI 2 are described in **Table 6-2**:

Table 6-2: Exposure Pathways at AOI 2

Pathway	Receptor
Surface Soil	Considered a potentially complete pathway to site workers, construction workers and trespassers via ingestion or inhalation of dust
Subsurface Soil	Considered a potentially complete pathway to construction workers via ingestion or inhalation of dust
Groundwater	Considered a potentially complete pathway to construction workers and off-facility users of groundwater for potable water (residents and workers) via ingestion



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
REVISED	3/20/2020	GIS BY	MS	3/20/2020
SCALE	1:13,200	CHK BY	SS	3/20/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/20/2020

N

Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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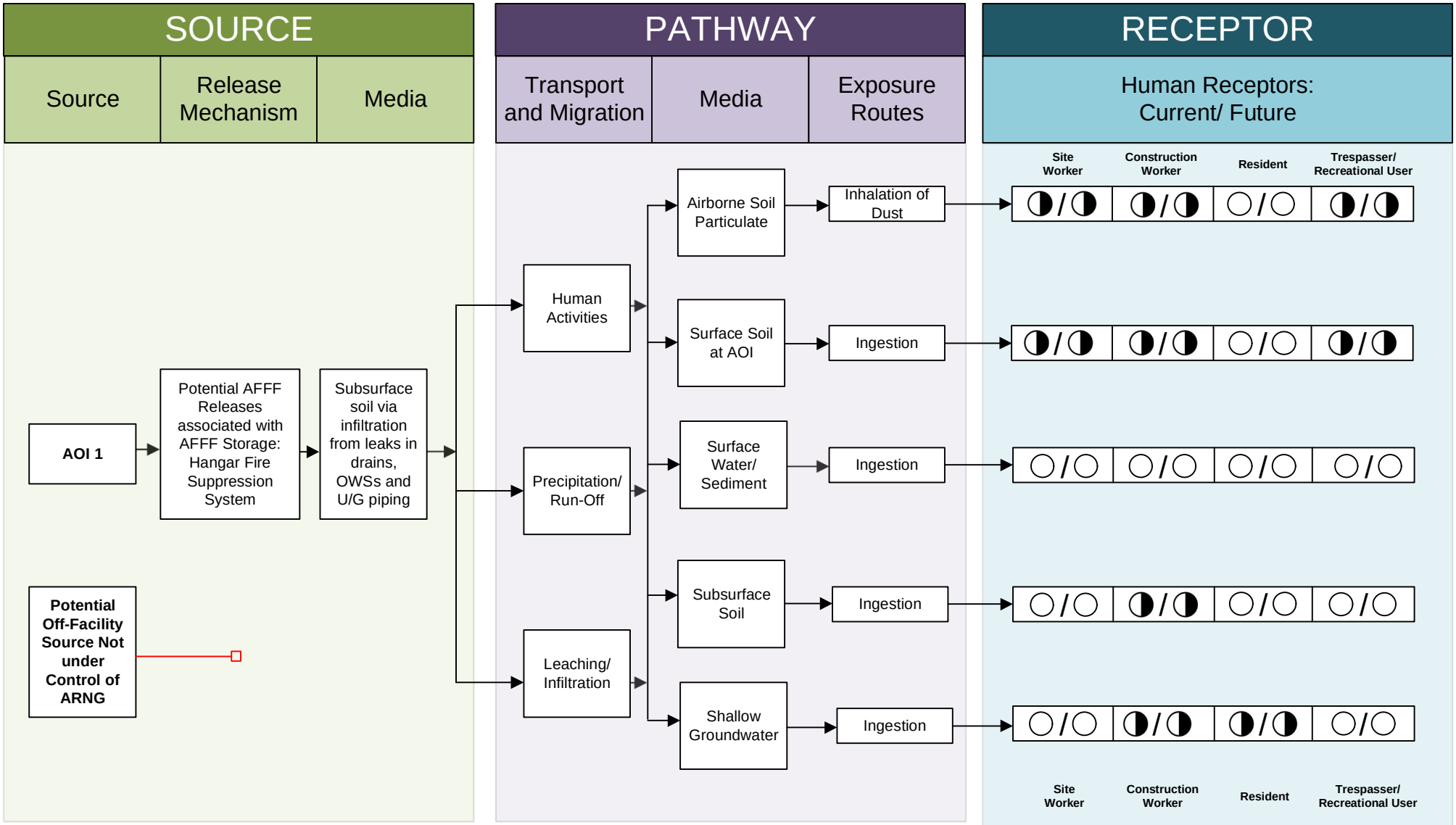
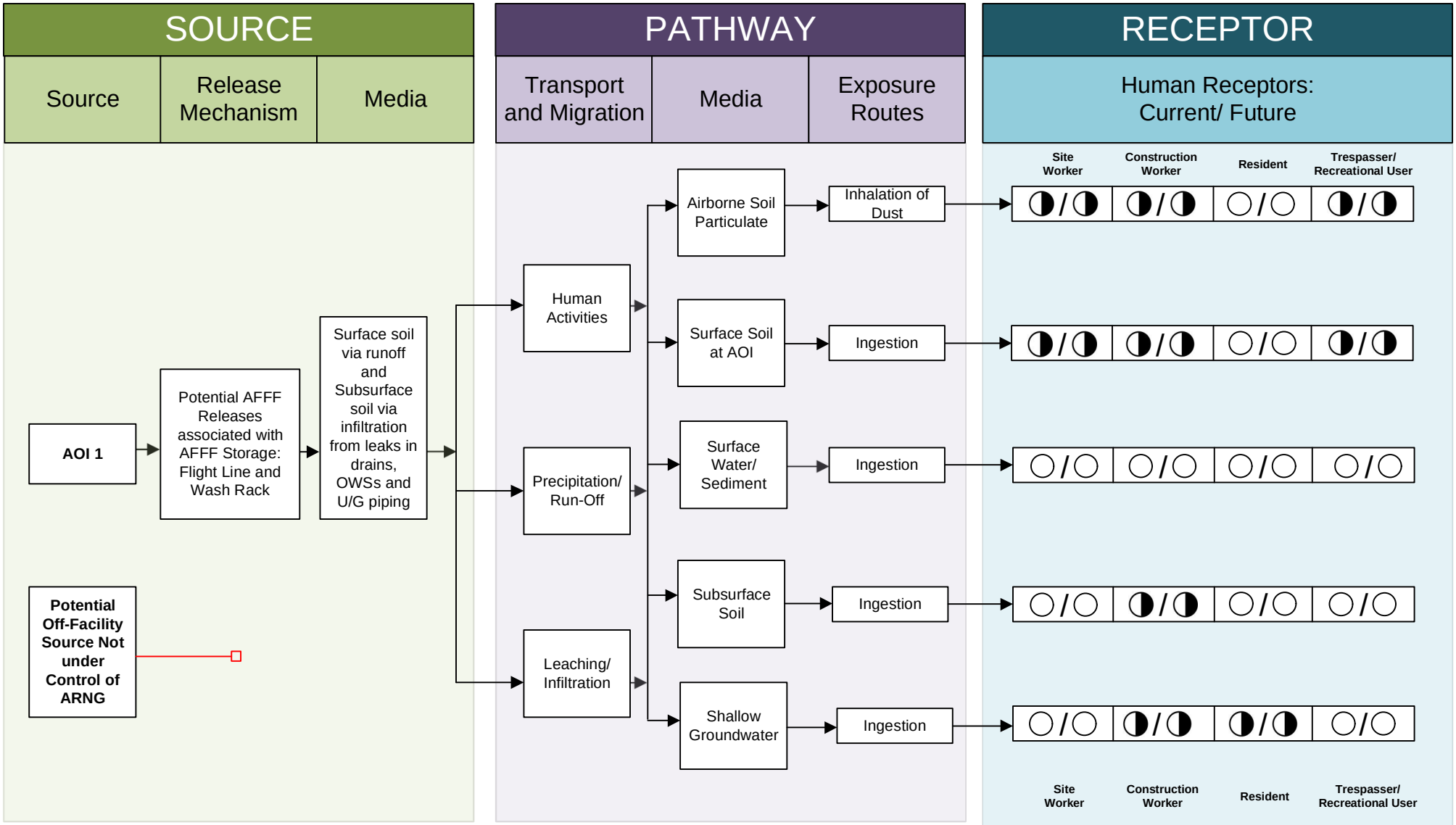


LEGEND

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

Figure 6-2
Conceptual Site Model
AOI 1 Potential AFFF Releases from AFFF Storage: Hangar Fire Suppression System, TNARNG AASF #2, Louisville TN



LEGEND

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

Figure 6-3
Conceptual Site Model
AOI 2 Potential AFFF Releases from AFFF Storage: Flight Line and Wash Rack, TNARNG AASF #2, Louisville TN

7. Conclusions

This report presents a summary of available information gathered during the PA with respect to the use and storage of AFFF and other PFAS-related activities at AASF#2. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Two AOIs related to potential PFAS releases were identified at AASF #2 during the PA (**Figure 7-1**) and is described in **Table 7-1** below.

Table 7-1 AOI at AASF #2 TNARNG

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Active Hangar	TNARNG	2008 - present
AOI 2	Flight Line and Wash Rack	TNARNG	1978 - present

7.2 Uncertainties

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 or available during the PA with respect to the use of PFAS in training, firefighting, other non-traditional activities, or 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 in the case of the reported aircraft crash, information 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 AASF #2 began operations (1978 – present), and a reliance on personal recollection. 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, current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected.

Table 7-2 summarizes the uncertainties associated with the PA:

Table 7-2 Sources of Uncertainty

Area of Interest	Source of Uncertainty
General	Information about the history of the site, including the storage and potential release of PFAS-containing products, or adjacent areas prior to 1995 (earliest tenure of interviewed staff) was not available.
Adjacent Sources	No information is available regarding potential PFAS releases associated with the following: undocumented fire training by other Airport tenants (with the exception of training documented in the TNANG SI report (Leidos, 2019); FAA fire response demonstrations; and a historical aircraft crash. The PA did not assess potential for releases that may have occurred at neighboring commercial tenant facilities, including UPS and Federal Express, north and upgradient of AASF #2.

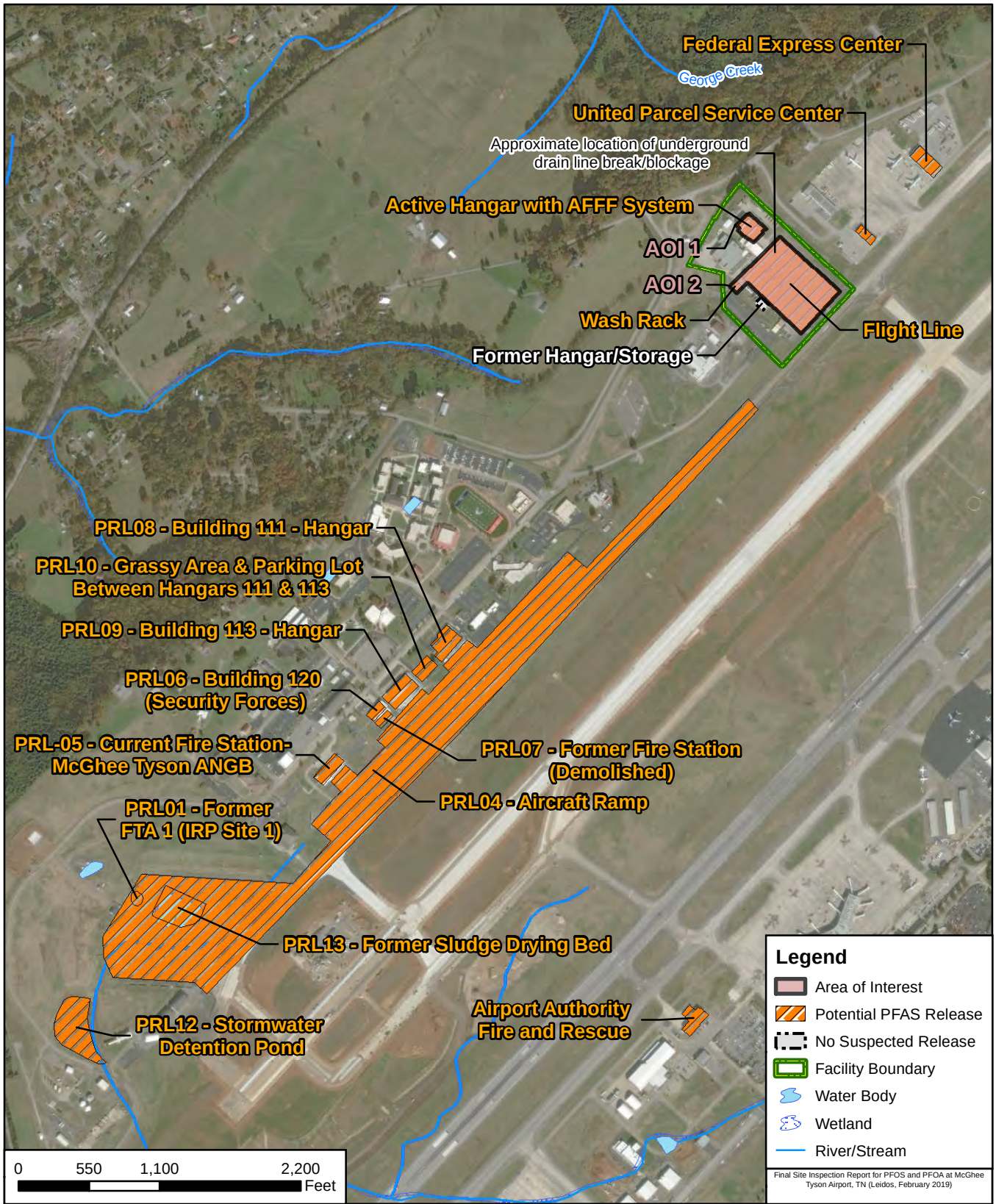
7.3 Potential Future Actions

Interviews and records (covering 1995 to present) indicate that current or former ARNG activities have a potential for PFAS releases at the AOIs identified during the PA. Based on the CSM developed for these AOIs, there is potential for receptors to be exposed to PFAS contamination in soil and groundwater at the AOIs. **Table 7-3** summarizes the rationale used to determine if the AOIs should be considered for further investigation under the CERCLA process and undergo an SI.

ARNG will evaluate the need for an SI at AOI 1 and AOI 2 at AASF #2 based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources. The TN ANG is investigating documented PFAS releases at their adjacent property (Leidos, 2019).

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Active Hangar	Hangar with AFFF fire suppression system and storage	While no PFAS releases have been documented at AASF #2, storage of AFFF represents a potential for PFAS release.	Proceed to an SI, focus on soil and groundwater.
AOI 2 Flight Line and Wash Rack	Cart storage on the flight line and wash rack	While no PFAS releases have been documented at AASF #2, storage of AFFF represents a potential for PFAS release.	Proceed to an SI, focus on soil and groundwater.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Lousville AASF, TN			
REVISED	3/20/2020	GIS BY	MS	3/20/2020
SCALE	1:13,200	CHK BY	SS	3/20/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	3/20/2020

N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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8. References

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USEPA, 1991. *Guidance for Performing Preliminary Assessments under CERCLA*. EPA/540/G-91/013. September 1991.

Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for Army Aviation Support Facility#2 include:

AASF#2 Permits and Lease Information

- 1994 AASF#2 License no. DACA01-3-97-448

McGee Tyson Air National Guard Base PA and SI Reports

- Final Perfluorinated Compounds Preliminary Assessment Site Visit Report, McGhee Tyson Air National Guard Base, Louisville, TN, April 2016. Prepared by BB&E.
- Site Inspection Report for Perfluorooctane Sulfonate and Perfluorooctanoic Acid at McGhee Tyson Airport, TN, February 2019. Prepared by Leidos.

1992 Aircraft Crash Report

- Aviation Safety Network Report

Miscellaneous Data Resources

- EDR™ Radius Map Report with GeoCheck, June 2018. Louisville AASF TN, Louisville, TN 37777.

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Environmental Manager

Facility: AASF #2
Interviewer: [redacted]
Date/Time: 5/24/2018 0900

Interviewee: CW3 [redacted] **Title:** Asst Pilot / Fire Marshall **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] - Facility Mgr will I call to your ok

1. Roles or activities with the Facility/years working at the Facility.

With this unit since 1997

At AASF #2 since ~~2007~~ 2011

2. Where can I find previous facility ownership information?

Always TN ARNG

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 N
Fire Training Areas N
Firefighting (Active Fire) N
Crash N
Fire Suppression Systems (Hangers/Dining Facilities) Y ← installed but not used (constructed w/ hanga ~2008-2009) never used no training / incidents
Fire Protection at Fueling Stations carts only
Non-Technical/Recreational/ Pest Management N
Metals Plating Facility N
Waterproofing Uniforms (Laundry Facilities) N
Other

4. Fill out CSM Information worksheet with the Environmental Manager.

5. 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 the AFFF/suppression system? Do you have "As Built" drawings for the buildings?

New hangar has AFFF fire suppression sprinkler system. Never trained or tested in hangar - no released in emergency carts on flight line used and first response provided by USAF Airport Authority. No As Builts

PA Interview Questionnaire - Environmental Manager

Facility: AASF #2
Interviewer: [redacted]
Date/Time: 5/24/2016 0900

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?

currently piped to tank in storage accessed outside hangar,

7. How is AFFF procured? Do you have an inventory/procurement system that tracks use?

Never required recharge, no refill storage on site. Serviced by contractor.
AFFF ~~Foam~~ containers on site accepted by ANG on property some time ago.

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)?

unknown

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?

500 gal AST in storage accessed outside (but adj to) hangar (north corner)

10. 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?

0 No FTAs poss. USAF FTA on airport

PA Interview Questionnaire - Environmental Manager

Facility: AASF #2
Interviewer: [redacted]
Date/Time: 5/24/2016 0900

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?

Never released. If release were to occur believe it would co-mingle with airport sewer

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?

N/A

13. Did military routinely or occasionally fire train off-post? List the units that you can recall used/trained at various areas.

No

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

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

PA Interview Questionnaire - Environmental Manager

Facility: _____
Interviewer: [redacted]
Date/Time: _____

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?

5 Fuel trucks parked in lot NE of new hangar
fuel purchased from USAF as 178RNG has no
on site bulk storage

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

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?

No copies but emergency response provided
by airport and 178RNG

19. 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 treatment plants, and AFFF ponds)?

8 mobile carts along flight line, wash
rack

20. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?

No

PA Interview Questionnaire - Environmental Manager

Facility: _____
Interviewer: [redacted]
Date/Time: _____

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?

No

22. What other records might be helpful to us (environmental compliance, investigation records, admin record) and where can we find them?

No

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?

No

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.?

N/A

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?

given to FD, no records

PA Interview Questionnaire - Environmental Manager

Facility: _____
Interviewer: [redacted]
Date/Time: _____

26. Do you recommend anyone else we can interview? If so, do you have contact information for them?

Except for [redacted] No.

PA Interview Questionnaire - Other

Facility: AAFSF #2
Interviewer: [redacted]
Date/Time: 5/24/2016 0930

Interviewee: CW3 [redacted] (Test Pilot) Title: Safety Officer 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

Roles or activities with the Facility/Years working at the Facility:

Here since 2007
New Hangar since ~~196~~ 2009
Old Hangar - ask [redacted]
AFFF Never expelled - 2007 (since arriving on)

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
USAF change of mission	Use
Space Command East Communications	Procurement
	Disposition
staff 40 people in this bldg	Storage (Mixed)
	Storage (Solution)
139th ANG Refueling Wing	Inventory, Off-Spec
10 KC 135 refuelers	Containment
for end of ~~base~~	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
Floor drains in hangar, water ponded	Dining Facilities
	Vehicle Washing
Wash rack has floor drain to	Ramp Washing
Ramp slopes South / South East	Fuel Spill Washing and Fueling Stations
Never seen flooded	Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility: _____
Interviewer: [redacted]
Date/Time: _____

Small 2-seater crash in 1990s (97?)
at night may have used
but doesn't know

old runways have since been
excavated

PA Interview Questionnaire - Other

Facility: AASF
Interviewer: [redacted]
Date/Time:

Interviewee: E7 [redacted]	Can your name/role be used in the PA Report? Y or N
Title: Facility Manager	Can you recommend anyone we can interview?
Phone Number: [redacted]	Y or N
Email:	

Roles or activities with the Facility/Years working at the Facility:

Since 1995 on yearly
Active Wash Rack on north central portion of sit
& OWS on Wash Rack, valve on OWS allows cleanout
does not have history of release of AFFF
OWS serviced in February 2018 by contractor
pumped dry and cleaned well, contents disposed offsite.
Several floor drains at each hanger door, line collapsed &
water leach / evap as line damaged inspected by engineer (PAG)

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
No incidents or training where AFFF released	Use
	Procurement
Old hanger circa ~1970 no fire suppression system	Disposition
	Storage (Mixed)
	Storage (Solution)
Readiness Center bldg circa 2003-2004	Inventory, Off-Spec
	Containment
8 total mobile carts w/ AFFF. Never discharged	SOP on Filling
	Leaking Vehicles
	Nozzle and Suppression System Testing
Unit's mission changed to Blackhawk replaced in 2015	Dining Facilities
	Vehicle Washing
	Ramp Washing
	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

PA Interview Questionnaire – Fire Station

Facility: AASF#2
Interviewer: [redacted]
Date/Time: 11/9/2018

Interviewee: CPT [redacted] McGhee Tyson Airport Authority Fire and Rescue	Can your name/role be used in the PA Report? Yes Can you recommend anyone we can interview? No
Title Shift Captain	
Phone: [redacted]	
Email: [redacted]	

1. Roles or activities with the Facility/years working at the Facility.
   Shift Captain, with Airport Authority for 24 years (since 1994)

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.
   Station is adjacent to 2 aircraft maintenance hangars, current facility 10 years old

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?
   2 aircraft maintenance hangars have AFFF fire suppression systems, total approximate storage capacity of 11,000 gallons. Bladders have been replaced. No knowledge of any leaks or discharges, no emergency deployments of systems. Annual flow testing only.

4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?
   AFFF systems

5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?
   Airport Authority office procures, not familiar with inventory system

PA Interview Questionnaire – Fire Station

Facility: AASF#2
Interviewer: [redacted]
Date/Time: 11/9/2018

6. What type of AFFF has been/is being used?
AFFF is 3%, manufacturer unknown.

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?
Stored in fire station in two 265-gallon totes on pallets stored in garage bays next to two fire trucks. Two fire trucks each have 205 gallon tanks and equipped with pump system that pulls AFFF from storage totes via hose into truck tank. No knowledge of any truck leaks or spills during transfer of AFFF into trucks.

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?
See #7 above

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?
Floor drains in all hangars and fire station garage bays. Assumes any discharges would go to wastewater treatment system. No knowledge of leaks/spills during his tenure. Training recently conducted and personnel have awareness of need to capture any leaks/spills to avoid environmental release. .

10. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located?
See #7 above

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?
Nozzle testing in station conducted by draining and containerizing AFFF, refill equipment with dish soap, test nozzles, then return AFFF to equipment.

PA Interview Questionnaire – Fire Station

Facility: AASF#2
Interviewer: [redacted]
Date/Time: 11/9/2018

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 FTAs current or historical.

13. What types of fuels/flammables were used at the FTAs? N/A

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?
Every 3 years FAA drills require demonstration of simulated emergency response readiness (not live fire). Typically staged on grass adjacent to taxi/runways in areas (varied over years) designated by FAA personnel. A traffic cone is set up and they are required to demonstrate ability to deploy foam from truck to the cone. Most recently conducted last month. AFFF released (small quantity – i.e., "squirt") is not recovered and allowed 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?
The Airport Authority has primary emergency response for commercial aircraft. The Air National Guard Fire Department located on the west (far) side of the airport has primary emergency response for military aircraft. Both provide assistance to each other in case of emergency. Local fire department units have attended the FAA demonstrations but do not train on the airport property

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? No- See #15 above

PA Interview Questionnaire – Fire Station

Facility: AASF#2
Interviewer: [redacted]
Date/Time: 11/9/2018

17. Did military routinely or occasionally fire train off-post? List units that you can recall used/trained at various areas. No knowledge

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?
Thankfully no crashes where AFFF deployed to his knowledge during his tenure.

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?
AFFF not used for fuel spill response.

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)? Only AFFF systems in the 2 maintenance hangars and inside their fire station.

22. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved? No

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? No knowledge of disposal needed.

24. Do you recommend anyone else we can interview? If so, do you have contact information for them? If further information needed, may contact Airport Authority Fire Chief [redacted]

PA Interview Questionnaire – Fire Station

Facility: AASF#2
Interviewer: [redacted]
Date/Time: 11/9/2018

25. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved? No
26. 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? No knowledge of disposal needed.
27. Do you recommend anyone else we can interview? If so, do you have contact information for them? If further information needed, may contact Airport Authority Fire Chief [redacted]

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted]

Recorded by: [redacted]

ARNG Contact: LTC [redacted] (TDY during site visit)

Date and Time: 5/24/2018 0900

Method of visit (walking, driving, adjacent): walking

Source/Release Information

Site Name / Area Name / Unique ID: AASF # 2

Site / Area Acreage: 10 ac.

Historic Site Use (Brief Description): ARNG exclusively

Current Site Use (Brief Description): AASF

Physical barriers or access restrictions: security gorded gate/perimeter 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):

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 airport / ANG

4. Is this site located at an airport/flightline? **Y / N**

4a. If yes, provide a description of the airport/flightline tenants:

adj. to cargo (FedEx / UPS) facilities, ANG on other side

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:

AFFF w/ sprinkler system (black pipe) above electrical, 500 gal tank in storage

1b. If yes, describe maintenance schedule/leaks: accessed outside hangar

never tested, no leaks

1c. If yes, how often is the AFFF replaced:

contractor conducts annual test w/ sample collected off tank

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?

joint sanitary sewer serving airport authority

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation? (Y) / N

1a. If so, note observation and location:

regional flow N

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: unknown

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. unknown

6. Does an adjacent non-ARNG PFAS source exist? (Y) / N

6a. If so, please note the source and location. yes → ANG and airport auth FD

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: security guarded gate

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:

drain to airport WWTP sewer

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: AASF #2

Why has this location been identified as a site? Potential for release due to asset type and historical site use

Are there any other activities nearby that could also impact this location?
ANG & McGee Tyson Airport Fire Dept

Training Events

Have any training events with AFFF occurred at this site? No

If so, how often?

How much material was used? Is it documented? N/A

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? Any direct pathways to larger water bodies?

Surface Water:

Surface water flow direction? South/west toward runway on flight line North/West in parking lot

Average rainfall? Unknown

Any flooding during rainy season? No

Direct or indirect pathway to ditches? overland to swale

Direct or indirect pathway to larger bodies of water? off site

Does surface water pond any place on site? reported no

Any impoundment areas or retention ponds? no

Any NPDES location points near the site? unknown

How does surface water drain on and around the flight line? ppct flows toward hangar and into floor drain along large bay doors

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Unknown

Depth to groundwater? "

Uses (agricultural, drinking water, irrigation)? unknown

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? No

Is groundwater used for drinking water? unknown

Are there drinking water supply wells on installation? No

Do they serve off-post populations? NA

Are there off-post drinking water wells downgradient unknown

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No - airport has system poss.

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? No

Is surface water from potential contaminated sites treated? unknown

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? No

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles? Not AFFF dispensed during only on hand/wall mount extinguishers, AFFF never dispensed during incident or training

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker ✓

Construction Worker ✓

Recreational User X

Residential X

Child X

Ecological

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?

Documentation

Ask for Engineering drawings (if applicable).

Has there been a reconstruction or changes to the drainage system? When did that occur? No

There is a known sewer blockage caused by bldg construction on rear flight bird unlikely to be repaired due to cost to replace flight bird pad (concrete)

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility#2	Louisville, Tennessee

Photograph No. 1

Description:

Flight line looking Northeast, mobile cart between helicopters

24 May 2019

Photograph No. 2

Description:

Old hangar exterior, looking South

24 May 2019

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility#2	Louisville, Tennessee

Photograph No. 3

Description:

Old hangar interior floor drain

24 May 2019

Photograph No. 4

Description:

Old hangar no ceiling fire suppression system

24 May 2019

APPENDIX C – Photographic Log

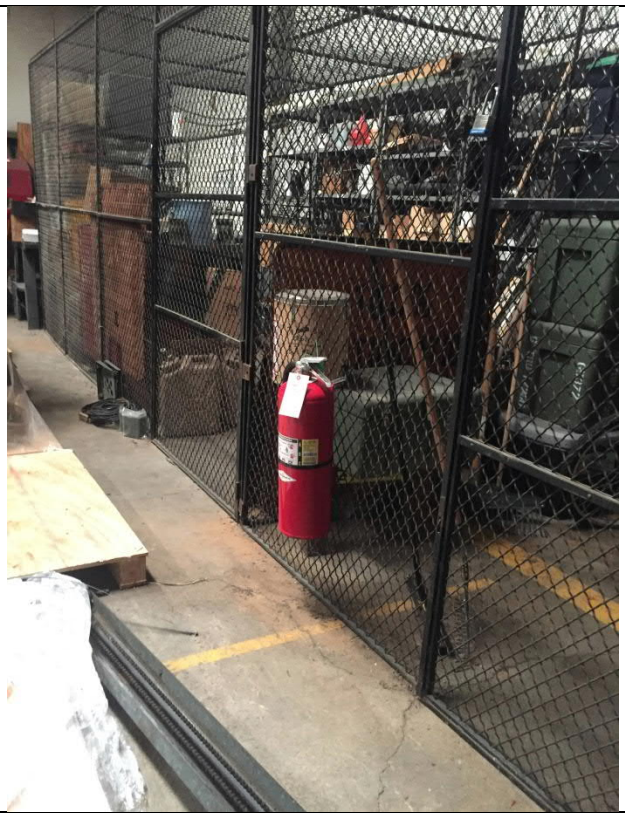
Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility#2	Louisville, Tennessee

Photograph No. 5

Description:

Old hangar wall mount fire extinguisher

24 May 2019

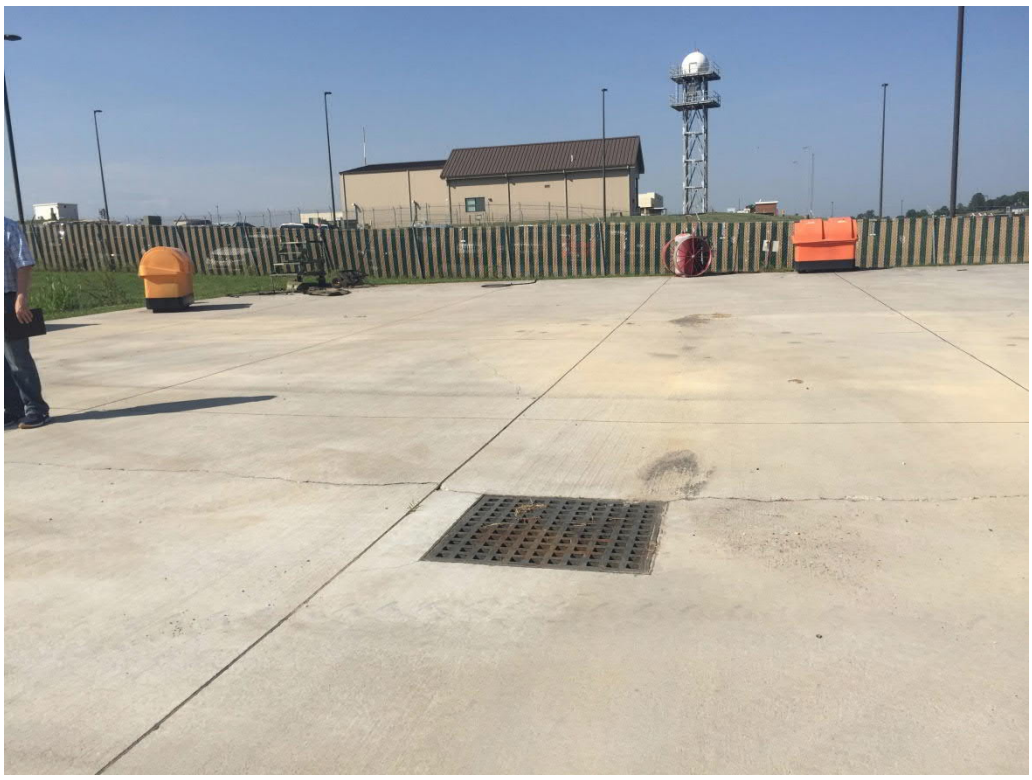


Photograph No. 6

Description:

Looking Southwest, wash rack, drain in foreground, Ansul cart in background along fence

24 May 2019



APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility#2	Louisville, Tennessee

Photograph No. 7

Description:

Label on Ansul AFFF fire extinguisher, SimplexGrinnell

24 May 2019

Photograph No. 8

Description:

Looking Southwest, Ansul AFFF mobile cart fire extinguisher

24 May 2019

APPENDIX C – Photographic Log

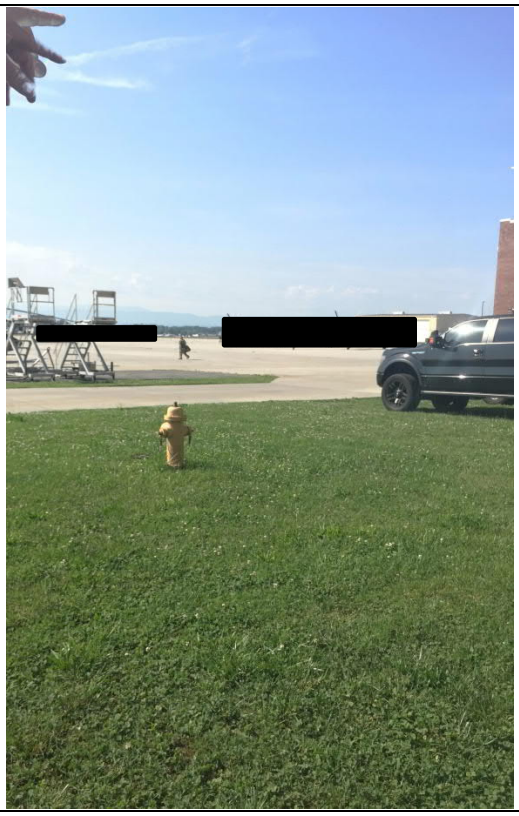
Army National Guard, Preliminary Assessment for PFAS	Army Aviation Support Facility#2	Louisville, Tennessee

Photograph No. 9

Description:

View South toward flight line and damaged sewer blockage beneath concrete pad

24 May 2019



Photograph No. 10

Description:

Manhole to sewer system, looking South

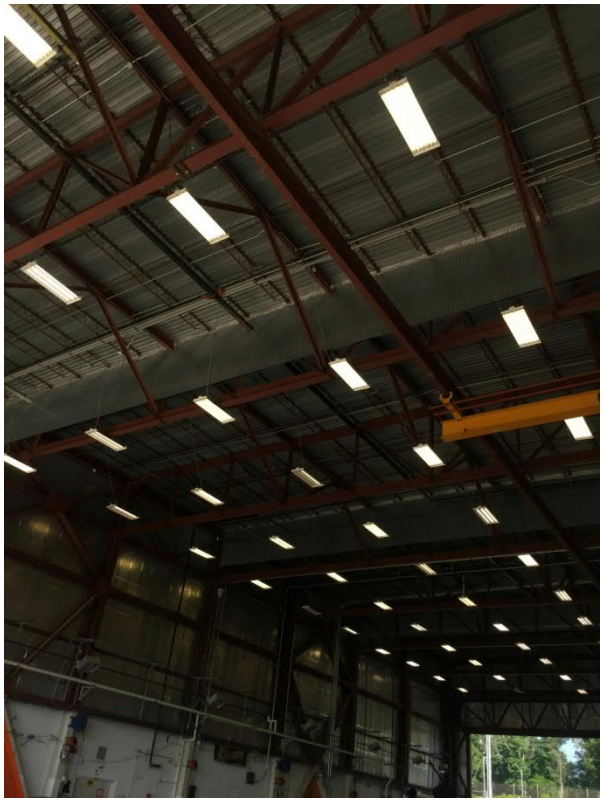
24 May 2019

Photograph No. 11

Description:

Black fire suppression piping in hangar ceiling, above lights

24 May 2019

Photograph No. 12	
Description: Black fire suppression piping in hangar ceiling, above lights 24 May 2019	

Photograph No. 13	
Description: Floor drains inside hangar door 24 May 2019	

Photograph No. 14

Description:

AFFF storage, accessible outside Northeast corner of

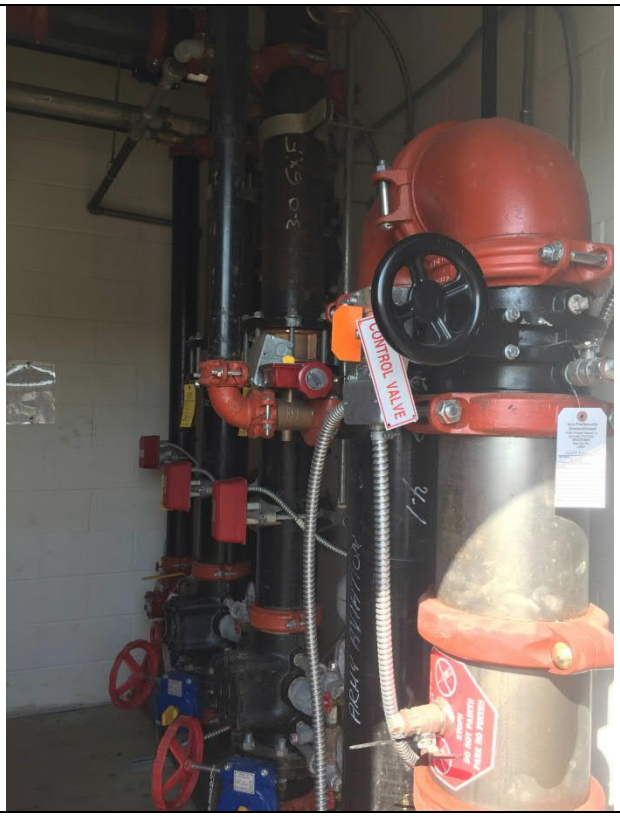
24 May 2019

Photograph No. 15

Description:

AFFF piping in storage room adjacent to hangar

24 May 2019



Photograph No. 16

Description:

AFFF tank piping in storage room adjacent to hangar

24 May 2019

Photograph No. 17

Description:

500 gallon AFFF tank installed in 2008

24 May 2019