FINAL
Preliminary Assessment Report
State Military Reservation
Concord, New Hampshire

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

November 2019

Prepared for:

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AGQS	ambient groundwater quality standard
amsl	above mean sea level
AOI	area of interest
ARFF	Aircraft Rescue and Firefighting
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	conceptual site model
CSMS	Combined Support Maintenance Shop
EDR	Environmental Data Resources, Inc.
FTA	fire training area
HA	Health Advisory
JP	jet propellant
MCL	maximum contaminant level
NHARNG	New Hampshire Army National Guard
NHDES	New Hampshire Department of Environmental Services
NHDOS	New Hampshire Department of Safety
OWS	oil-water separator
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
ppt	parts per trillion
SI	Site Inspection
SMR	State Military Reservation
UCMR 3	Third Unregulated Contaminant Monitoring Rule
US	United States
USACE	United States Army Corps of Engineers

USEPA	United States Environmental Protection Agency
UST	underground storage tank
VSI	visual site inspection

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District, on behalf of the Army National Guard (ARNG)-Installations and Environment Division, 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), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible.

AECOM completed a PA for PFAS at the State Military Reservation (SMR) in Concord, New Hampshire, to assess potential PFAS release areas and exposure pathways to receptors. The performance of this PA included the following tasks:

- Reviewed data resources to obtain information relevant to suspected PFAS releases;
- Conducted a site visit on 22 April 2019;
- Interviewed current New Hampshire ARNG (NHARNG) personnel at the SMR, NHARNG environmental managers and operations staff, former employees, and current employees of the nearby current Army Aviation Support Facility (AASF) during the site visit;
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs; and
- Developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Areas of Interest (AOIs) and the facility (**Figure ES-1**).

Two AOIs related to potential PFAS release were identified at the SMR during the PA. The AOIs are shown on **Figure ES-1** and described in **Table ES-1** below:

Table ES-1: AOIs at the State Military Reservation

Area of Interest	Name	Used by	Release Dates
AOI 1	Former AASF	NHARNG	late 1960s to 2004
AOI 2	Former Camp LaBonte	NHARNG	late 1960s to pre-1977

Based on actual and potential AFFF releases at these AOIs, there is a potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for the SMR, which presents the potential receptors and media impacted, is shown on **Figure ES-2**.

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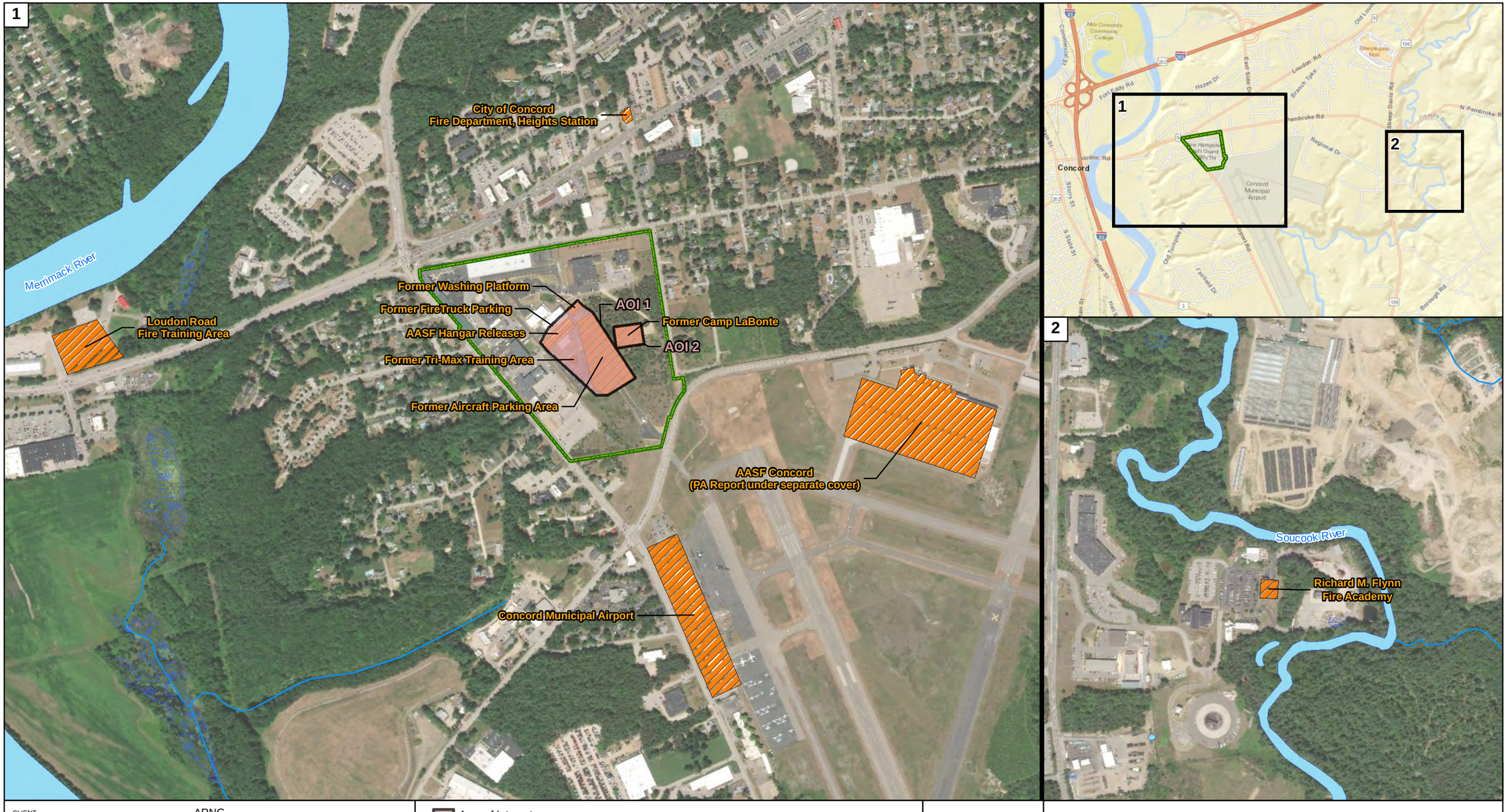

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SCALE	1:8,281	CHK BY	JZ	10/30/2019
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Area of Interest
Potential PFAS Release
Facility Boundary
StreamRiver
Wetland
River/Stream

0 345 690 1,380 Feet

N

Summary of Findings

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Figure ES-1

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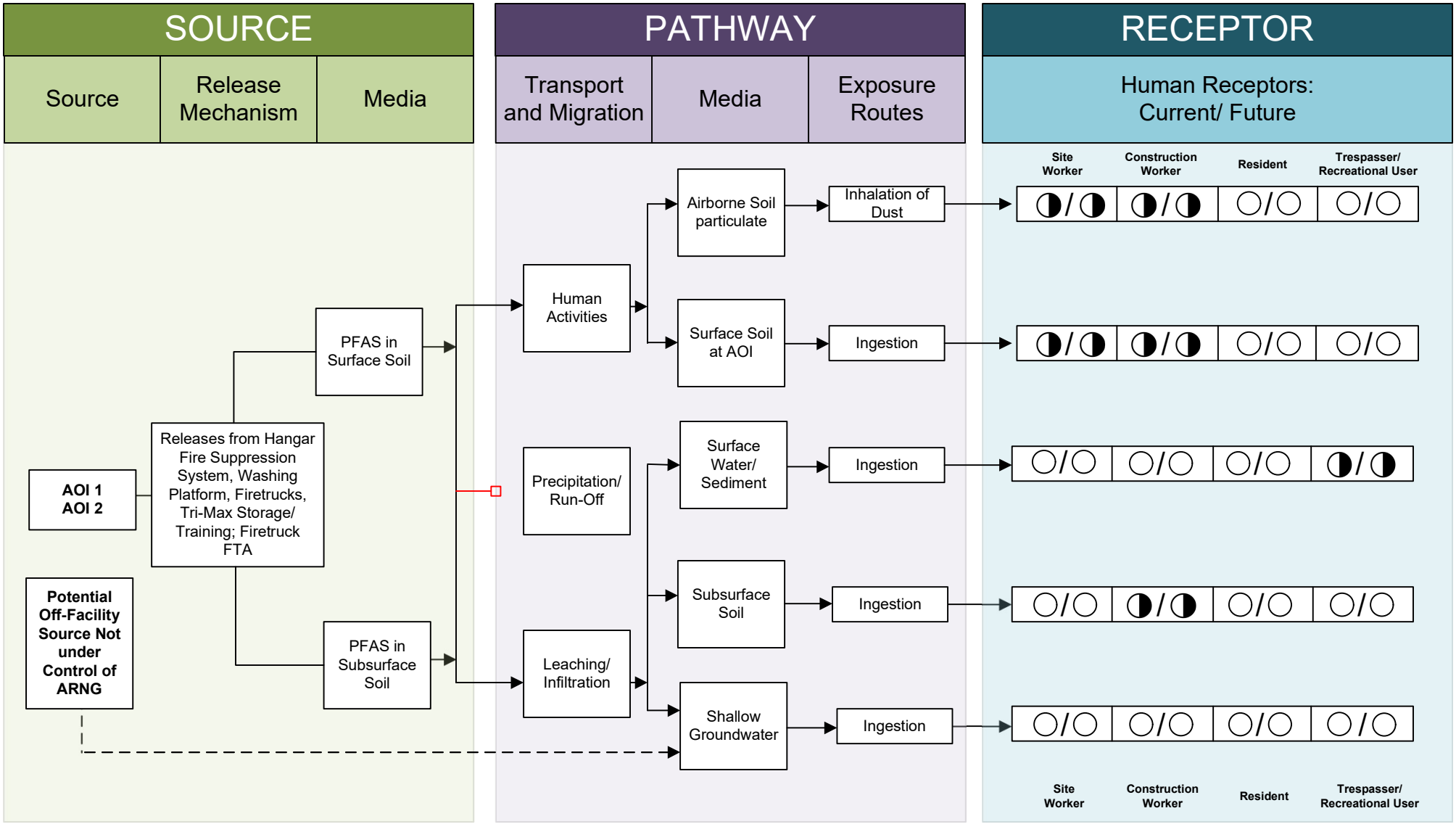

LEGEND

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

NOTES

1. The resident receptor refers to an off-site resident.
2. No surface water bodies were identified at the facility, but the surface water/sediment pathway is considered potentially complete for offsite recreational users due to the potential for groundwater interaction with the downgradient river.
3. Human consumption of fish potentially affected by PFAS from the downgradient river is possible.

Figure ES-2
Preliminary Conceptual Site Model
State Military Reservation

1. Introduction

1.1 Authority and Purpose

The United States (US) Army Corps of Engineers (USACE) Baltimore District, on behalf of the Army National Guard (ARNG)-Installations and Environment Division, 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, and Modification 01 issued 30 September 2017. The ARNG is assessing potential effects on human health related to processes at 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 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.

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 (HAs) of 70 parts per trillion (ppt), individually or combined, for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water (USEPA, 2016a; USEPA, 2016b). In the absence of federal maximum contaminant levels (MCLs), some states have adopted their own drinking water standards for PFAS. In June 2019, the New Hampshire Department of Environmental Services (NHDES) issued Final Proposed MCLs and Ambient Groundwater Quality Standards (AGQSs) for four PFAS compounds. The drinking water rule amendments were subsequently adopted by the New Hampshire Joint Legislative Committee on Administrative Rules to be effective on 30 September 2019 (New Hampshire Code of Administrative Rules, 2019). The MCLs/AGQSs are as follows:

- PFOA: 12 ppt
- PFOS: 15 ppt
- PFHxS: 18 ppt
- PFNA: 11 ppt

This report presents findings of a PA for PFAS at the State Military Reservation (SMR; also referred to as the “facility”) in Concord, New Hampshire, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; USEPA, 1980), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300; USEPA, 1994), and USACE requirements and guidance.

This PA documents the known locations where PFAS may have been released into the environment at the SMR. 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 site visit on 22 April 2019;
- Interviewed current New Hampshire ARNG (NHARNG) personnel at the SMR, NHARNG environmental managers and operations staff, former employees, and current employees of the nearby current Army Aviation Support Facility (AASF) during the site visit;
- Completed visual site inspections (VSIs) at known or suspected PFAS release locations and documented with photographs; and
- Developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Areas of Interest (AOIs) and the facility.

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, if present.
- **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, if present.
- **Section 5** – **Adjacent Sources:** describes sources of 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 for the AOIs and the facility.
- **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

The SMR is located at 1 Minuteman Way in Concord, Merrimack County, New Hampshire, approximately 0.5 miles north-northwest from the Concord Municipal Airport terminal (**Figure 1-1**). The facility property occupies approximately 50 acres on the east side of the Merrimack River, near the southeastern city limits, east of Interstate 93, and south of Interstate 393. The

approximate center of the property is located at geographic coordinates 43°12'35.89"N; 71°30'43.74" W longitude at 363 feet above mean sea level (amsl).

The property was originally known in the late 1800s as the State Military Campground for the New Hampshire State Militia; additionally, it was known in 1886 as "Camp Langdon." In 1885, the state of New Hampshire entered into a 99-year lease with the city of Concord for use and development of the grounds on which the National Guard trained. Additional parcels of the property were deeded or leased to the city of Concord in 1911, 1937, 1942, and 1954, and the state of New Hampshire formally acquired the property in 1959 (The Louis Berger Group, Inc., 2006). The property is currently owned by the state of New Hampshire and is used for State operations of the NHARNG. The SMR currently serves as the headquarters for the NHARNG. Facilities at the SMR include a warehouse, a maintenance shop, Joint Force Offices, the Concord Armory, and a Civil Support Teams building (Tighe & Bond, 2018).

An AASF was located at the SMR from the 1960s to 2004. Typical activities conducted at the AASF included maintenance and repair of fixed-wing and rotary aircraft, storage and dispensing of fuel, and mechanical servicing and cleaning of helicopter interiors and exteriors (NHARNG, 1996). The initial building for the AASF hangar (later known as the Ground Power Annex) was designed in 1959 and constructed between 1960 and 1961. Aerial photographs show that the initial building was present in 1960, 1967, and 1969 (**Appendix A**). According to interviews with former AASF personnel, Bell helicopters and TH-55 helicopters were present at the SMR in the 1960s. In 1974, an addition to the original building was constructed to create Building K (The Louis Berger Group, Inc., 2006). AASF operations continued at Building K until 2004, at which time operations were moved to a new facility located at 26 Regional Drive, 0.5 mile to the east.

The SMR is completely secured by a 6-foot fence, which consists of chain-link fence secured by a brick column and ornamental iron fencing barrier. Access to the facility is through monitored gates at the perimeter of the facility on Pembroke Road and on Minuteman Way via Airport Road.

1.5 Facility Environmental Setting

The SMR is located within the Merrimack Valley in southern New Hampshire, within the Eastern New England Upland Physiographic Province of the Appalachian Highlands. The New England Upland consists of a maturely-dissected plateau with narrow valleys, and the entire area was greatly modified by glaciation. The city of Concord developed along the Merrimack River and lies fully within the Merrimack River watershed. The city of Concord has a population of approximately 43,000 people, according to the 2017 census (US Census, 2018).

The following sections describe the environmental setting of the subject property and include information on geology, hydrogeology, hydrology, climate, and current and future land use.

1.5.1 Geology

Regional geology consists of unconsolidated glacial material overlying igneous and metamorphic rocks that was deposited during the Wisconsin stage of glaciation, of the Pleistocene Epoch during the Quaternary Period. The weight of the ice caused differential depressions of the land surface during the Pleistocene Epoch. The southeastward flow of glacial ice scoured the rock surface, and as the ice melted, it deposited a thick blanket of glacial till in many areas. Meltwater streams deposited a variety of ice-contact sands and gravels upon portions of the till sheet (USAEHA, 1993). Geologic features near the facility are shown on **Figure 1-2**.

The unconsolidated material, which is mainly ground moraine, was originally subglacial till, that was left scattered over the ground after the ice melted. A ground moraine consists of scattered boulders combined with cobbles, gravel, pebbles, sand, silt, and clay, with some areas of ice-

contact stratified drift. This stratified drift was derived from englacial and subglacial meltwater streams that also carried gravel, sand, silt, and clay. Determination of glacial features and geologic characterization of the deposits is important. Assumptions may then be made concerning the grain sizes within the deposit, the bedding, and the sorting. In some areas, unstratified material was deposited. Knowledge of a particular deposit's origin is helpful in the prediction of the type and distribution of the materials within the deposit, which also may give an idea about the occurrence of groundwater (USAEHA, 1993; Stone & Webster Environmental Technology & Services, 1998).

Numerous environmental investigations have been conducted nearby the subject property for the Former Vishay Sprague Site, located at 70 Pembroke Road (approximately 0.4 miles west of the subject property). These investigations have indicated that the local geology is underlain by up to about five feet of fill overlying a relatively thick sequence (about 160 to 200 feet) of glacial deposits overlying granitic bedrock. Bedrock in the vicinity consists predominantly of moderately fractured, medium-grained, two-mica granite. The bedrock surface generally slopes downward from west to east (GZA GeoEnvironmental, Inc., 2010).

In the immediate vicinity of the facility, overlying bedrock is an approximately 25- to 50-foot-thick lacustrine deposit consisting of very dense, thinly interbedded silt, silt and clay, and fine sand. This stratum is overlain by an approximately 50- to 60-foot-thick section of glacial till consisting of very dense, fine to medium sand with clayey silt and gravel. Lacustrine sediments similar to those underlying the glacial till overlie the glacial till with thicknesses ranging from about 15 to 40 feet. Outwash deposits consisting predominantly of fine sand top the overburden stratigraphy with a thickness ranging from about 50 to 85 feet (GZA GeoEnvironmental, Inc., 2010).

In 1997, an SI was conducted at the SMR, and the soils encountered were typically fine to medium sands with little coarse sand, varying amounts of silt, and occasionally a trace of clay. The soils become finer and more compact as the depth increased (Stone & Webster Environmental Technology & Services, 1998).

1.5.2 Hydrogeology

In 1998, an SI was conducted at the SMR, and groundwater was encountered from approximately 41 feet to 51 feet (Stone & Webster Environmental Technology & Services, 1998). Based on recent investigations at the nearby Former Vishay Sprague Site, groundwater in the vicinity is expected to be 30 and 50 feet below ground surface (bgs) (GZA GeoEnvironmental, Inc., 2018). Both investigations indicated that overburden groundwater flow was to the west-southwest, toward the Merrimack River, which is located 0.8 miles to the west/southwest. Groundwater features in the vicinity of the facility are shown on **Figure 1-2**.

The overburden hydrogeology in the area generally consists of a dual hydrogeologic unit system separated by the glacial till stratum. The upper unit consists of the saturated lacustrine and/or outwash deposits overlying glacial till, whereas the lower unit consists of the lacustrine deposits underlying the glacial till. Hydraulic communication between the upper and lower units is likely, with the glacial till forming only a partial aquitard. The upper overburden unit is unconfined, with the resultant groundwater surface at a pressure equal to atmospheric. The lower unit is partially confined by the glacial till, with the resultant groundwater surface potentiometric (at pressure greater than atmospheric). Groundwater elevations within the upper unit are typically observed to be about 10 to 15 feet higher than those of the lower unit, indicating a loss in total head through the glacial till aquitard, and a vertically downward component of groundwater flow (GZA GeoEnvironmental, Inc., 2010).

The Environmental Data Resources, Inc. (EDR) Radius Map report did not identify any public supply wells at the SMR or within a 1-mile radius (EDR, 2019). One domestic well and one

commercial well were identified by the EDR Radius Map approximately 0.5 miles to the east of the facility. Locations of the wells are shown on **Figure 1-2**.

The SMR is serviced by municipal water from the city of Concord. Third Unregulated Contaminant Monitoring Rule (UCMR 3) data were reviewed as part of the PA. PFAS were nondetect for the Concord Water Department treatment plant, which is located 4.3 miles northwest of the facility, on the west side of the Merrimack River (USEPA, 2017). The primary water source for the Concord community is Penacook Lake, located 4 miles northwest of the facility, on the west side of the Merrimack River. During dry periods, the lake is supplemented with water from Contoocook River Pump Station, which is located further northwest of Penacook Lake. Additionally, a groundwater well field adjacent to the Soucook River in Pembroke is maintained as an emergency water source (city of Concord, 2019c). The Pembroke well field is approximately 1.6 miles southeast of the facility, on the opposite side of the Soucook River. None of these drinking water resources are anticipated to be hydraulically downgradient from the subject property.

1.5.3 Hydrology

The SMR is located within the central portion of the Merrimack River watershed, which stretches from central New Hampshire into Northeastern Massachusetts. The nearest major surface water bodies are the Merrimack River, located approximately 0.8 miles to the west/southwest of the facility, and the Soucook River, located approximately 1 mile to the south/southeast. The Merrimack River is popular for recreational use, including boating, canoeing, rowing, and fishing (NHDES, 2017). Based on the depth of the Merrimack River (5 to 40 ft or more; Concord Monitor, 2013) and the depth to groundwater in the area (estimated to be 30 to 50 ft bgs), it is possible that groundwater to surface water discharge may occur at points along the river downgradient of the site. No wetlands exist within the vicinity of the facility. Surface water features in the vicinity of the facility are shown on **Figure 1-3**.

The topography of the facility and in the surrounding area is relatively flat. Much of the facility is paved with either asphalt or concrete, with unpaved grassy areas along the boundaries of the facility. Surface water in the general vicinity drains westerly towards the Merrimack River. Stormwater at the SMR is currently managed utilizing a series of drainage basins and trenches for infiltration, which allow the majority of stormwater to infiltrate the ground onsite. Drains in the Combined Support Maintenance Shop (CSMS) and unit vehicle parking area are supplied with an oil-water separator (OWS)-equipped catch basin drain before discharge to the Concord municipal storm drain system on Airport Road. The drainage within the storm drain system from Airport Road flows westward down Loudon Road and then to the Merrimack River, which is approximately 0.5 miles to the west of the SMR. Storm drains in the northeast corner of the SMR are also connected to the Concord municipal storm drainage system. In the northern portion of the site, stormwater runoff drains into scattered catch basins that discharge to the storm drain in Pembroke Road. This stormwater also flows westward into the storm drain system on Loudon Road and ultimately to the Merrimack River (VHB, 1993; Stone & Webster Environmental Technology & Services, 1998).

From the 1970s to approximately 2006, drywells were used to dispose of stormwater at the SMR. Historic reports for the SMR indicate that 14 drywells were present at the facility. Seven of the drywells (DW-1 through DW-7) were located downgradient of the UH-60 helicopter pads and may have received drainage from these areas. Two of the drywells formerly received drainage from the Ground Power Annex (DW-9 and DW-10), and one received drainage downgradient of the refueling area (DW-8). Drywells DW-1 through DW-10 were installed in the 1972 to 1974 timeframe (Jacques Whitford Company, Inc., 2003). DW-A was located north-northwest from the blacktop driveway at the Airport Road gate, northeast of the boundary fence. DW-B was located 20 feet southeast from the southeast wall of the former AASF building (Building K). DW-C was located 160 feet southwest from the southeast corner of the former AASF building. An additional unnamed drywell was located on the northwest side of former Building K (labeled DW-Z for

purposes of this report). Some of the drywells were removed or filled in the 1990s (Stone & Webster Environmental Technology & Services, 1998). According to interviews with NHARNG personnel, the remainder of the drywells were abandoned in 2006, with the exception of DW-1, which is still present at the facility.

1.5.4 Climate

The facility lies within the humid continental climate zone, which is characterized by long, cold, snowy winters, very warm (and at times humid) summers, and relatively brief autumns and springs. The monthly daily average temperature ranges from a high of 31 degrees Fahrenheit (°F) in January to 82°F in July. In winter, successive storms deliver light to moderate snowfall amounts, which contribute to the relatively reliable snow cover. Summer can bring stretches of humid conditions as well as thunderstorms, and there is an annual average of 12 days of 90°F highs. Average annual precipitation is approximately 41 inches (US Climate Data, 2019).

1.5.5 Current and Future Land Use

The SMR property is zoned “industrial” by the city of Concord. Much of the facility is paved with either asphalt or concrete. Approximately 15 acres of the SMR is a fully vegetated Pine Barrens Habitat area, which was created as mitigation to compensate for the habitat loss at the AASF facility currently located at 26 Regional Drive, Concord, New Hampshire. The SMR currently serves as the headquarters for the NHARNG. Facilities at the SMR include a warehouse, a maintenance shop, Joint Force Offices, the Concord Armory, and a Civil Support Teams building (Tighe & Bond, 2018). Activities and land use within the facility are not expected to change.

The area surrounding the SMR includes residential and commercial properties to the north, the Concord Municipal Airport to the south, commercial and light industrial properties to the east, and additional residential neighborhoods to the west. Conservation/Public Lands are located approximately 0.8 miles to the southeast, adjoining the Soucook River. Future land use of the surrounding area is not anticipated to change.

CLIENT	ARNG			
Preliminary Assessment for PFAS at State Military Reservation, NH				
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SCALE	1:63,360	CHK BY	AM	7/11/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	7/11/2019

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

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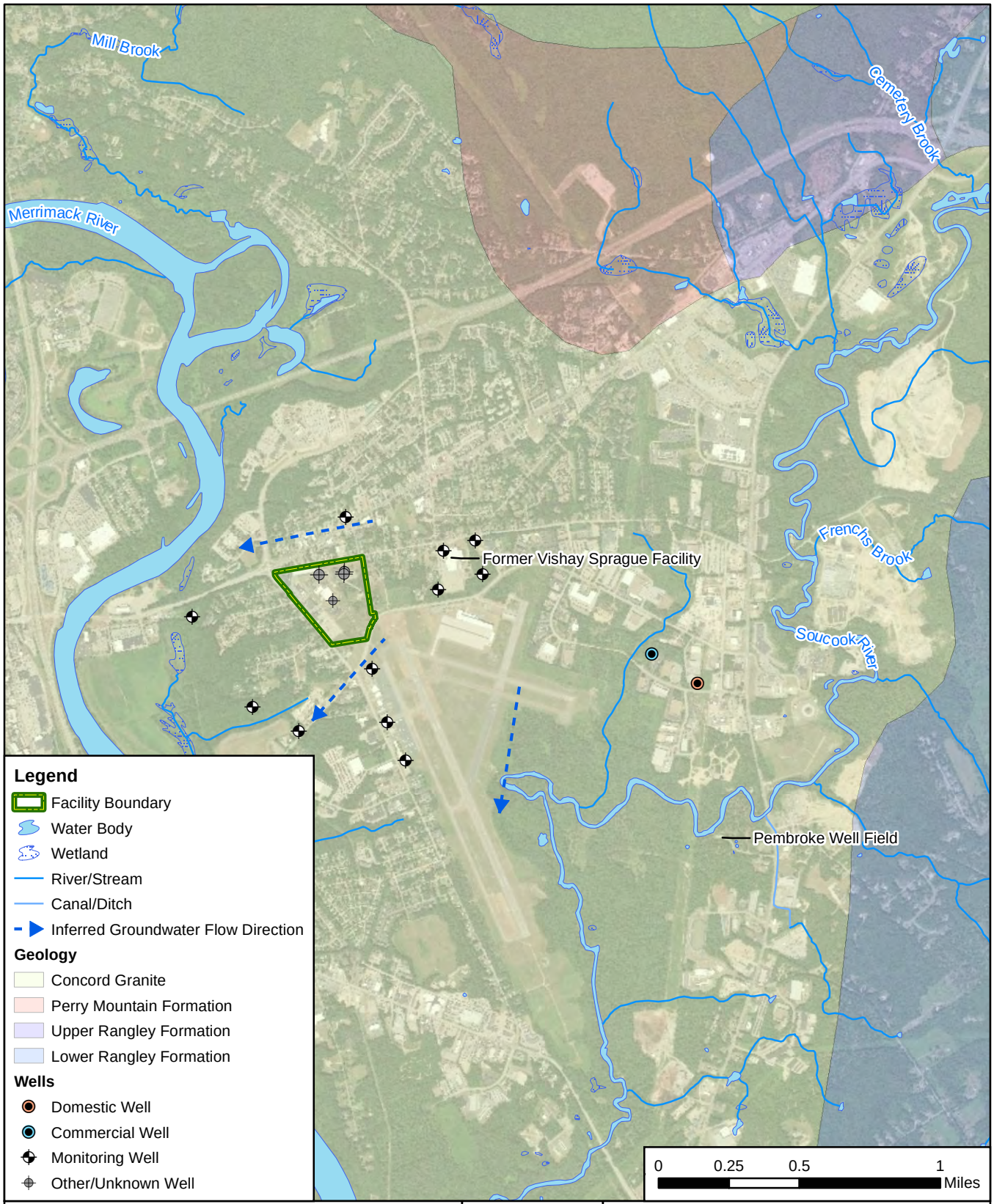

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Groundwater Features

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Figure 1-2

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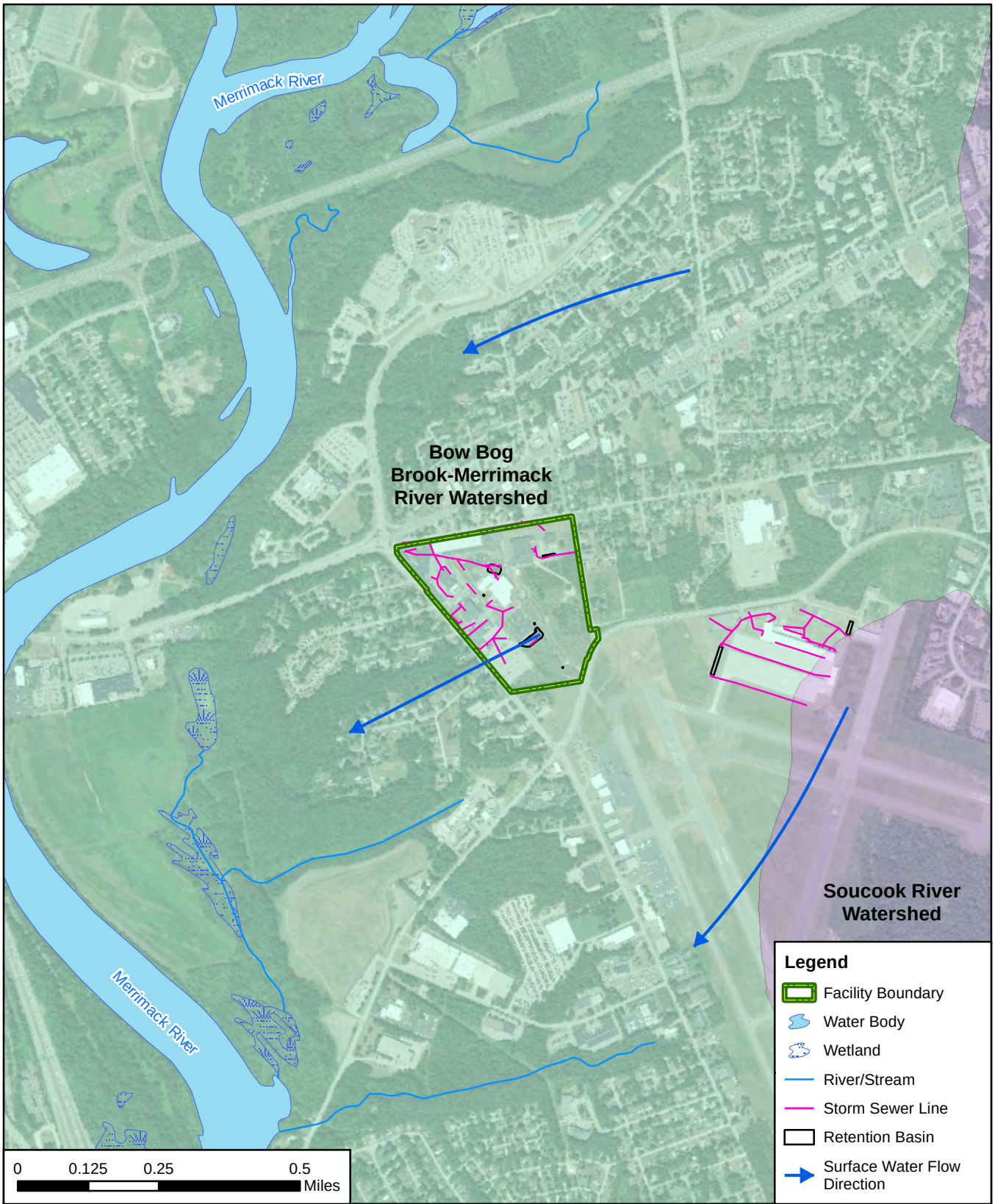

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

Two FTAs were identified at the SMR through interviews. Descriptions of the FTAs are presented below, and the FTAs are shown on **Figure 2-1**.

2.1 Former Camp LaBonte

The Former Camp LaBonte was used by the NHARNG as a Weekend Training Site for many years and originally served as the New Hampshire Military Academy for Officer Candidate School prior to the state of New Hampshire's acquisition of the current New Hampshire National Guard Training Site property in Center Strafford in 1985.

According to former AASF personnel, two firetrucks were used at the SMR during AASF operations. The first firetruck was a former 1940s vintage LaFrance firetruck, which was moved to the SMR from Manchester Airport in the 1960s. The vintage LaFrance firetruck was removed from the facility sometime prior to 1977 (the exact date is unknown). The second firetruck was tank-mounted on a deuce and a half truck, which was introduced to the SMR sometime prior to 1977 and was removed from the site in 1992.

Interviewees indicated that foam was used on both firetrucks. When the first firetruck was in use (late 1960s to pre-1977), foam was used for training on the grass and gravel to the north of the former Camp LaBonte on the SMR, at approximate geographic coordinates 43°12'38.9"N; 71°30'40.1"W (**Figure 2-1**). When the second firetruck was in use (pre-1977 to 1992), foam was sprayed on the pavement at the former AASF (Building K), but not in the Camp LaBonte area.

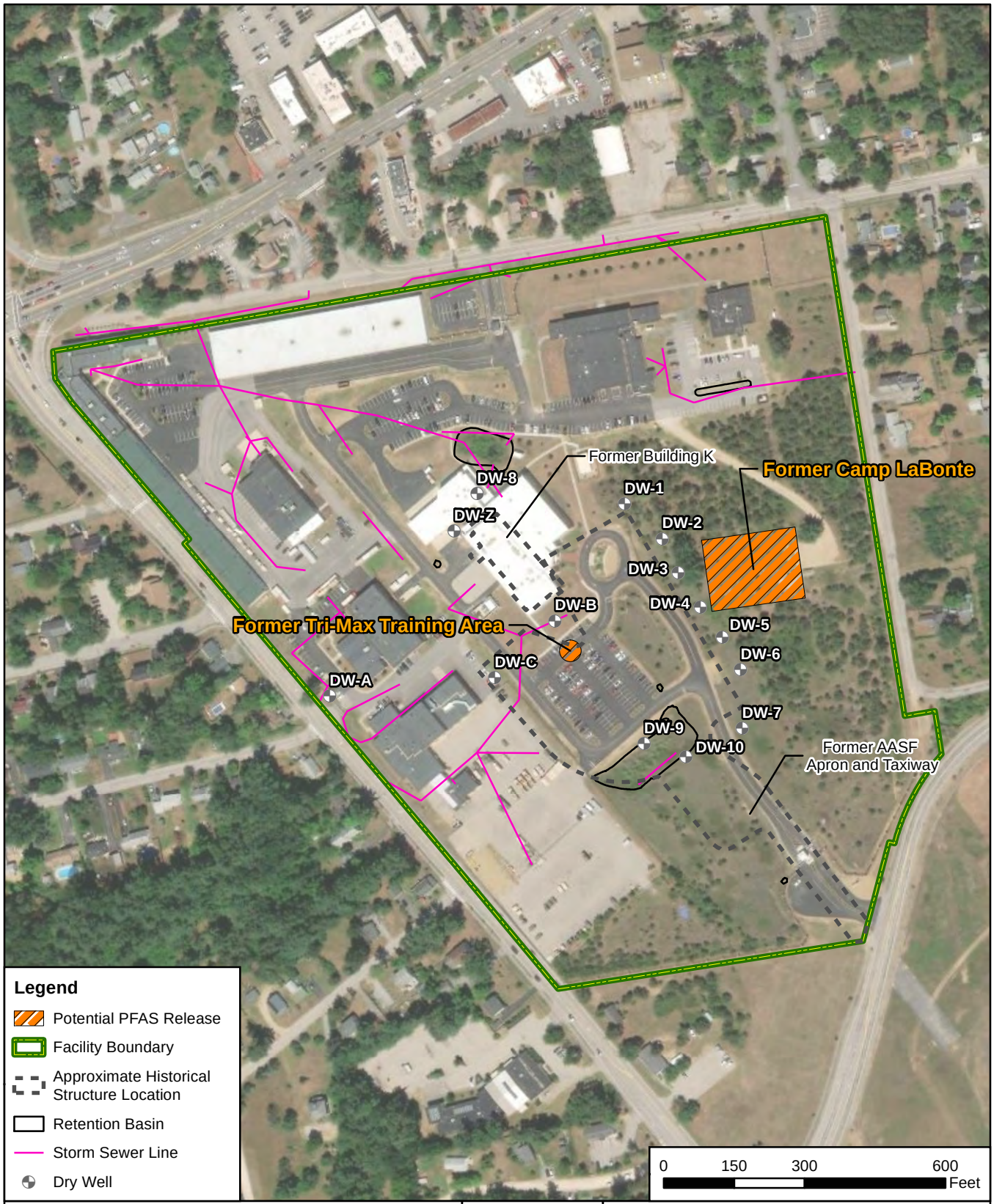
According to former AASF personnel, two types of foam were used on the firetrucks. The older of the two foams contained animal-based ingredients (potentially blood or fat). The second type of foam was referred to as a "civilian foam" that came in 5-gallon containers from a local Fire Department (either the Concord Fire Department or the Franklin Fire Department). No additional information was available on the dates of foam use, the type of foam used (Class A or Class B), or whether the foam contained AFFF. Because the first firetruck was potentially in use after the introduction of AFFF in firefighting foams, a release of PFAS-containing AFFF at the former Camp LaBonte area cannot be ruled out.

The former Camp LaBonte was located to the south of the parking lot that is behind the Concord Readiness Center and previously had small training huts. Two of the huts currently remain and have been joined into one building that now serves as a Karner Blue Butterfly Captive Rearing Building, which is leased to the New Hampshire Fish and Game Department. The area is also part of the 15 of fully-vegetated Pine Barrens Habitat, which was created as mitigation to compensate for the habitat loss at the AASF facility currently located at 26 Regional Drive, Concord, New Hampshire.

2.2 Tri-Max Training Area

According to interviews with former AASF personnel, six Tri-Max™ mobile fire extinguishers were stored outside on the former AASF apron (one beside each helicopter) during the time that helicopters were stationed at the SMR (from the 1960s to 2004). Once expired, the tanks would be periodically emptied as part of training exercises that occurred north of the former runway, at approximate geographic coordinates 43°12'35.4"N; 71°30'44.3"W (**Figure 2-1**). The frequency and timeframe of training and the volume of AFFF discharged per training event are unknown. Additionally, no documentation or information were available on the type, quantity, and concentration of AFFF stored in the Tri-Max™ extinguishers. All Tri-Max™ mobile fire

extinguishers were removed from the facility and sent for disposal in 2004. The area is now a parking lot.



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REVISED	10/25/2019	GIS BY	MS	10/25/2019
SCALE	1:3,600	CHK BY	AM	10/25/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	10/25/2019

Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 2-1

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3. Non-Fire Training Areas

Non-FTAs where AFFF was stored and/or potentially released were identified during the PA. A description of each non-FTA is presented below, and the non-FTAs are shown on **Figure 3-1**.

3.1 Former AASF Hangar

The former AASF was located at the SMR from the 1960s to 2004. Typical activities conducted at the AASF included maintenance and repair of fixed-wing and rotary aircraft, storage and dispensing of fuel, and mechanical servicing and cleaning of helicopter interiors and exteriors (NHARNG, 1996). As described in **Section 1.4**, the initial building for the AASF hangar constructed between 1960 and 1961, and helicopters were present at the SMR in the 1960s. In 1974, an addition to the original building was constructed to create Building K (The Louis Berger Group, Inc., 2006). The Aircraft Maintenance Hangar was located in the center of former Building K, at approximate geographic coordinates 43°12'37.4"N; 71°30'46.6"W.

According to interviews with former personnel, a fire suppression system was installed in the hangar in 1994. No fire suppression system was present prior to this time, despite aircraft operations beginning in the 1960s. The system was charged with 3% AFFF from 1994 to 2004. No additional information on the type of AFFF, frequency of testing, or system maintenance was available. The system was removed in 2004, when operations were moved the new AASF at 26 Regional Drive, located 0.5 miles to the east of the facility. The majority of former Building K was demolished at that time, except for the main hangar. The current Building 1 was built in 2006 around the former hangar. The former hangar is now used as a large drill and assembly hall.

One documented release of AFFF from the fire suppression system occurred on 23 July 1999. According to interviewees, a fire was triggered using a lighter to ignite accelerants located in the Communications Room of Building K (**Appendix B**). The amount of AFFF released is unknown. After the release, the foam was either washed into a floor drain trench inside the hangar or washed out of the hangar onto the apron to the east of the building. The floor drain trench inside the hangar led to a 1,000-gallon OWS located outside the building, and then to the municipal sewer system, per the terms and conditions of city of Concord Industrial Discharge Permit No. H-37 (VHB, 1993; NHARNG, 1996). The location of the 1,000-gallon OWS is presumed to be on the southwest side of former Building K, based on historic figures from the 1998 SI Report (Stone & Webster Environmental Technology & Services, 1998). Foam washed onto the apron would have entered a catch basin that discharged to the municipal sewer system. The location of the former AASF (Building K) fire suppression system release is shown on **Figure 3-1**.

A second release of AFFF from the fire suppression system was recalled by one interviewee, who recalled the Hangar filling up quickly with foam. However, the date of this incident and the quantity of AFFF released was unknown. The foam from this release is presumed to have been managed in the same manner as the first release.

3.2 Former Firetruck Parking

As described in **Section 2.1**, former AASF personnel indicated that two firetrucks were used at the SMR during AASF operations. The first was a former 1940s vintage LaFrance firetruck, which moved to the SMR from Manchester Airport in the 1960s. The vintage LaFrance firetruck was removed from the facility sometime prior to 1977 (the exact date is unknown). The second firetruck was tank-mounted on a deuce and a half truck, which was introduced to the SMR sometime prior to 1977 and was removed from the site in 1992. Both firetrucks were regularly parked in a

crash/rescue bay on the north side of former Building K, at approximate geographic coordinates 43°12'38.2"N; 71°30'47.0"W.

Interviewees indicated that foam was used on both firetrucks. Although interviewees recalled that two types of foam were used, no additional information was available on the dates of foam use, the type of foam used (Class A or Class B), or whether the foam contained AFFF. Because the dates of use of the firetrucks overlap with the use of AFFF, there is the potential for the foam to have contained PFAS. Unintended spills or releases of foam from the firetrucks may have occurred in the parking bay or to the asphalt outside the bay, if the firetrucks were parked outside. Additionally, former AASF personnel indicated that when the second firetruck was in use (pre-1977 to 1992), foam was sprayed on the pavement at the former AASF (Building K) and then rinsed into the storm drains. The location of the former firetruck parking bay is shown on **Figure 3-1**.

3.3 Former Washing Platform

During the former AASF operations, aircraft maintenance and washing was conducted outside at the washing platform. The washing platform was located at approximate geographic coordinates 43°12'39.1"N; 71°30'45.3"W. According to the 1998 SI, rinsate generated in the washing platform was collected in a blocked sump at that location and pumped into a mobile holding tank. The holding tank was then wheeled into the Hangar's Maintenance Area and pumped into the same floor drain trench at the front of the hangar, which led to a 1,000-gallon OWS located outside the building, and then to the municipal sewer system (VHB, 1993; NHARNG, 1996). However, there is the potential for unintended spills or releases of PFAS from the washing platform after washing aircraft or firetrucks. No documentation or information were available on the type, quantity, and concentration of AFFF, which may have been released from the washing platform. The location of the former washing platform is shown on **Figure 3-1**.

3.4 Former Aircraft Parking Area

According to interviews with former AASF personnel, six Tri-Max™ mobile fire extinguishers were stored outside on the former AASF (Building K) apron (one beside each helicopter) during the time that helicopters were stationed at the SMR (from the 1960s to 2004). The center of the parking apron was approximately located at geographic coordinates 43°12'37.8"N; 71°30'43.1"W. No spills or releases were reported from the Tri-Max™ extinguishers, and interviewees could not confirm if routine inspections were performed on the tanks. Given the long-term storage of the Tri-Max™ extinguishers in a non-climate-controlled environment, there is the potential for unintended spills or releases of PFAS from the extinguishers. No additional documentation or information were available on the type, quantity, and concentration of AFFF stored in the Tri-Max™ extinguishers. All Tri-Max™ mobile fire extinguishers were removed from the facility and sent for disposal approximately in 2004. The former aircraft parking area is shown on **Figure 3-1**.

3.5 Current and Former Dry Wells

From the 1970s to approximately 2006, drywells were used to dispose of stormwater at the SMR. According to historic records, there were 14 drywells at the SMR. Locations of the drywells are shown on **Figure 3-1**. There is potential for AFFF from the hangar fire suppression system release in 1999, or from unintended spills or releases in the other identified areas, to have entered the drywells. Thus, the drywells may be secondary sources of PFAS. Some of the drywells were removed or filled in the 1990s (Stone & Webster Environmental Technology & Services, 1998). According to interviews with NHARNG personnel, the remainder of the drywells were abandoned in 2006, with the exception of DW-1, which is still present at the facility.

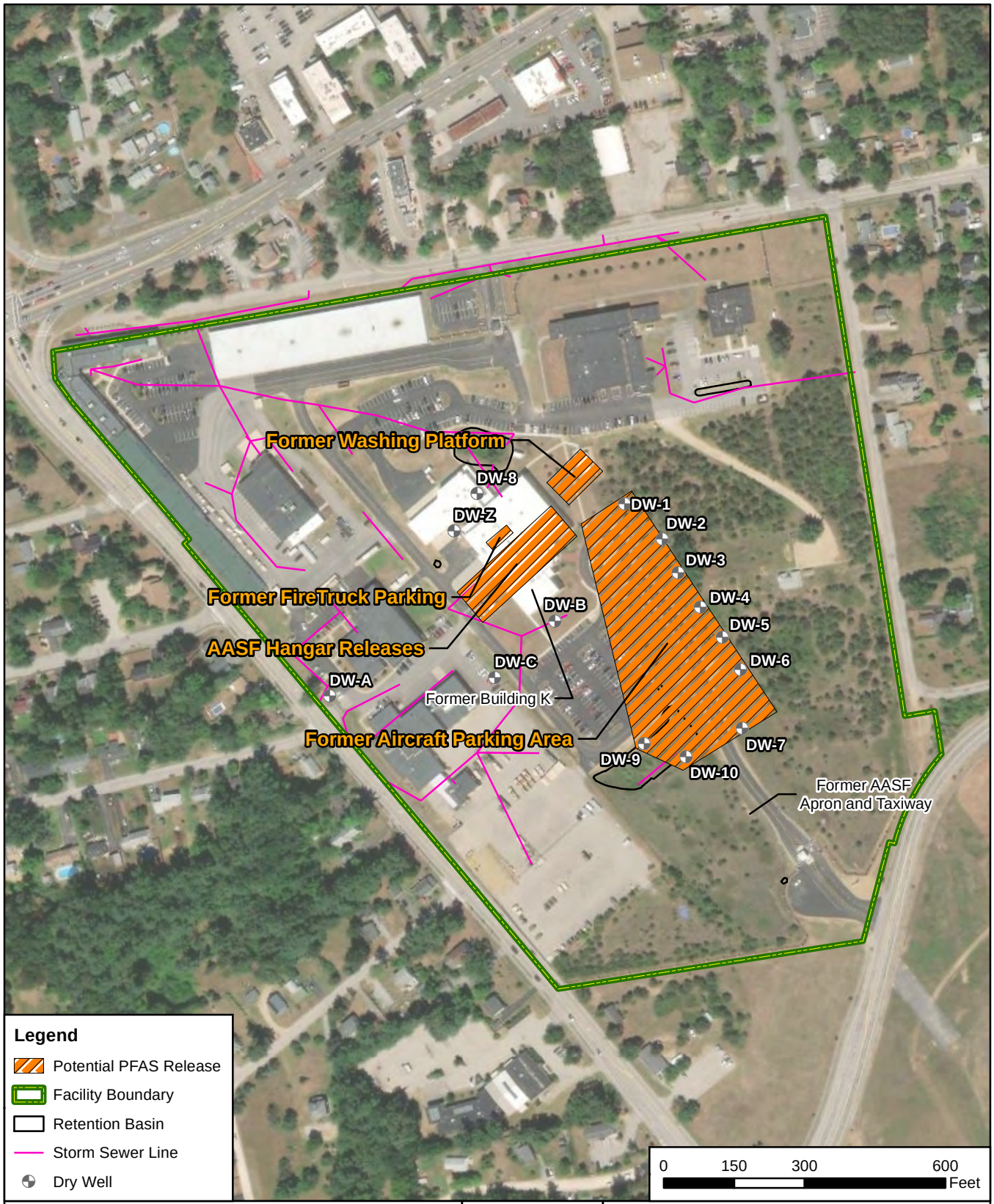
Seven of the drywells (DW-1 through DW-7) were located downgradient of the former UH-60 helicopter pads and may have received drainage from these areas. Two of the drywells formerly received drainage from the Ground Power Annex (DW-9 and DW-10), and one received drainage downgradient of the refueling area (DW-8). Drywells DW-1 through DW-10 were installed in the 1972 to 1974 timeframe. The base of DW-8 was approximately 14 feet in diameter and 17 feet in depth. The remaining dry wells ranged from 10 to 15 feet deep and from 7 to 10 feet in diameter. Downgradient impacts to soil and groundwater from DW-1 through DW-10 were evaluated in a 2003 Limited Site Investigation (Jacques Whitford Company, Inc., 2003), and a monitoring well (MW-1) was installed adjacent to DW-8. Petroleum-contaminated soils were subsequently removed from DW-8 in September 2004. A Certificate of No Further Action for the drywells was issued on 17 December 2004 (NHDES, 2004). However, PFAS were not evaluated as part of the drywell investigation.

DW-A was located 18 feet north-northwest from the blacktop driveway at the Airport Road gate, and 8.5 feet northeast from the boundary fence. DW-A had a two-foot diameter and was constructed of brick and concrete. DW-A was constructed subsurface (2 ft bgs) and had a two-foot square steel cover to keep the soil out. A catch basin that was located adjacent to and south of Building Q connected to DW-A. Past releases of liquid hazardous wastes reportedly occurred, draining into an OWS. Some waste from the OWS was routed to a former waste oil UST (Tank No. 8). The potentially-contaminated water from the OWS was allowed to drain into the catch basin and then flowed through a 4-inch pipe into DW-A. DW-A was excavated and removed in June 1994 (USAEHA, 1994).

DW-B was located 20 feet southeast of the southeast wall of the former AASF building (Building K). Before 1992, wash water from the service bay floor, which contained oils and greases from airplane repair and maintenance, was collected in a sump, discharged into a catch basin, and then discharged into DW-B. After 1992, the drains inside the former AASF maintenance bays were blocked off, and the wash water was pumped into wheeled holding tanks, which were transported to the CSMS, where they emptied into the OWS. This OWS is connected to the Concord publicly-owned treatment works. DW-B was located directly below the catch basin, which also received drainage from the roof of the former AASF (Building K). DW-B drained into a storm drain pipeline, which flowed to a combination storm drain and sanitary sewer main on Airport Road (USAEHA, 1993; Stone & Webster Environmental Technology & Services, 1998).

DW-C was located 160 feet southwest of the southeast corner of the former AASF building (Building K) and 170 feet northwest from Building R, the JP-8 (formerly JP-4) pumphouse. Formerly, the catch basin leading to DW-C reportedly had water ponded on the ground surface within a diameter of approximately 40 feet. DW-C was plugged and then could not drain or drained very slowly. In the fall of 1993, DW-C was filled, and a solid, pre-cast concrete catch basin was installed on top of it. This catch basin currently flows into a new pipeline, which was constructed in early 1994, and is connected to the Airport Road storm drain. Since this change occurred, water ponding at the surface of the catch basin has not been observed (USAEHA, 1994; Stone & Webster Environmental Technology & Services, 1998).

An additional unnamed drywell (labeled DW-Z for purposes of this report) was identified on figures from the 1998 SI Report, located on the northwest side of former Building K and extends from a former septic system (Stone & Webster Environmental Technology & Services, 1998).



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SCALE	1:3,600	CHK BY	AM	10/29/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	10/29/2019

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Emergency Response Areas

No emergency response areas were identified within the facility during the PA through interviews or EDR Reports. The City of Concord Fire Department would handle any potential fire or emergency response incident at the SMR.

5. Adjacent Off-Facility Sources

Five potential off-facility sources of PFAS adjacent to the SMR were identified during the PA. One of these facilities, the AASF Concord, is under the control of the NHARNG, while the remaining four are not under the control of the NHARNG. Descriptions of the off-facility sources are presented below and are shown on **Figure 5-1**. Interview records are included in **Appendix B**.

5.1 Army Aviation Support Facility Concord

The AASF Concord is located 0.5 miles east of the SMR, at 26 Regional Drive, Concord, New Hampshire, at the Concord Municipal Airport. The geographic coordinates for the AASF Concord are 43°12'33.50" N; 71°30'8.21"W. The AASF property is owned by the city of Concord and leased to NHARNG by and through the Office of the Adjutant General.

The new AASF facility opened in 2005, when operations were moved from the former Building K at the SMR. Two buildings, the main hangar and the Fuel Truck Storage Building, are currently equipped with AFFF fire suppression systems. The ARNG conducted a PFAS PA of the AASF under separate title and cover as part of Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017, and known releases of AFFF were identified (AECOM, 2019). Please refer to the PA Report for the AASF for details of those releases. Because the AASF has potential releases of PFAS and is located outside the boundary of the SMR, the AASF is considered a potential adjacent off-facility source of PFAS. **Figure 5-1** shows the location of the AASF in relation to the SMR.

5.2 Concord Municipal Airport

The Concord Municipal Airport is located south of the SMR, at 71 Airport Road, Concord, New Hampshire. The geographic coordinates for the approximate center of the airport property are 43º12'9.838"N; 071º30'08.228"W. The airport is a 614-acre general aviation facility and features two runways (Runway 17-35 and Runway 12-30). The airport has one fixed base operator, Concord Aviation Services, which offers aircraft services and fueling (city of Concord, 2019a). The airport has 35,000 square feet of heated hangars and a dozen private T-hangars (city of Concord, 2019b). It is not known if these hangars have fire suppression systems charged with AFFF. According to interviews with the NHARNG, the City of Concord Fire Department is responsible for responding to any potential fires or emergency response incidents at the Concord Municipal Airport. There is no Aircraft Rescue and Firefighting (ARFF) truck housed at the airport.

Municipal Airport personnel were not interviewed during the PA because the focus of the assessment was to evaluate potential PFAS related activities and sources of PFAS at NHARNG properties, and not to formally assess adjacent sources. Therefore, it is not known if AFFF is or has been used or stored at the airport currently or historically. Because the presence or absence of AFFF at the airport cannot be confirmed, the Concord Municipal Airport has been identified as a potential off-site PFAS source area. **Figure 5-1** shows the location of the Concord Municipal Airport (as a potential PFAS source area) in relation to the SMR.

5.3 City of Concord Fire Department

The City of Concord Fire Department Heights Station is located 0.2 miles northeast of the SMR, at 127 Loudon Road, Concord, New Hampshire. The geographic coordinates for the Heights Station are 43°12'52.6"N; 71°30'40.3"W. The current facility was dedicated in 1966 and is currently the oldest fire station in the city of Concord. The Heights Station is located in the Concord Heights District and protects an area that encompasses the entire city of Concord, east of

Interstate 93, and north to the area of Sewalls Falls Road, including the Concord Municipal Airport. The Heights District also includes the Merrimack and Soucook Rivers, Interstate 93 from Exits 14 through 17, and the majority of Interstate 393 (city of Concord, 2019d). The City of Concord Fire Department is responsible for responding to any potential fires or emergency response incidents at the SMR.

Concord Fire Department personnel were not interviewed during the PA; therefore, it is not known if AFFF is used or stored at the Heights Station currently or historically. Because the presence or absence of AFFF at the station cannot be confirmed, the Concord Fire Department has been identified as a potential off-site PFAS source area. **Figure 5-1** shows the location of the Heights Station (as a potential PFAS source area) in relation to the SMR.

5.4 Richard M. Flynn Fire Academy

The Richard M. Flynn Fire Academy, also known as the New Hampshire Fire Academy, is located 1.7 miles east of the SMR, at 98 Smokey Bear Boulevard, Concord, New Hampshire. The geographic coordinates for the Fire Academy are 43°12'27.8"N; 71°28'39.1"W.

The Fire Academy includes an administration/classroom building, an 80-bed dormitory, a four-bay fire station, and training grounds (two burn buildings, a flashover simulator, and other props). The Fire Academy serves as the Northeast regional training facility for aircraft rescue and firefighting personnel (New Hampshire Department of Safety [NHDOS], 2019). Class B foam has been used on the Fire Academy site through approximately 175 training courses dating back to 1994. According to a news interview with the NHDOS, the academy ceased using foam containing PFOS and PFOA in May of 2018 and instead selected a fluorine-free foam for training (Sexton, 2018).

In June and August 2018, environmental samples were collected at the Academy at the request of NHDES. PFOS was detected in groundwater at concentrations ranging from 190 ppt to 18,000 ppt, and PFOA was detected at concentrations ranging from 120 ppt to 2,200 ppt, with a maximum total of 20,200 ppt for combined PFOA/PFOS. Elevated concentrations of PFAS compounds were also detected in soil samples and adjacent surface water samples from the Soucook River; however, there are currently no standards for PFAS in soil or surface water in New Hampshire (Nobis Group, 2018).

Fire Academy personnel were not interviewed during the PA; therefore, the types and quantities of AFFF used or stored at the academy currently or historically are not known. However, because the Fire Academy has confirmed releases of PFAS and is located outside the boundary of the AASF Concord, it is considered an adjacent off-facility source of PFAS. **Figure 5-1** shows the location of the Richard M. Flynn Fire Academy in relation to the SMR.

5.5 Loudon Road Fire Training Area

During interviews, NHARNG environmental office personnel indicated that an FTA was formerly located on Loudon Road, next to the Douglas N. Everett Arena, located 0.6 miles west of the SMR and directly adjacent to the Merrimack River, at 15 Loudon Road, Concord, New Hampshire. The approximate geographic coordinates for the former FTA are 43°12'36.1"N; 71°31'31.7"W. Interviewees indicated that there was previously a wooden tower at the site that was used for fire training and was removed in the late 1990s.

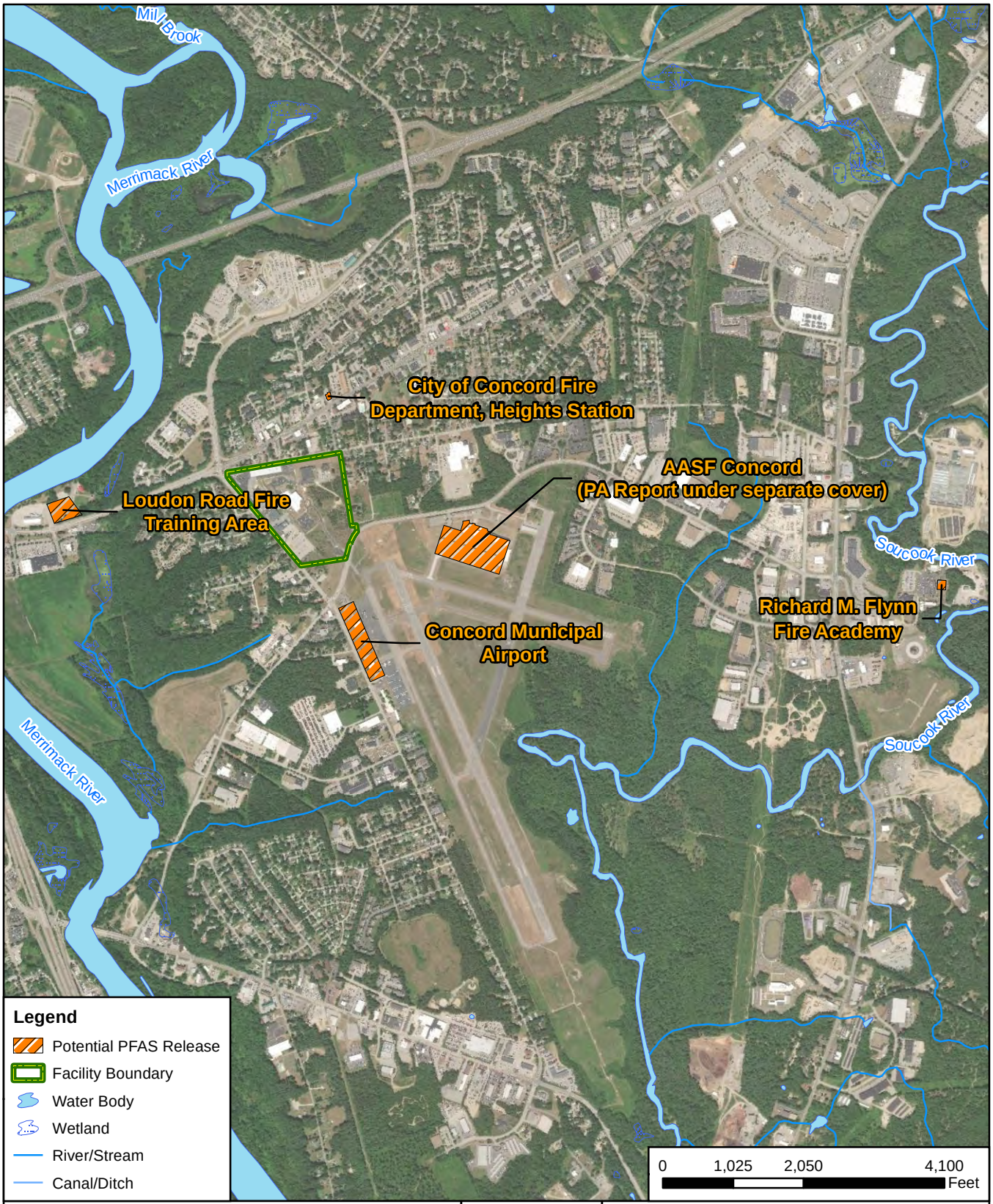
Additionally, former AASF personnel indicated that at least one of the two firetrucks used at the former AASF (the second/newer truck) was taken by the NHARNG for training at the Loudon Road FTA. Although interviewees confirmed that this firetruck used foam, no additional information was

available on the dates of foam use, the type of foam used (Class A or Class B), or whether the foam contained AFFF.

Concord Fire Department personnel were not interviewed during the PA; therefore, it is not known if AFFF were used or stored at the Loudon Road FTA historically. Because the presence of AFFF at the FTA cannot be confirmed, it has been identified as a potential off-site PFAS source area. **Figure 5-1** shows the location of the Loudon Road FTA (as a potential PFAS source area) in relation to the SMR. However, because groundwater flow in the area is generally southwest, towards the Merrimack River, this area is likely side-gradient to the SMR.

5.6 New Hampshire Detections

The NHDES is engaged in an ongoing investigation of PFAS in New Hampshire drinking water and maintains an online, interactive PFAS Sampling Results map (NHDES, 2019). At the time of this PA, the database indicated that PFAS were detected at multiple locations in groundwater, soil, and surface water within a 4-mile radius of the AASF Concord. Data shown indicate PFAS were detected in groundwater in excess of the New Hampshire AGQSs in groundwater in the vicinity of the Richard M. Flynn Fire Academy, approximately 1.7 miles east (side-gradient), near the Old Suncook Road Landfill approximately 1.4 miles to the south-southwest (downgradient), and at an unidentified location approximately 1 mile to the east (side-gradient). PFAS were detected upgradient of the AASF Concord at the Former Vishay Sprague Facility; however, the detections were less than the AGQSs. There were no detections greater than the AGQSs within approximately 5 miles upgradient of the site. The source of the PFAS at these locations is not identified in the database. The data presented in the database are under constant revision, as new sites or facilities are added, and the data may not contain all potential PFAS detections.



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SCALE	1:24,600	CHK BY	AM	10/29/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	10/29/2019

N

Adjacent Sources

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Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, two AOIs was identified at the SMR: AOI 1 Former AASF and AOI 2 Former Camp LaBonte. The AOI locations are shown on **Figure 6-1**. The following sections describe the preliminary CSM components and the specific preliminary CSMs developed for the AOIs. The preliminary CSMs identify 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. Receptors at the SMR include site workers and construction workers. Potential off-post receptors include recreational users of the Merrimack River.

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.

6.1 AOI 1 Former AASF

AOI 1 is the Former AASF, including the former main AASF hangar (former Building K) fire suppression system releases, the firetruck parking bay, the washing platform, the aircraft parking apron, the dry wells, and the Tri-Max™ training area. Potential PFAS release mechanisms within this AOI are described below.

- One documented release of AFFF from the former AASF hangar fire suppression system occurred in 1999. Additionally, a second release of AFFF from the fire suppression system was recalled by one interviewee on an unknown date. After the releases, the foam was either washed into a floor drain trench inside the hangar or washed out of the hangar onto the apron to the east of the building, from where it would have entered the municipal sewer system; however, unintentional releases may have occurred to the nearby grassy areas.

- Former AASF personnel indicated that foam was used on two firetrucks at the SMR between the late 1960s and 1992. Both firetrucks were regularly parked in a crash/rescue bay on the north side of former Building K. Because the dates of use of the firetrucks overlap with the use of AFFF, there is the potential for the foam to have contained PFAS. Unintended spills or releases of foam from the firetrucks may have occurred in the parking bay or to the asphalt outside the bay, if the firetrucks were parked outside.

- Aircraft maintenance and washing were conducted outside at washing platform. There is the potential for unintended spills or releases of PFAS from the washing platform or the associated rinsate after washing aircraft or firetrucks.

- Six Tri-Max™ mobile fire extinguishers were stored outside on the former AASF apron (one beside each helicopter) during the time that helicopters were stationed at the SMR. Given the long-term storage of the Tri-Max™ extinguishers in a non-climate-controlled environment, there is the potential for unintended spills or releases of PFAS from the extinguishers. Additionally, the tanks would be periodically emptied as part of training exercises that occurred north of the former runway.

Given the known releases from the former fire suppression system and Tri-Max™ training, and potential releases from other identified areas, PFAS were likely released to the surface soil at AOI 1. There is the potential for this PFAS to have migrated from surface soil to subsurface soil. Additionally, PFAS that migrated into the drywells would have been released directly to the subsurface soil. Therefore, ground-disturbing activities at AOI 1 could result in site worker and construction worker exposure to via ingestion of surface soil or inhalation of soil particles (dust).

Ground-disturbing activities to subsurface soil could also result in construction worker exposure via ingestion. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete for AOI 1.

PFAS are water soluble and can migrate readily from soil to groundwater; therefore, PFAS released to soil at AOI 1 may migrate to the groundwater via leaching. However, due to the depth of groundwater at the site (estimated to be 30 to 50 ft bgs), the groundwater ingestion exposure pathway for construction workers is considered incomplete. Because no public drinking water wells were identified within 1 mile downgradient of the facility, the groundwater pathway for nearby residents is also considered incomplete.

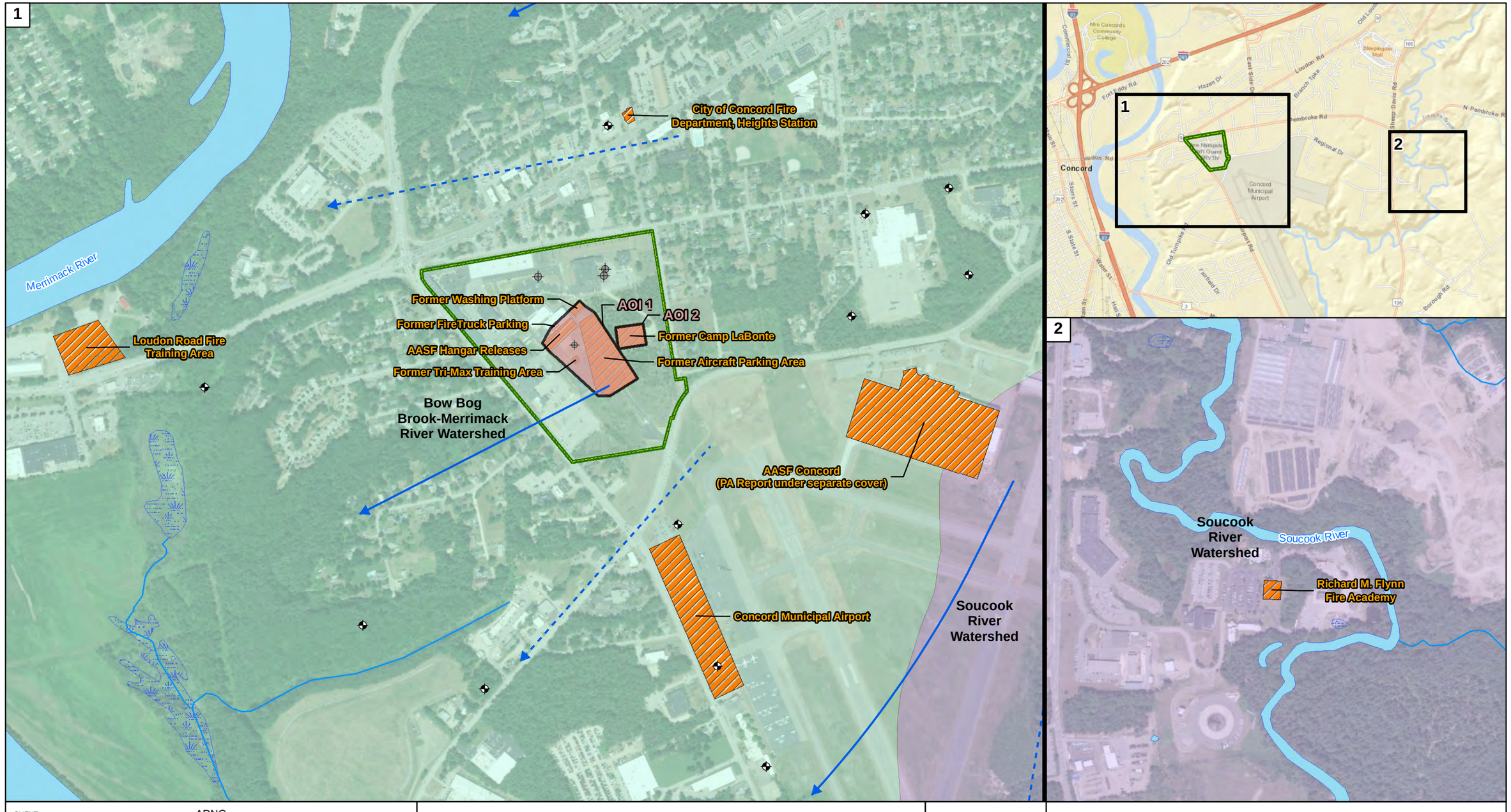
No surface water bodies were identified at the facility; however, the Merrimack River is located approximately 0.8 miles to the west/southwest (downgradient), and the Soucook River is located approximately 0.6 miles to the south/southeast (side gradient). It is not known if there is offsite groundwater discharge to surface water bodies (the Soucook River, Merrimack River, or their tributaries). Based on the depth to groundwater (30 to 50 ft bgs) and the depth of the Merrimack River (5 to 40 ft bgs), groundwater interaction with the river may be possible. Therefore, the ingestion exposure pathway for offsite surface water and sediment is considered potentially complete for recreational users. Human consumption of fish potentially affected by PFAS from the river is also possible. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

6.2 AOI 2 Former Camp LaBonte

AOI 2 is the Former Camp LaBonte. According to former AASF personnel, two firetrucks with foam capabilities were present at the SMR between the late 1960s and 1992. When the first firetruck was in use (late 1960s to pre-1977), foam was used for training on the grass and gravel to the north of the former Camp LaBonte, at the SMR, at approximate geographic coordinates 43°12'38.9"N; 71°30'40.1"W. However, no additional information was available on the type of foam used (Class A or Class B), or whether the foam contained AFFF. Because the first firetruck was potentially in use after the introduction of AFFF, a release of PFAS in the former Camp LaBonte area cannot be ruled out.

Given the potential release to surface soil at the Former Camp LaBonte, there is the potential for PFAS to have migrated from surface soil to subsurface soil. Therefore, ground-disturbing activities at AOI 2 could result in site worker and construction worker exposure to potential PFAS contamination via ingestion of surface soil or inhalation of soil particles (dust). Ground-disturbing activities to subsurface soil could result in construction worker exposure via ingestion. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete. Although PFAS may migrate from the soil to the groundwater via leaching, the groundwater ingestion exposure pathway for construction workers is considered incomplete due to the depth to groundwater (30 to 50 ft bgs). Because no public drinking water wells were identified within 1 mile downgradient of the facility, the groundwater ingestion pathway for nearby residents is also considered incomplete.

As described above in **Section 6.1**, no surface water bodies were identified at the facility. However, it is not known whether there is offsite groundwater discharge to downgradient surface water bodies (the Soucook River, Merrimack River, or their tributaries). Based on the depth to groundwater (30 to 50 ft bgs) and the depth of the Merrimack River 5 to 40 ft bgs), groundwater interaction with the river may be possible. Therefore, the ingestion exposure pathway for offsite surface water and sediment is considered potentially complete for recreational users of the nearby rivers. Human consumption of fish potentially affected by PFAS from the river is also possible. The preliminary CSM for AOI 2 is shown on **Figure 6-3**.



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SCALE	1:8,281	CHK BY	JZ	10/30/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)		PM	RG	10/30/2019

Potential PFAS Release
Facility Boundary
StreamRiver
Wetland
River/Stream
Surface Water Flow Direction
Inferred Groundwater Flow Direction

Wells
Monitoring Well
Other/Unknown Well

0 345 690 1,380 Feet

N

Areas of Interest

AECOM
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Figure 6-1

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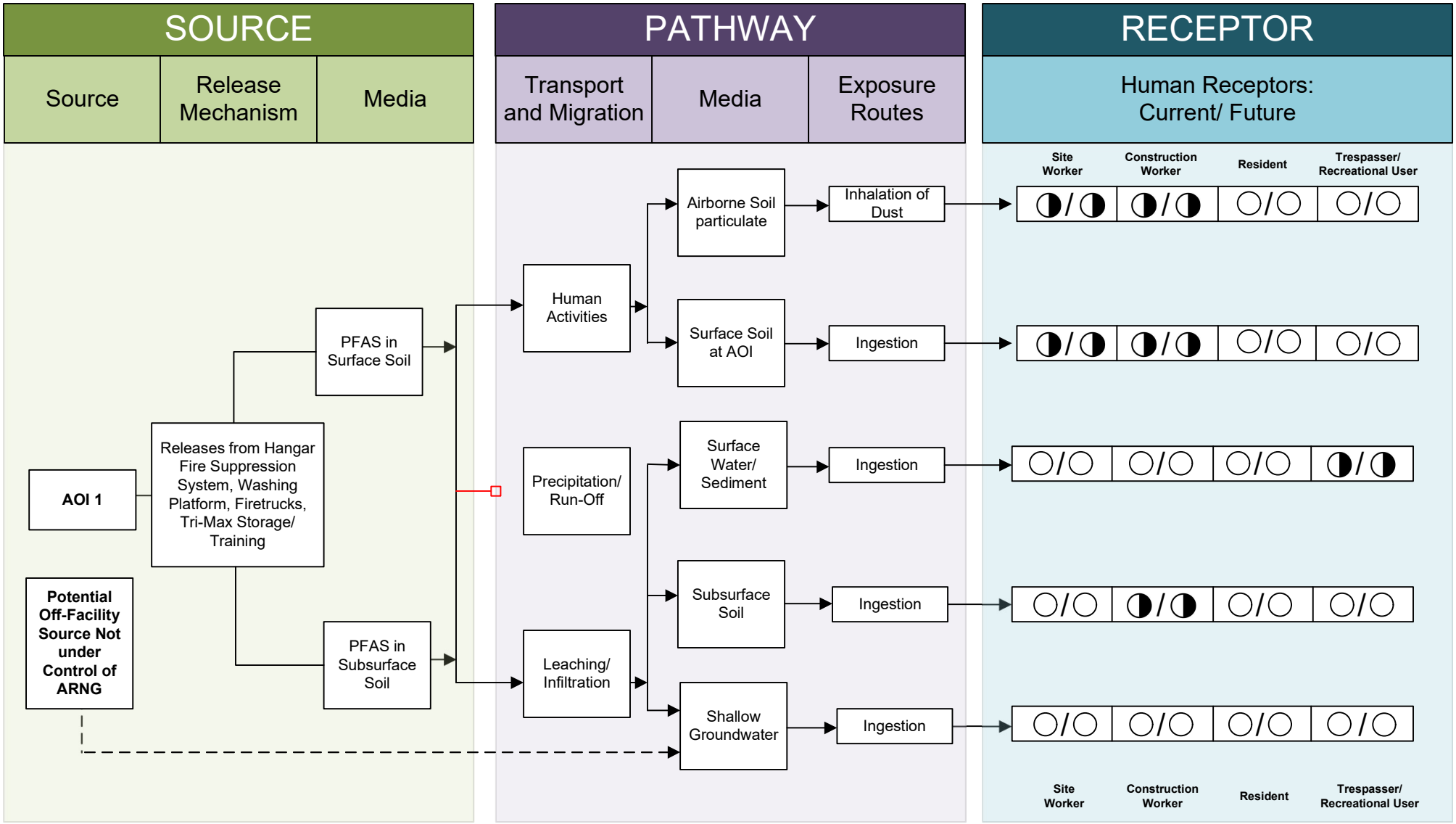


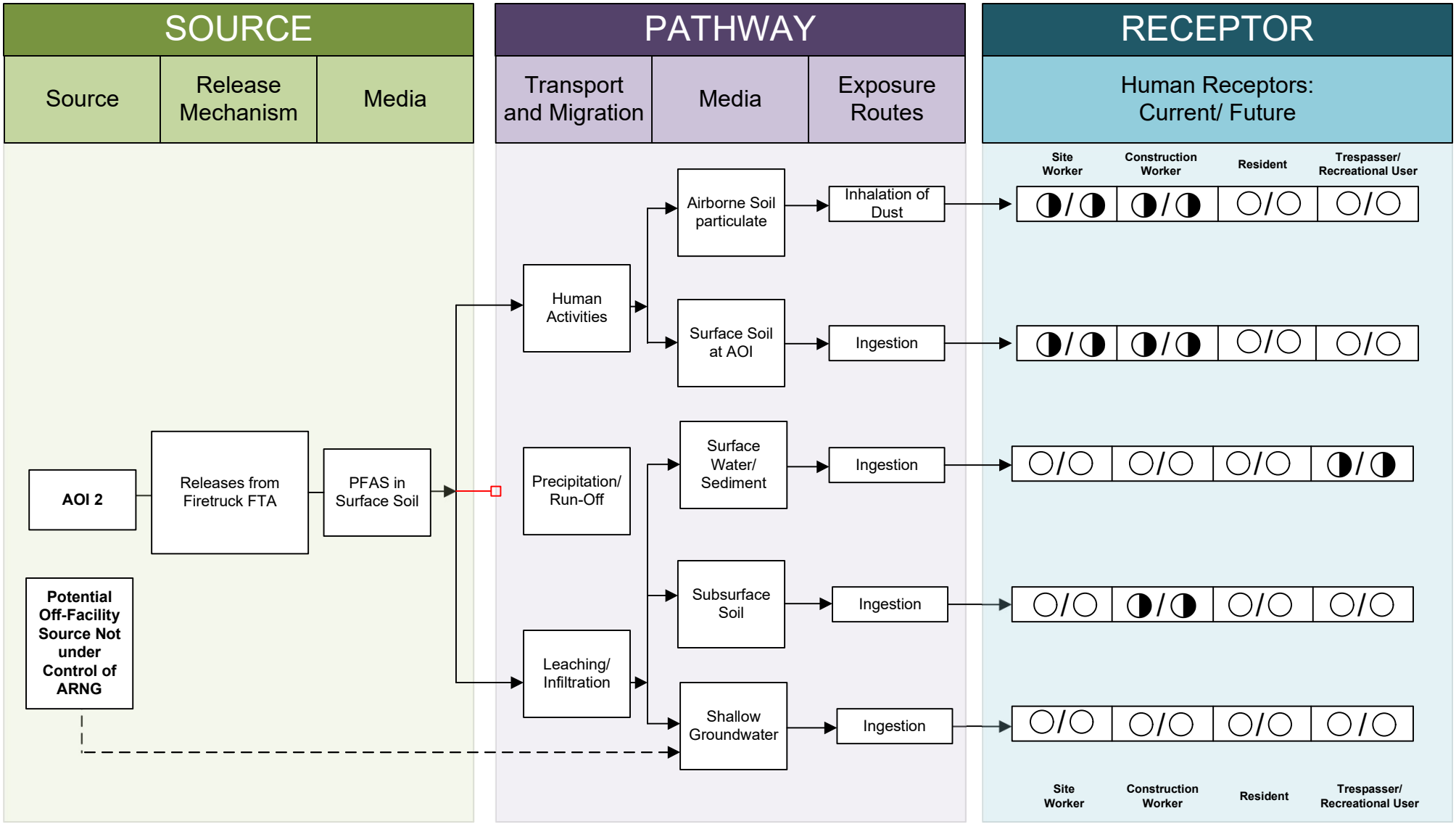
LEGEND

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

NOTES

1. The resident receptor refers to an off-site resident.
2. No surface water bodies were identified at the facility, but the surface water/sediment pathway is considered potentially complete for offsite recreational users due to the potential for groundwater interaction with the downgradient river.
3. Human consumption of fish potentially affected by PFAS from the downgradient river is possible.

Figure 6-2
Preliminary Conceptual Site Model
AOI1 Former AASF



LEGEND

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

NOTES

1. The resident receptor refers to an off-site resident.
2. No surface water bodies were identified at the facility, but the surface water/sediment pathway is considered potentially complete for offsite recreational users due to the potential for groundwater interaction with the downgradient river.
3. Human consumption of fish potentially affected by PFAS from the downgradient river is possible.

Figure 6-3
Preliminary Conceptual Site Model
AOI2 Former Camp LaBonte

7. Conclusions

This report presents a summary of available information gathered during the PA on the use, storage, and potential release of AFFF and other PFAS-related activities at the SMR. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Two AOIs related to a PFAS releases were identified (**Table 7-1**) at the SMR during the PA (**Figure 7-1**).

Table 7-1: AOIs at the State Military Reservation

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Former AASF	NHARNG	late 1960s to 2004
AOI 2	Former Camp LaBonte	NHARNG	late 1960s to pre-1977

Based on actual and potential AFFF releases at these AOIs, there is a potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for AOI 1 is shown on **Figure 6-2**, and the preliminary CSM for AOI 2 is shown on **Figure 6-3**. The preliminary CSMs present the potential receptors and media impacted.

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 SMR. Historically, documentation of PFAS use was not required because PFAS were considered benign. Records were not typically kept by the facility or available during the PA on the use of PFAS at the SMR.

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. 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, and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations. 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, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-3** summarizes the uncertainties associated with the PA.

Table 7-2: Uncertainties

Area of Interest	Source of Uncertainty
AOI 1 Former AASF	AOI 1 includes the former AASF hangar fire suppression system releases, the firetruck parking bay, the washing platform, the aircraft parking apron, the dry wells, and the Tri-Max™ training area. Uncertainties for this AOI include: • No information was available on the type of AFFF, frequency of testing, or system maintenance for the former AASF hangar fire suppression system. The quantities of AFFF released during the two discharges are unknown.

Area of Interest	Source of Uncertainty
	• Although interviewees indicated foam was used on the firetrucks, the dates of the foam type switch, the frequency of sparing on the apron, the type of foam used (Class A or Class B), whether the foam contained AFFF, or the quantities of foam used are unknown. • No information was available on the type, quantity, and concentration of AFFF stored in the Tri-Max™ extinguishers. Interviewees could not confirm if routine inspections were performed on the tanks. Additionally, the frequency and timeframe of Tri-Max™ training and the volume of AFFF discharged per training event are unknown.
AOI 2 Former Camp LaBonte	Interviewees indicated that foam from a firetruck was used for training on the grass and gravel to the north of the former Camp LaBonte on the SMR between the late 1960s are pre-1977. However, the no additional information was available on the dates of foam use, frequency of training, the type of foam used (Class A or Class B), whether the foam contained AFFF, or the quantities of foam used.

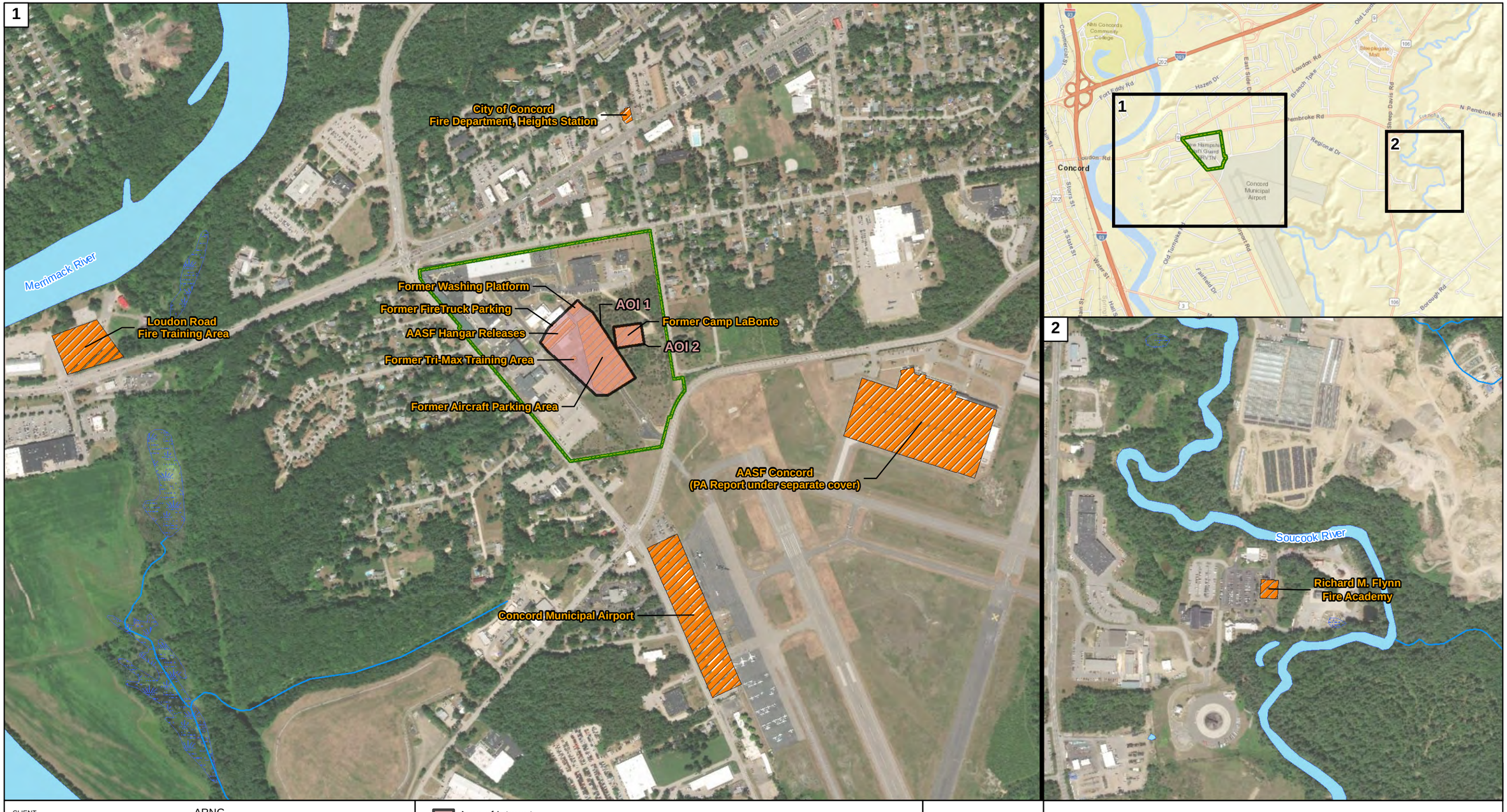
7.3 Potential Future Action

Interviews and records indicate that current or former ARNG activities may have resulted in potential PFAS releases at the AOI identified during the PA. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in surface and subsurface soil at these AOIs. In addition, there is potential for off-site receptors to be exposed to PFAS contamination in surface water and sediment or via fish consumption. **Table 7-4** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo a SI.

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

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rational	Potential Future Action
AOI 1 Former AASF	43°12'38.1"N; 71°30'44.2"W	Known release in 1999 from the main hangar fuel suppression system. Known releases from Tri-Max™ training. Potential releases from the firetruck parking bay, washing platform, and aircraft parking areas. Surface releases may have migrated to drywells.	Proceed to an SI, focus on surface soil (in areas not now covered by asphalt), subsurface soil, and groundwater
AOI 2 Former Camp LaBonte	43°12'38.9"N; 71°30'40.1"W	Firetruck with foam potentially containing PFAS was used for training on the grass and gravel to the north of the former Camp LaBonte.	Proceed to an SI, focus on surface soil, subsurface soil, and groundwater



CLIENT	ARNG			
Preliminary Assessment for PFAS at the State Military Reservation, NH				
REVISED	10/30/2019	GIS BY	MS	10/30/2019
SCALE	1:8,281	CHK BY	JZ	10/30/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)		PM	RG	10/30/2019

Area of Interest
Potential PFAS Release
Facility Boundary
StreamRiver
Wetland
River/Stream

0 345 690 1,380 Feet

N

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 7-1

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Appendix A
Data Resources

Data resources will be provided separately on CD. Data resources for the State Military Reservation include:

Environmental Data Resources Report

- 2019 The EDR Radius Map™ Report with GeoCheck®; Aerial Photo Decade Package; and Certified Sanborn® Map Report; State Military Reservation, 1 Minuteman Way, Concord, NH 03301.

Previous Investigations

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Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

Chief Warrant Officer 4 (CW4 [redacted]) – Phone interview on 5/3/2019

Started with the National Guard at the end of 1982 as a Federal technician (GS)

Became a Chief Warrant Officer 4 (CW4) in 1983.

Left Hangar (Bldg K) in Fall, 1995 to go to CFMO.

Worked in Construction Facilities Management Office (CFMO) from Oct-Nov 1995 until retirement.

Retired from the NH Army National Guard in 1997.

[redacted] relayed the following information:

Sergeant [redacted] (of Loudon, NH) was the Fire Chief in the 1990s, and is deceased, as of 5 Feb 2018. He would have known the most about the history and use of AFFF at the AASF.
He was a 40 year member of the NH Army National Guard, a 30 year member of the Pembroke, NH Fire Department, and a 21 year member of the Loudon, NH Fire Department.

[redacted] Maintenance Foreman was [redacted], who also went to Law School and became Legal Assistant/Warrant Officer.

[redacted] did not recall any foam being used/sprayed in the Hangar (Building K).

He mentioned that the 26th AVN unit out of the Massachusetts Guard was assigned a Fire Truck which was located at the Building K hangar. This truck was assigned as the property of the Hangar itself, and it went with the unit to Annual Training (AT).

According to [redacted], the Fire Truck used water. Every two weeks, the 4-person fire team[([redacted] (deceased), [redacted] retired), [redacted] (retired) and [redacted] (deceased)] from the Hangar would take the fire truck down Loudon Road to the Everett Arena parking lot for fire training. [redacted] wasn't entirely certain what the training consisted of, but was aware that they would donn suits, practiced timing to get to the scene. At the hangar, he remembers them only spraying water on the grounds of the hangar. The same 4 men on the Fire Team were also mechanics working on aircraft at the Hangar (Building K). [redacted] noted that they conducted fire training 4 hours every two weeks or 4 hours every month

The Fire Truck was water/fog capable. It had 2 hoses: 1 for Fog, and 1 for Water. The 26th AVN unit was absorbed back into MAARNG in 1984. At that time, NHARNG got 6 Huey Helicopters and 1 (one) Medical Detachment.

The City of Concord Fire Department also had an interest in the Fire Truck, and they counted it as part of their fire suppression equipment, even though they didn't own it. The NHARNG kept the Fire Truck beyond 1984, and the Concord Fire Department would not let the NHARNG turn it in. The Concord Fire Department made a deal with the Adjutant General at the time [redacted] (now deceased)) to keep it in the NHARNG's equipment inventory.

In 1992, the City of Concord Fire Department had all the equipment they needed and no longer wanted/needed the Fire Truck for their fire suppression needs (to respond to potential fire at the Hangar and the Concord Municipal Airport, so the NHARNG got rid of the Fire Truck at that time (1992).

[redacted] also recalled that in the 1960s, a former 1940s vintage LaFrance Fire Truck, with ladders that had been formerly used at Manchester Airport in 1957-1958, was moved to Concord for the NHARNG's use.

[redacted] noted that he would reach out and get in touch with [redacted], who is now retired and living in Webster, NH, and he will find out what he knows and then get back to me. [redacted] was formerly employed as a mechanic at the NHARNG's Building K on the State Military Reservation in Concord.

Phone Interview with [redacted] (retired) – 5/10/2019

[redacted], a retired Command Sergeant Major (who used to work in the Flight Operations Room at Building K) noted that there were two (2) incidents that he recalls taking place at Building K, State Military Reservation (SMR) in Concord:

1) The first was a fire that was set off by accelerants with a lighter (July 23, 1999) in the Communications Room of Building K.

2) The second incident he only remembers the Hangar filling up fast with foam – he only found out about it was he was arriving to work.

He will try to reach out to [redacted]. He noted that his former AASF Commander, [redacted] is now living in Colorado and he cannot reach him.

5/13/19 - Phone call from [redacted] @ 1:07 pm regarding [redacted] interview

[redacted] noted that he had spoken with [redacted] on 5/9/19 for about 45 minutes, to ask him what he knew about the use of AFFF at the Hangar.

He said that [redacted] noted that foam was used on both Fire Trucks that were under NHARNG ownership. [redacted]s recollection was that the first Fire Truck (a civilian fire truck) came from the Redstone Arsenal, and was an old LaFrance (non-military) Fire Truck. The 2nd Fire Truck was a tank mounted on a deuce and a half truck. According to [redacted], foam was used on the State Military Reservation (SMR) from both trucks.

[redacted] recalled that when the first Fire Truck was in use, the foam was not used on the pavement, but was used on gravel and grass. In specific, [redacted] remembers that foam was used (for training) on the grass and gravel to the north of Camp LaBonte on the SMR. Camp LaBonte used to have small huts, and is located to the south of the parking lot that is behind the Concord Readiness Center.

[redacted] recalled that foam was also used with the 2nd (newer) Fire Truck, but not in the same location as referenced above. With the 2nd Fire Truck, foam was only used on the pavement at the Flight Facility (Building K), and all that foam was directed into storm drains. [redacted] noted that foam was used on the asphalt and rinsed off into storm drains.

He noted that from the East door of Building K, a paved ramp was located there with a washrack, which had pavement and parking for 6 helicopters. Behind the southward line and Camp LaBonte was a ditch which had iron drains. Whatever foam was sprayed would have made it into the ditch and storm drains; the existing drywells were open.

[redacted] also noted that he does remember there was foam capability in Building K. According to [redacted], up until the point that [redacted] retired in 1997, and [redacted] retired in 1999, foam was never discharged in the Hangar itself.

According to [redacted], 2 kinds of foam were used, that were also used in Civilian fire-fighting. He recalled that the older of the 2 foams had some type of animal blood as an ingredient (e.g. pig blood?). The foam later changed to civilian Foam that came from either the Concord Fire Department or the Franklin Fire Department (unclear). He noted that the foam came in 5-gallon containers. [redacted] recalled that the newer Fire Truck was used for training at the Everett Arena on Loudon Road in Concord. He noted that he wasn't sure if water or foam (or both) were used at the Everett Arena training, but he was sure that foam was used on the Building K Hangar pavement.

[redacted] tenure with the NHARNG was from 1982-1997; he only worked part-time in 1974.
[redacted] tenure with the NHARNG was from 1970 – 1999; he was hired as a Mechanic in 1970.
[redacted] was also a fireman for 30-40 years.

Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-19 1000

Interviewee: [redacted] Title: State env. specialist 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 ~~maybe to review records~~ see pg 1 of form

1. Roles or activities with the Facility/years working at the Facility.
[redacted] 21 yrs, state environmental manager, physically at Concord but responsible for entire state. [redacted] Flight medic & last Sergeant (1973) 38 yrs NHARNG, retired 2006 ~~from~~
Additional interviewees below - refer to sign-in sheet

2. Where can I find previous facility ownership information? [redacted] to provide deed records 2005 - 2009 at regional drive
~~ARNG leases from~~
SMR is owned by the ~~ARNG~~ State of NH, ~~airport from~~

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) – Haz. Storage area (maybe), truck storage (maybe) [redacted]
Fire Training Areas – none on site (talk to [redacted])
Firefighting (Active Fire) – no known
Crash – no known
(Fire Suppression Systems (Hangers/Dining Facilities)) – Bldg K (former) along wall
(Fire Protection at Fueling Stations) – near Bldg. P, underground JP4
Non-Technical/Recreational/ Pest Management – no known
Metals Plating Facility – no known
Waterproofing Uniforms (Laundry Facilities) – no known
Other – no known

Building Pmad normal fire extinguishers. unknown as to whether fire supp.

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

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?
- yes - from 1994 to 2004. For testing frequency, discuss with [redacted] (Building K) - to be interviewed by ARNG
- As-builts/construction plans) to be provided by [redacted]

Additional interviewees (group interview):
- [redacted] - 27 yrs, state env. specialist, always with Concord SMR
- [redacted] - Env. Branch manager, 9 yrs ARNG (Concord / Plymouth), 1 yr at Concord SMR
- [redacted] - water resource manager, 12 yrs

PA Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-14 1000

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?
   - Building K (former) has been demolished, would have been charged w/ AFFF, ask Zach B for records (may or may not have demolition records)

7. How is AFFF procured? Do you have an inventory/procurement system that tracks use?
   - no information - ask [redacted] NHARNG to interview)

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)?
   - ~~have MSDS for release at new AASF.~~ ~~therefore 3% class~~ ~~ask Zach B for documentation~~ on
   - current documents unclear, will get copies of everything they have

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?
   - ~~stored in drill hall (Bldg K), deluge tanks, size unknown, no storage of~~ on
   - no information on Bldg. suspect by contractor filling deluge system tanks

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?
    None on the facility.
    Two areas near by (indicated on map).
    Both areas active
    (1) Smokey ~~the~~ bear blvd, Concord
    (2) ~~near the~~ Louden Rd by Everett Arena

PA Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-99 1000

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?

NA - no training on site

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?

[redacted] - unknown, no recollection

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

yes - smokey bear Blvd facility FTA (see maps)
- London Road by Everett Arena
- ARNG did NOT train to put out fires at either (per [redacted]

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?

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?

NA

PA Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-19 1000

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 information
NA
did not use for this purpose

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 information (none to recollection of interviewees)

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?
for emergencies - city of Concord Fire Dept. would have responded

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)?
all in same general area
- Release in late 1990s from Bldg K to tarmac
- (TBD) Former fire truck parked at Bldg K
- Former wash rack (see figure)
- Trimax testing on former tarmac (see figure)

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

PA Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-19 1000

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?

SI 1998
Initial Site Charac. of Dry Well Removal
Decommissioning of Dry Wells
Air emissions reports
Also an EBS for the new AASF

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

[redacted] to provide records listed above

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?

NA

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.?

NA

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?

- no information. per [redacted] - [redacted] may have records.

PA Interview Questionnaire - Environmental Manager

Facility: Concord SMR
Interviewer: [redacted]
Date/Time: 4-22-14 1000

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

- [redacted]
- [redacted]
- [redacted]
- [redacted]

NHARNG to contact [redacted] to provide interview form.

Appendix B.2
Visual Site Inspection Checklists

04-22-19

Visual Site Inspection Checklist

Names(s) of people performing VSI: [redacted] ARNG, USACE, NHARNG; [redacted], NHARNG

Recorded by: [redacted], AECOM

ARNG Contact: [redacted], NHARNG

Date and Time: 04-22-19 1500

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

Source/Release Information

Site Name / Area Name / Unique ID: Concord SMR

Site / Area Acreage: approx. ~~3~~ 43 acres

Historic Site Use (Brief Description): Former location of AASF (former Building K), helicopter parking

Current Site Use (Brief Description): Administrative Buildings for NHARNG

Physical barriers or access restrictions: yes- chain link fence, checkin and security approval required

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):
- late 1990s: discharge from deluge system in Bldg K
- (TBD) potential fire truck
- former wash rack
- trimax testing (see maps)

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

Dump Road - industrial area - Concord Litho Construction company. automotive, brakes, tires

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

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

Now Old Turnpike Road

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? (Y) N → former AASF

1a. If yes, indicate which type of AFFF has been used:
30%, team cannot recall what brand

1b. If yes, describe maintenance schedule/leaks:
NHARNG to contact [redacted]

1c. If yes, how often is the AFFF replaced:
NHARNG to contact [redacted]

1d. If yes, does the facility have floor drains and where do they lead? Can we obtain an as built drawing?
[redacted] to provide as-builts for former building K

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location: no surface water features on site, catch basins in paved portions of site that lead to Concord Municipal Sewer

2. Is there channelized flow within the site/area? Y (N)

2a. If so, please note observation and location: see above

3. Are monitoring or drinking water wells located near the site? (Y) N
- Pembroke Well Field 1.5 mi SE
- One domestic well + one commercial well 0.8 mi East

3a. If so, please note the location: at SMR → used to have them but no longer have K/C does not meet transport requirement

4. Are surface water intakes located near the site? Y (N)

4a. If so, please note the location:
- MWS at former Vishay Sprague Facility

5. Can wind dispersion information be obtained? (Y) N

5a. If so, please note and observe the location. wind sock data for Concord Municipal Airport

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

6a. If so, please note the source and location. local fire stations, two FTAs (Smokey Bear Blvd and Louden Road by Everett Arena)

6b. Will off-site reconnaissance be conducted? Y (N)

04-26-17
[redacted]
Concord SMT

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): yes-demolition of former Building K and associated former AMSF tarmac and runway in 2004

2. Is the site/area vegetated? Y/N

2a. If not vegetated, briefly describe the site/area composition: yes-grass near buildings, evergreens along Minuteman way

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: chain link fence, check in w/ security, pre-approval for access

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: yes- across Airport Rd to the West, across Pembroke Rd to the East, many homes w/in 1-mi

4. Are any schools/day care centers located near the site? Y/N

4a. If so, please note the location/distance/type: Many daycares and schools nearby
Easley Enrichment Center

5. Are any wetlands located near the site? Y/N

5a. If so, please note the location/distance/type: wetlands are a few miles away, [redacted] (NHARNG) to provide files

Concord Christian academy
East Concord Cooperative Preschool
Childrens Place and Parent Education Center
Merrimack Valley Daycare Center
Broken ground School
Millbrook School
} within 1-mi
} about 2 mi

[redacted] Concord SMR

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
Concord-SMR-01	04-22-19 Former Building K	West side of new building in location of former Bldg K

Appendix B.3
Conceptual Site Model Information

07-22-11
recorded by: A. Martin AECOM

Preliminary Assessment – Conceptual Site Model Information

Site Name: Concord SMR

Why has this location been identified as a site?

AFFF was stored or used at the facility when the former AASF was located here.

Are there any other activities nearby that could also impact this location? Two nearby FTAs:

① Smokey Bear Blvd, Concord

② Londin Rd by Everett Arena, Concord (both still in use)

Training Events

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

If so, how often? NA

How much material was used? Is it documented? NA

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? generally west to Merrimack River

Average rainfall? 40 inches

Any flooding during rainy season? NO

Direct or indirect pathway to ditches? Scattered catch basins on paved portions of site which discharge to Concord Municipal Storm system

Direct or indirect pathway to larger bodies of water? NO

Does surface water pond any place on site? Minor

Any impoundment areas or retention ponds? NO

Any NPDES location points near the site? NO

How does surface water drain on and around the flight line? NO flight line currently. Former tarmac and taxiway.

04-2274
A. Martin
ConcordSMR

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? Southwest

Depth to groundwater? approx. 50 ft bgs

Uses (agricultural, drinking water, irrigation)? none

Any groundwater treatment systems? no

Any groundwater monitoring well locations near the site? no

Is groundwater used for drinking water? yes but not from wells near site

Are there drinking water supply wells on installation? no

Do they serve off-post populations? no

Are there off-post drinking water wells downgradient no

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? no

If so, do we understand the process and which water is/was treated at the plant? NA

Do we understand the fate of sludge waste? NA

Is surface water from potential contaminated sites treated? NA

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? (historic) there was a wash rack located to the NE of former bldg K. (see map)

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?

NA - no nozzle testing known to interviewees

3. Other? NA

04-22-19
a. martin
Concord SMK

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker – yes

Construction Worker – yes (2018 PCA for Buildings 2)

Recreational User – no

Residential – no

Child – no

Ecological – yes

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

Industrial sites, landfills, many schools, hospitals, daycare, churches, commercial areas (shopping/restaurants)

Documentation

Ask for Engineering drawings (if applicable). drawings requested 4-22-19

Has there been a reconstruction or changes to the drainage system? When did that occur?

yes - Bldg K torn down, former AASF tarmac and taxiway removed in 2004

Appendix C
Photograph Log

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	State Military Reservation	Concord, New Hampshire

Photograph No. 01

Date 5/25/1999

Time Unknown

Description:
Front of the former Building K AASF Hangar.

Orientation:
West

Photograph No. 02

Date 7/23/1999

Time Unknown

Description:
AFFF foam release from the former AASF Hangar (former Building K).

Orientation:
East

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	State Military Reservation	Concord, New Hampshire

Photograph No. 03

Date 7/23/1999

Time Unknown

Description:

AFFF foam release from the former AASF Hangar (former Building K). Personnel washed foam down drain in the main hangar which led to the municipal sewer system.

Orientation:

NA

Photograph No. 04

Date 7/23/1999

Time Unknown

Description:

AFFF foam release from the former AASF Hangar (former Building K). AFFF foam release from the former AASF Hangar (former Building K). Personnel washed foam down drain in the main hangar which led to the municipal sewer system. Some foam was washed out onto the apron.

Orientation:

South

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	State Military Reservation	Concord, New Hampshire

Photograph No. 05

Date 7/23/1999

Time Unknown

Description:

AFFF foam release from the former AASF Hangar (former Building K). AFFF foam release from the former AASF Hangar (former Building K). Personnel washed foam down drain in the main hangar which led to the municipal sewer system.

Orientation:

East

Photograph No. 06

Date 6/25/2003

Time 13:34

Description:

Aerial photograph collected by the NHARNG of the former AASF.

Orientation:

Northwest

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	State Military Reservation	Concord, New Hampshire

Photograph No. 07

Date 6/25/2003

Time 15:35

Description:

Aerial photograph collected by the NHARNG of the former AASF.

Orientation:

Southwest

Photograph No. 08

Date 4/22/2019

Time 15:46

Description:

Front of current Building 1, which is in the location of the former AASF (former Building K).

Orientation:

Northeast