FINAL
Preliminary Assessment Report
AASF 1
Green Township, Summit County, Ohio

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

June 2020

Prepared for:

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

U.S. Army Corps of Engineers, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

Prepared by:

AECOM
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876
aecom.com

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Acronyms and Abbreviations

%	Percent
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	Area of Interest
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
°F	degrees Fahrenheit
FTA	fire training area
gpm	gallons per minute
HEF	high expansion foam
IED	Installations & Environment Division
NOSC	Navy Operational Suport Center
OHANG	Ohio Air National Guard
OHARNG	Ohio Army National Guard
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency

Executive Summary

The United States (US) Army Corps of Engineers (USACE) Baltimore District on behalf of the Army National Guard (ARNG)-Installations & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SI) 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 Army Aviation Support Facility (AASF) 1 in Green Township, Summit County, Ohio to assess potential PFAS release areas and exposure pathways to receptors. The AASF is constructed on a 76.9-acre parcel of land owned by the Akron-Canton Regional Airport and leased to the Ohio ARNG (OHARNG) until 2061. 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 24 July 2018
- Interviewed current OHARNG personnel during the site visit, including safety and aviation maintenance officer and hazardous waste manager, as well as the operations manager from the adjacent Akron-Canton Regional Airport
- Completed visual site inspection at known or suspected PFAS use, storage, or release locations and documented with photographs;
- Developed a preliminary conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Area(s) of Interest (AOIs) and the facility (**Figure ES-1**)

Three AOIs related to PFAS use, storage, or potential release were identified at the AASF 1 during the PA. The AOIs are shown on **Figure ES-1** and described in the table below:

Table ES-1: Areas of Interest

Area of Interest	Name	Used by	Release Dates
AOI 1	Storage and Ramp Area	OHARNG	Unknown
AOI 2	AASF 1 Hangar	OHARNG	System testing in 2007
AOI 3	Wetland	OHARNG	Secondary Accumulation

Based on the long-term exterior storage of AFFF-containing TriMax™ tanks and known storage of mobile fire extinguishers along the paved ramp area at AOI 1, potential releases could result in site and construction worker exposure to PFAS in surface and subsurface soil to via inhalation and ingestion. Given water flow patterns and the close proximity of private drinking water wells, potential releases from these tanks could also result in exposure to PFAS in groundwater and surface water via ingestion to site workers, construction workers, trespassers, and resident receptors at AOI 1.

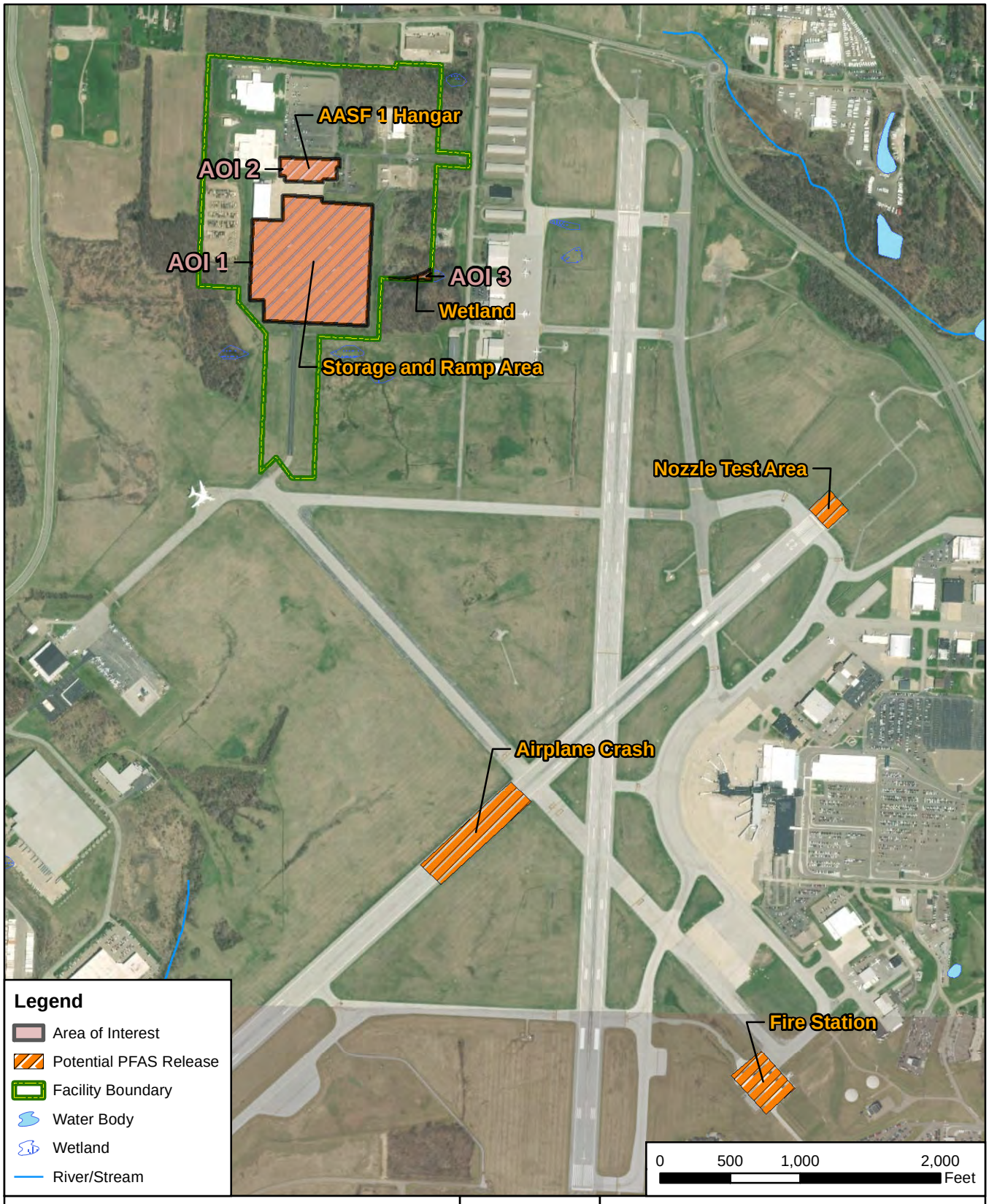
Any potential releases within AOI 2 would likely be captured in the AASF 1 Hangar drains, which flow to an underground oil water separator that is connected to the City municipal water system.

However, any residual AFFF from the AASF 1 Hangar not captured within the indoor floor drains has the potential to flow to the outside grated drains located throughout the AASF 1 and the paved parking area.

Based on the contained nature of the historic hangar release and the connection to city wastewater, ground disturbing activities at AOI 2 are not likely to result in site and construction worker exposure to potential PFAS contamination via inhalation of dust or ingestion of soil, surface soil, or subsurface soil. However, known and potential releases within and around AOI 2 have the potential to migrate to the nearby grated drains and impact groundwater and surface water. Therefore, based on groundwater flow, surface water drainage, and the close proximity of private drinking water wells in the area, there is the potential for exposure to PFAS contamination in groundwater to residents and trespassers, and surface water and sediment to all receptors at AOI 2.

Known and potential AFFF releases to surface soil and surface water throughout the facility have the potential to migrate to the on-site wetland, on the southeast edge of AASF 1. Based on surface water flow patterns and the potential for surface drainage and runoff to flow into AOI 3, AFFF-releases to surface soil and surface water have the potential to result in PFAS exposure to site and construction workers via inhalation and ingestion of surface soil, subsurface soil, and sediment, or potential exposure to PFAS in groundwater and surface water via ingestion to site workers, construction workers, trespassers, and resident receptors at AOI 3.

A summary CSM for all identified AOIs within the AASF 1 are shown on **Figure ES-2**.



CLIENT	ARNG			
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SCALE	1:12,000	CHK BY	TK	7/30/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/30/2019

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Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

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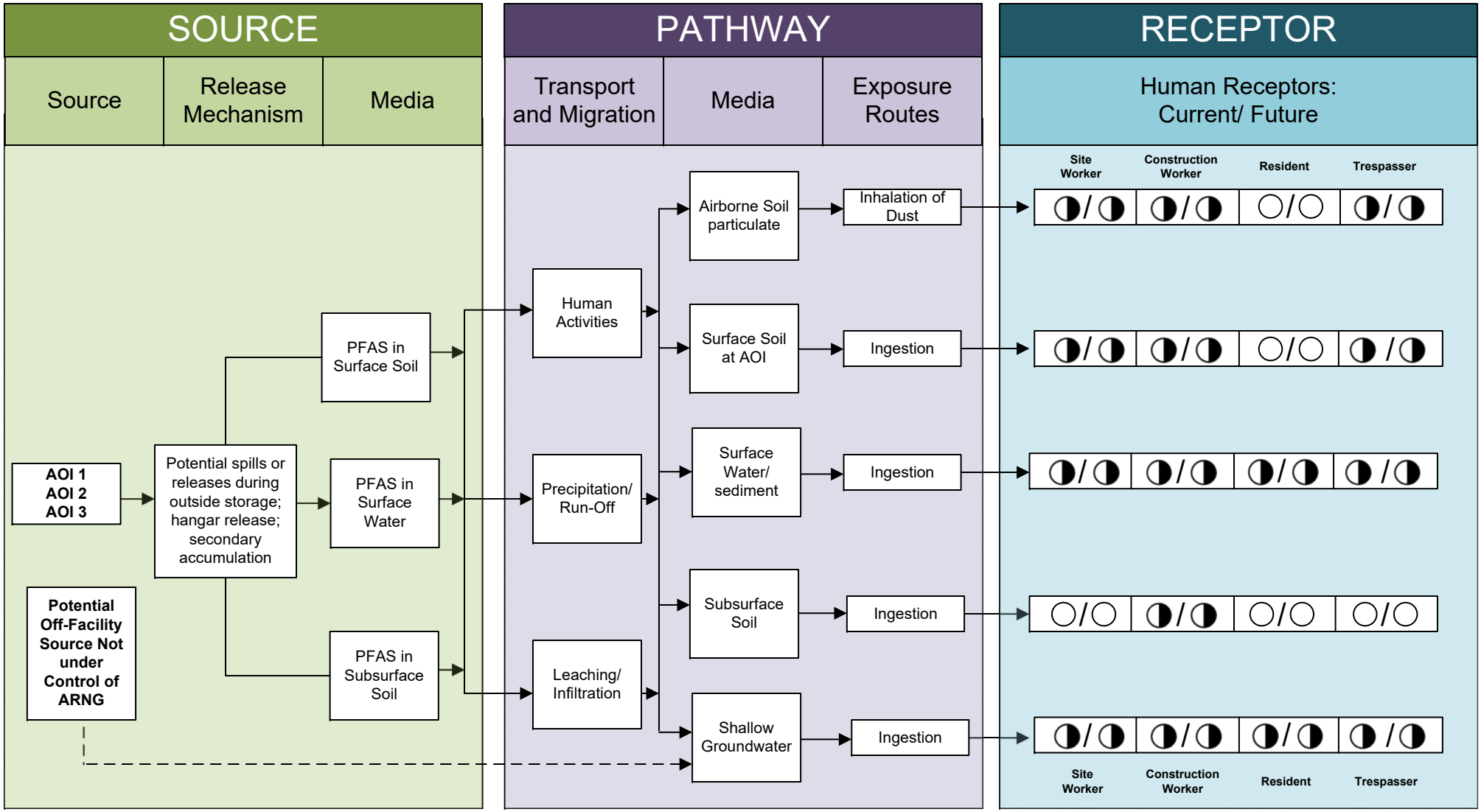


LEGEND

- 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. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
AASF1

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 & Environment Division (IED), Cleanup Branch contracted AECOM Technical Services, Inc. (AECOM) to perform *Preliminary Assessments (PAs) and Site Inspections (SI) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide* under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017. The ARNG is assessing potential effects on human health related to processes at 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 for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. In the absence of federal maximum contaminant levels, some states have adopted their own drinking water standards for PFAS; however, the Ohio Environmental Protection Agency has not issued any regulatory standards relating to maximum contaminant levels of PFAS in drinking water.

This report presents findings of a PA for PFAS at the Army Aviation Support Facility (AASF) 1 (also referred to as the “facility”) in North Canton, Ohio, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] Part 300), and USACE requirements and guidance.

This PA documents the known fire training areas (FTAs), as well as other locations where PFAS may have been used, stored, or potentially released into the environment at the AASF 1. 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 24 July 2018;
- Interviewed current Ohio ARNG (OHARNG) personnel during the site visit, including safety and aviation maintenance officer and hazardous waste manager, as well as the operations manager from the adjacent Akron-Canton Regional Airport;
- Completed visual site inspection at known or suspected PFAS use, storage, or release locations and documented with photographs;
- Developed a conceptual site model (CSM) to outline the potential release and pathway of PFAS for the Area(s) 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 outline is as follows:

- **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 FTAs at the facility identified during the site visit
- **Section 3** – **Non-Fire Training Areas:** describes other locations of PFAS releases at the facility identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of AFFF release at the facility, specifically in response to emergency situations
- **Section 5** – **Adjacent Sources:** describes sources of PFAS release adjacent to the facility that are not under the control of ARNG
- **Section 6** – **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

AASF 1 is home to Army Aviation Units, and it is located in Green Township, Summit County, Ohio, on the north portion of the Akron-Canton Regional Airport (**Figure 1-1**). The ARNG signed a lease in 1984 for property owned by the Akron-Canton Regional Airport Authority and, through an amendment in 2010, has an active lease for the 76.9-acre property until 2061. The facility currently has an AASF building, an aviation support area, helicopter parking area, vehicle maintenance area, and an armory. Hover operations and other flight training activities occur on and near the helicopter pad

1.5 Facility Environmental Setting

AASF 1 is located in the Appalachian Highlands region of Ohio. The Appalachian Highlands encompass the eastern part of the state and are characterized by alternating plateaus and plains and a higher relief than the adjacent Interior Plains. The terrain around the facility exhibits moderate to low relief. The elevation of the facility is approximately 1,215 feet above mean sea level. The facility is surrounded by farmland and deciduous forest to the north and west, the Akron-Canton Regional Airport to the southeast, and residential areas to the west.

1.5.1 Geology

AASF 1 lies within the Appalachian Plateaus physiographic province, Akron-Canton Interlobate Plateau district. It occupies a hummocky area between two converging glacial lobes and is dominated by kames, kame terraces, eskers, kettles, kettle lakes, bogs, and fens (ODGS, 1998).

AASF 1 is situated on sandy Wisconsinan-age clay to loam glacial till (ODGS, 1998). The glacial till unit is generally 21 to 50 feet thick and may be up to 80 feet thick locally (ODGS, 2004). The glacial till is underlain by shale and siltstone bedrock of the Allegheny and Pottsville Groups. The shale and siltstone are interbedded with minor very fine- to medium-grained sandstone and minor limestone. Incidental coal beds up to 12 feet thick may occur locally. The Allegheny and Pottsville Groups are up to 700 feet thick (Slucher, E.R. *et al*., 2006).

1.5.2 Hydrogeology

AASF 1 is located in the Appalachian Plateaus aquifer system. The aquifer system has two major hydrogeologic units within the vicinity of the AASF 1: (1) the surficial aquifer system and (2) the Pennsylvanian aquifers. The surficial aquifers consist of glacial or alluvial sand and gravel deposits surrounded by low-permeability glacial till and are concentrated in stream valleys. Yields from the surficial aquifer are typically low in the vicinity of the AASF 1 and increase westward towards Singer Lake and Nimisila Reservoir. The Pennsylvanian aquifer is composed primarily of sandstone and shale from the Allegheny and Pottsville Groups. Yields from the sandstone and shale are generally 3 to 10 gallons per minute (gpm). Yields as much as 50 gpm have been obtained from the Sharon conglomerate member of the Allegheny and Pottsville Groups at depths greater than 100 feet below ground surface (bgs) (Schmidt, 1979).

The property is located on a groundwater divide in both the surficial aquifer system and the Pennsylvanian aquifers. Groundwater in the eastern part of the property flows east towards a tributary of the West Branch of Nimishillen Creek; groundwater in the western part of the property flows west, southwest, and northwest toward a tributary of Nimisila Creek (**Figure 1-2**). According to the Ohio Water Wells database, the average depth to water in the immediate vicinity of the AASF 1 ranges from 10 to 80 feet bgs (ODNR, 2018).

Domestic, industrial, public/semi-public, agricultural/irrigation, and monitoring wells are located within a mile of the property (**Figure 1-2**). A query of the Ohio Water Wells database showed several private drinking water wells within a half-mile of the facility, as well as one public/semi-public supply well on the property; however, interviewees confirmed that this drinking water well has been inactive for approximately 10 years (ODNR, 2018). Drinking water within the facility is now provided by Aqua Ohio, a public water utility provider and a subsidiary of Aqua America. Aqua Ohio serves multiple counties and receives the drinking water it distributes from groundwater and a series of surface water locations at Evans, Pine, Hamilton, and McKelvey Lakes and Lake Erie (Aqua, 2018). The adjacent Akron-Canton Regional Airport drinking water supplies are provided by the city of North Canton, located about 3.5 miles south. Drinking water from the city of North Canton is supplied by a serious of six groundwater drinking wells in and around the North Canton area.

1.5.3 Hydrology

Regional surface water features include Willowdale Lake to the southwest, the Nimisila Reservoir to the west, and the Portage Lakes to the northwest. The Nimisila Reservoir is used to maintain a constant water supply in the Portage Lakes, and surface water is withdrawn from the Portage Lakes for industrial use.

No surface water flows onto AASF 1. Three streams flow to the east, west, and north of the facility, respectively. An unnamed tributary of the West Branch of Nimishillen Creek begins approximately 2,000 feet from the eastern boundary of the facility and flows to the southeast. An unnamed tributary of Nimisila Creek begins approximately 2,800 feet from the western boundary of the facility and flows to the south/southwest for approximately 2.5 miles, where it enters Willowdale Lake. An unnamed stream flowing to the north begins approximately 1,800 feet from the northern boundary of the facility. Lake Cable, a popular lake for recreational activities, is located approximately four miles south of the AASF 1. Recreational use of nearby surface water bodies, including Willowdale Lake, Lake Cable, and other surrounding tributaries is high.

Three small forested/shrub wetlands are located within and directly surrounding the facility boundary. Two wetland areas are located outside the southeast boundary of the facility, one wetland is located outside the northeast corner of the facility boundary, and one wetland is locted on the southeastern edge of the facility (CHA, 2015). An approximately 18.4-acre forested/shrub wetland begins approximately 930 feet from the north property boundary and drains into the unnamed stream to the north of the facility. Surface drainage from AASF 1 empties into these wetlands, as well as into the unnamed streams to the north and east of the facility (**Figure 1-3**). Any surface drainage not emptied into these wetlands is captured by grated drains throughout the facility and the adjacent property and is discharged through an outfall east of the facility, within the Akron-Canton Airport facility boundary. Discharge from this outfall eventually flows into Schumacher Ditch, approximately 1.5 miles east of AASF 1 (see **Figure 1-3**). Schumacher Ditch flows through Stark County and parts of the city of Green and discharges to the west branch of Nimisila Creek.

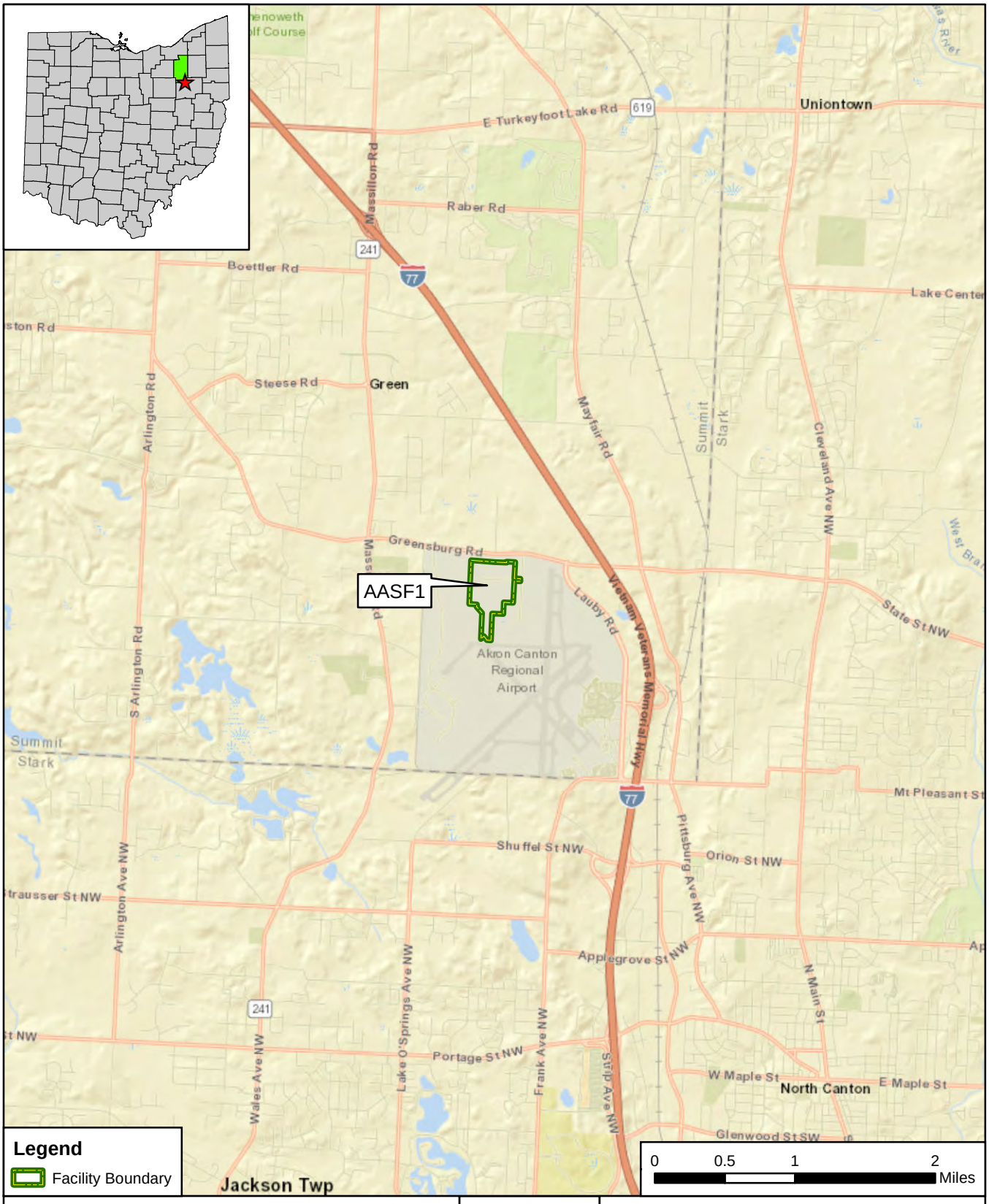
The Akron-Canton Airport property is broken up into eight designated drainage areas, with the AASF 1 located in the northern-most drainage area, which is about 500 acres. This area drains surface water to the east/southeast and discharges through a designated outfall on the eastern boundary of Akron-Canton Airport, eventually flowing into Schumacher Ditch. This outfall is operated and managed by the Akron-Canton Airport, and holds an NPDES permit (CHA, 2015). Four side channels are associated with this ditch; however, Schumacher Ditch is the main waterway that captures stormwater and surface flow from this entire drainage area, including the outfall associated with the AASF 1 (EDG, 1994).

1.5.4 Climate

The climate at the AASF 1 is temperate, humid subtropical, with cool to cold winters and long, hot summers. The average temperature is 49.9 degrees Fahrenheit (°F), with summer highs of 80.1 °F and winter lows of 21.4 °F. Average annual precipitation is 39.62 inches (NOAA, 2018).

1.5.5 Current and Future Land Use

The AASF 1 is located on the northern portion of the Akron-Canton Regional Airport, with various small residential areas surrounding the facility, and several small local parks to the north and west. A small taxiway extends from the OHARNG apron to the intersection of Taxiway K and D at the Akron-Canton Airport (CHA, 2015). A helicopter pad and work area are present within the facility, where hover operations and other flight training activities are performed (CHA, 2015). Directly east of the facility boundary lies Runway 19. Within the facility boundaries are an AASF hangar, an armory building, helicopter parking area, and vehicle maintenance area. Within the National Guard complex is a Navy Operational Suport Center (NOSC) that was built in 2011 and is leased by the United States Navy Reserve. This one-story facility was constructed under BRAC and consolidated NOSC Akron and NOSC Cleveland (CHA, 2015). ARNG has an active lease of the AASF 1 until 2061, and future land use is not anticipated to change during that time.



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NOTES	Preliminary Assessment for PFAS at AASF1, OH			
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SCALE	1:63,360	CHK BY	TK	5/17/2019
Base Map: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI,		PM	RG	5/17/2019

Facility Location

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12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

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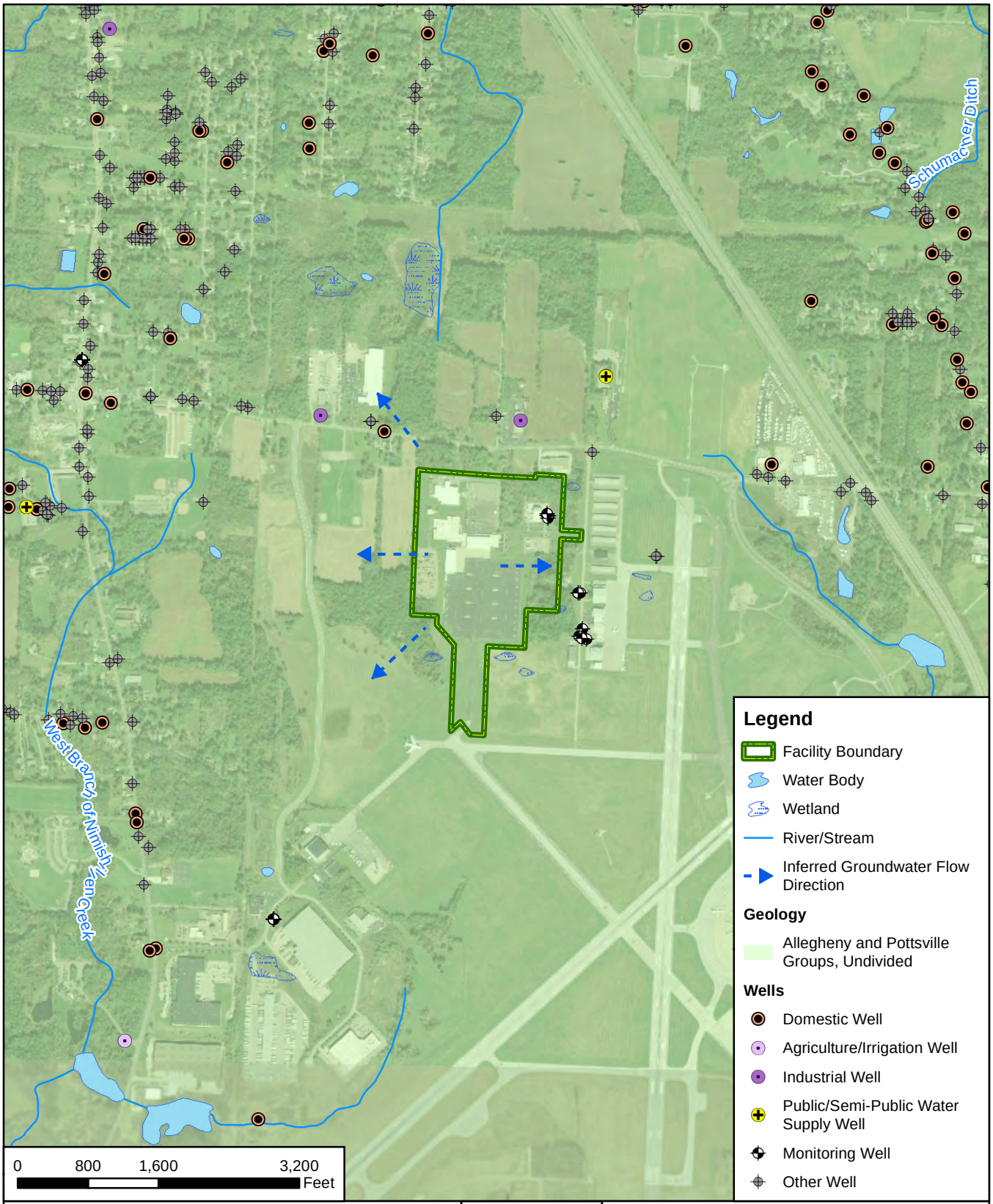

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Groundwater Features

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Figure 1-2

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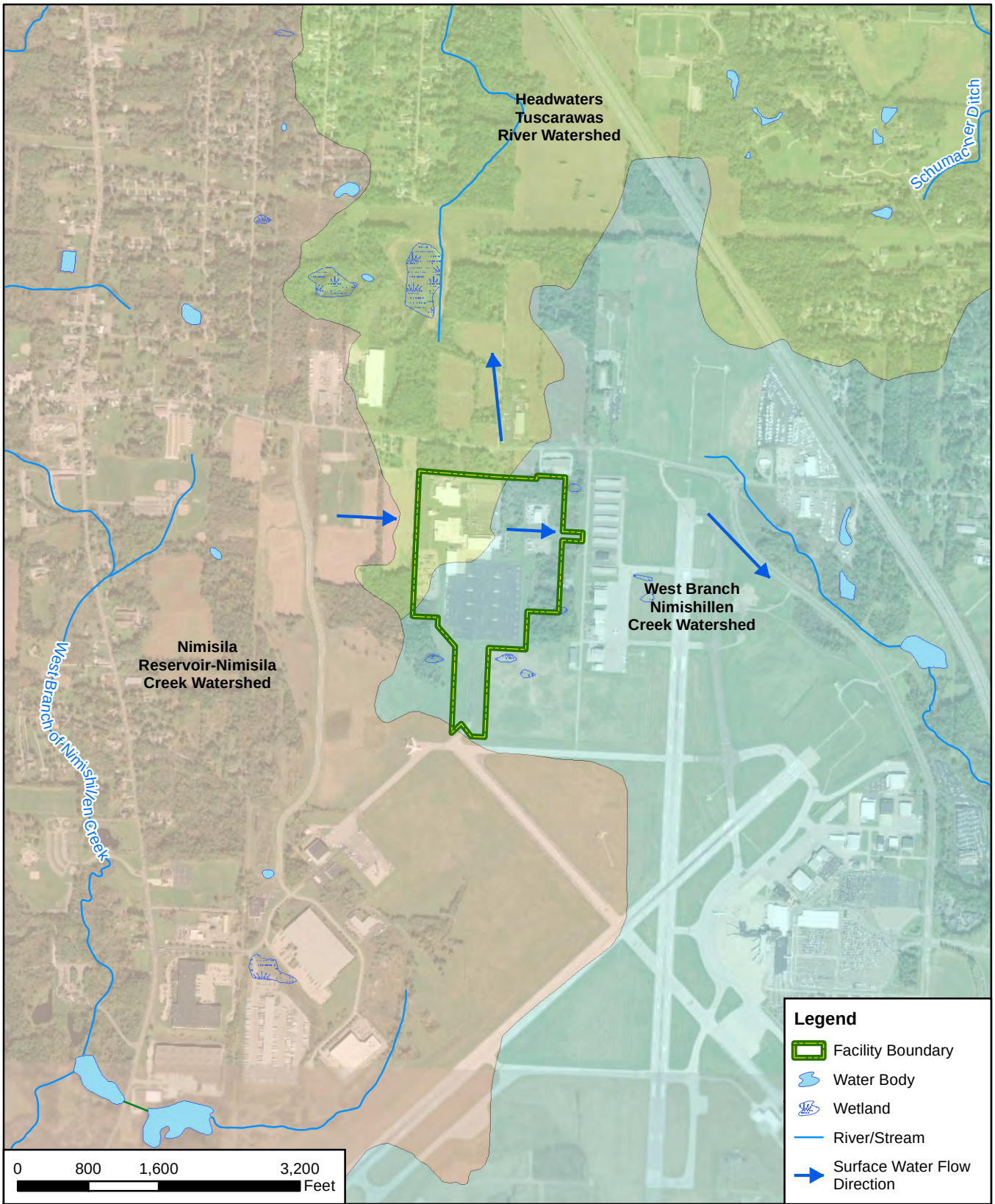

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Surface Water Features

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Figure 1-3

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2. Fire Training Areas

Interviewee knowledge from OHARNG personnel dates back to 2013; however, interviewee knowledge from the adjacent airport dates back to 1979. Based on collective knowledge of interviewee's, historical document review, and review of Environmental Data Resource reports, FTAs have never existed within the AASF 1.

3. Non-Fire Training Areas

Three non-FTAs where AFFF was potentially stored and/or released were identified during the PA. Descriptions of the non-FTAs are presented below, and the non-FTAs are shown on **Figure 3-1**.

3.1 Storage and Ramp Area

There are currently eleven (11) TriMax™ 30 tanks stored outside the southern border of AASF 1 Building 5, on the northwestern portion of the aircraft parking area. Nine of the tanks are filled with concentrated 3 percent (%) AFFF, while two of the tanks are empty. Interviewees confirmed that one of the empty tanks was previously released during an offsite training event approximately three to four years ago (i.e., approximately 2015 or 2014) at the Akron-Canton Airport; this event is described in **Section 5.1**. The other empty TriMax™ tank had non-functional parts, and the contents were drained into 5-gallon buckets and sent for disposal in 2018; however, the location of this transfer is unknown.

Five of the TriMax™ tanks were covered and were previously stored inside the AASF 1 Building area (since approximately 2000 or 2001). Six of the TriMax™ tanks were uncovered and were previously stored inside of Building 5. It is unknown what year the tanks were transferred from inside their prospective buildings to the exterior of Building 5. Interviewees recalled these tanks being stored outside for several years; however, aerial photography from May 2017 does not show these tanks stored outside. It is estimated that these tanks are 15 to 20 years old, although the exact origin of these tanks is unknown. According to inspection tags, these tanks were last serviced in July 2014.

While no spills or releases have been reported from the nine full tanks stored outside, the storage of these tanks in a non-climate controlled area since at least 2017 without inspection for several years indicates a potential for unintended spills or releases. The long-term storage location of the TriMax™ tanks falls within a surface water divide; depending on various factors, surface water can flow to either the east or the west. Suface water flow to the west migrates towards off-site wetlands and other grassy areas. Surface water flow to the east is towards an identified on-site wetland, as well as towards a designated surface drainage system. Any potential spills or releases on or around this TriMax™ Storage Area have the potential to migrate and impact these various areas.

Historical aerial photography shows the presence of mobile fire extinguishers along the paved ramp area from at least 2006 until 2018. Generally, safety standards require at least one mobile fire extinguisher for every two helicopters. During interviews, it could not be confirmed if the mobile extinguishers previously stored along the ramp area contained AFFF or PFAS material; however, given the facility history included the presence of TriMax™ tanks and other previous AFFF storage, there is the potential for these mobile fire extinguishers to contain PFAS. Any potential spills or relases in this area would follow the same pattern as the long-term TriMax™ storage, and leaves the potential for PFAS exposure.

3.2 AASF 1 Hangar

The AASF 1 Hangar was constructed between 1987 and 1988, which included a main hangar and larger attached armory building; however, the armory was not investigated or inspected during this PA. Aviation maintenance and storage of aircraft occurs at this building. Original construction of the AASF 1 Hangar did not include a fire suppression system. The AASF 1 Hangar was retrofitted in 2006 to include a high expansion foam (HEF) fire suppression system. This fire suppression system included a 400-gallon tank containing concentrated Buckeye HEF 2.2%. In 2007, a test of the system occurred that resulted in a full release of the system. According to

interviewees, the bay doors were closed, and all foam from the test was washed down the drains within the AASF 1 Hangar. The drains within the AASF 1 Hangar are connected to an underground oil water separator that then routes any residual material to the local municipal wastewater system. Five of the TriMax™ tanks located within the TriMax™ storage were previously stored inside the AASF 1 Building area (since approximately 2000 or 2001), and then transferred to outside storage sometime within the last several years. However, interviewee's were unable to confirm the exact storage location within the AASF 1 Building. Whether floor drains were present within the storage area or whether the storage location was climate-controlled is unknown. The long-term and undocumented storage of these tanks within the AASF 1 leaves the potential for unintended spills or releases.

During the site visit, interviewees noted that 26 5-gallon containers of AFFF concentrate were removed from the AASF 1 Hangar and disposed of off-site approximately three months prior (i.e., approximately April 2018). The disposed AFFF product was from two manufacturers: (1) Chemguard and (2) Minnesota Mining and MFG Co Industrial Chem Products; pictures of these buckets are provided in **Appendix C**. The 5-gallon buckets from Chemguard contained TriMax™ Arctic Minus 40 Degree AFFF. The 5-gallon buckets from The Minnesota Mining and MFG Co Industrial Chem Products contained 6% concentrated AFFF.

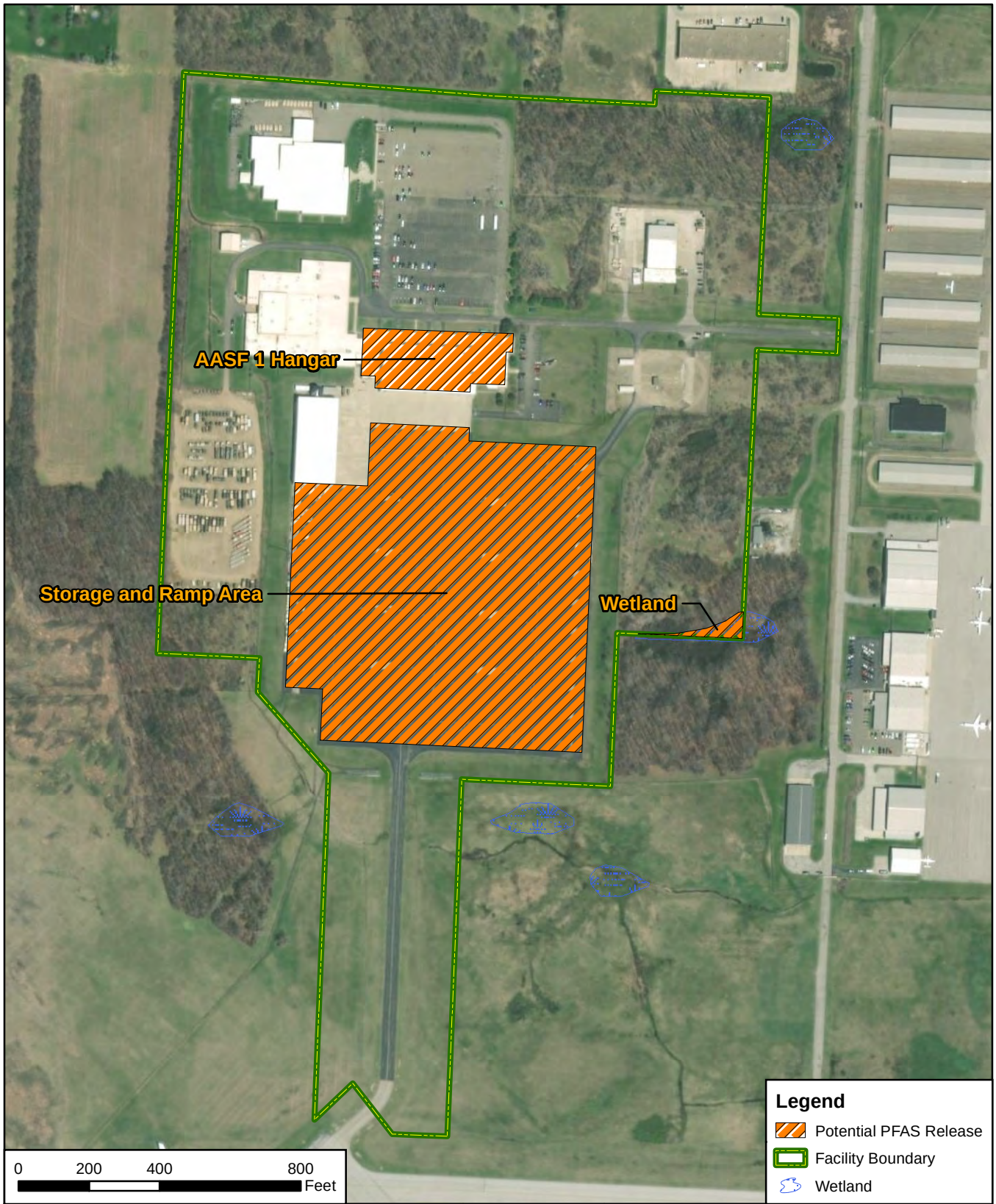
According to base personnel, all 26 5-gallon buckets of AFFF were unopened and unused during the entire duration of storage at the facility. It is estimated that the containers were located within the facility for approximately 10 years prior to disposal; however, it is unknown where the buckets originated from. Interviewees also had no knowledge of the procurement of the AFFF buckets, and there was no knowledge of spills or releases during their time of storage at the facility.

A half-filled 5-gallon bucket of Class A wildland fire fighting foam was noted during the site visit. The bucket's origin and use was unknown by interviewees; however, this foam is not believed to contain PFAS. Yearly nozzle testing of the suppression system involves the release of approximately 50-gallons of water. The yearly nozzle tests bypass the HEF valves and only releases water on the west end of the AASF 1 Building. As mentioned in **Section 3.1**, five full TriMax™ tanks were previously stored inside of the AASF 1 Hangar, but the exact storage location of these TriMax™ tanks and the duration of their storage before relocation are unknown.

3.3 Wetland

Several wetlands exist directly around the facility. On the southeast edge of the facility property lies a small wetland extending on- and off-facility. Surface drainage from AASF 1 empties into these various wetlands, including the wetland partially located within the AASF 1 property, as well as into the unnamed streams to the north and east of the facility (**Figure 1-3**). Any surface runoff not directed into these wetlands is captured by grated drains throughout the facility and the adjacent property, which is discharged through an outfall east of the facility, within the Akron-Canton Airport facility boundary (see **Section 1.5.3**).

While there have been no known or suspected direct releases directly into the on-site wetland, the close proximity of the other releases discussed above coupled with a general surface water flow direction to the east leaves the potential for migrating PFAS to impact this wetland. This wetland can receive and store potentially impacted stormwater and surface water runoff from around the facility.



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REVISED	7/30/2019	GIS BY	MS	7/30/2019
SCALE	1:4,800	CHK BY	TK	7/30/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/30/2019

N

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

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4. Emergency Response Areas

Interviewee knowledge from OHARNG personnel dates back to 2013; however, interviewee knowledge from the adjacent airport dates back to 1979. Based on collective knowledge of interviewee's, historical document review, and review of Environmental Data Resource reports, no emergency response areas were identified within the AASF 1.

5. Adjacent Sources

Four potential off-facility sources of PFAS adjacent to the AASF, not under the control of the OHARNG, were identified during the PA. Descriptions of the adjacent sources are presented below and are shown on **Figure 5-1**.

5.1 Fire Station

Interviewees recalled that approximately two to four years ago (between 2015 and 2017), a one-time fire training event occurred at the Fire Station, located at Akron-Canton Regional Airport. The coordinates of this fire training event are 40º54'33.58"N; 81º26'11.58"W. One full TriMax™ tank containing 3% concentrated AFFF was brought in from the OHARNG for this training; it is estimated that approximately 30 gallons of concentrated AFFF from this tank were released during this training exercise. A trainer was brought in to teach OHANG and OHARNG personnel how to operate the nozzles and hoses from the TriMax™ tanks. None of the AFFF used during this training event was captured; all releases were allowed to dissipate onto the surrounding ground, which consists of concrete, asphalt, and some grassy areas.

During follow-up interviews with personnel from the Akron-Canton Airport, it was confirmed that the Fire Station has a current and past history of AFFF use and storage. Currently, two firetrucks with AFFF tanks are located within the Fire Station. While the capacity of the AFFF tanks on the trucks are unknown, each tank holds 3% AFFF. In addition to the firetrucks containing AFFF, the Fire Station stores 55-gallon drums, 5-gallon buckets, and 340-gallon totes of concentrated 3% AFFF. Exact quantities of all stored AFFF within the Fire Station are unknown. The AFFF tanks on the two firetrucks are refilled manually by hand, directly at the fire station, on an as-needed basis. There have been no identified spills or releases relating to AFFF storage at the fire station; however, the manual refilling of tanks on the firetrucks leaves the potential for minor spills or releases during transfer.

Between approximately 1986 and 1995, one firetruck from the National Guard was stored at the Fire Station within the Akron-Canton Airport. It is unknown if this firetruck contained an AFFF tank, or if the firetruck were ever deployed for emergency response or fire training activities; however, it was confirmed that there were no firetrucks stored at the AASF 1 historically or currently.

5.2 Airplane Crash

In approximately 2010, an airplane crash occurred along the north side of Runway 5. According to interviewees, approximately 50 gallons of concentrated 3% AFFF were used for this emergency incident. The incident was responded to by personnel at the Akron-Canton Regional Airport, and any AFFF used during the event was in possession by the responding fire station. According to personnel at the Akron-Canton Regional Airport, it is believed that multiple other emergency response incidents at the airport involved the use of AFFF; however, specific information, such as timeframe of use, concentration, quantity, and locations, could not be confirmed.

5.3 Nozzle Test Area

According to interviews, yearly nozzle testing of the firetrucks occurs in an area west of Runway 23 that includes both paved and grassy areas. This yearly testing involves the release of approximately 10 to 15 gallons of concentrated AFFF. The AFFF is allowed to dissipate onto the surrounding ground, which consists of asphalt and grassy areas. This nozzle testing is known to have occurred for the last several years; however, an exact timeframe for this yearly nozzle testing is unknown.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF1, OH			
REVISED	5/17/2019	GIS BY	MS	5/17/2019
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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/17/2019

N

Adjacent Sources

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Germantown, MD 20876

Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, three AOIs were identified at the AASF 1: (1) AOI 1 Tri-Max™ Storage Area, (2) AOI 2 AASF 1 Building, and (3) AOI 3 Wetland. The AOI locations are shown on **Figure 6-1**. The following sections describe the CSM components and the specific CSMs developed for AOI 1 and 2. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways is sparse and continues to be the subject of PFAS toxicological study. Receptors at the AASF include site workers and construction workers. The preliminary CSM for the AASF indicates which specific receptors could potentially be exposed to PFAS.

6.1 AOI 1 Storage and Ramp Area

AOI 1 is the Storage and Ramp Area. As identified in **Section 3.1**, there are currently 11 TriMax™ 30 tanks stored outside the southern border of Building 5. Refer to **Section 3.1** for further description of this storage area, the tanks, and their AFFF contents. One of the tanks, now empty, was released during an offsite training event approximately two to four years ago . No other spills or releases have been reported from these tanks; however, as described in **Section 3.1**, the storage of TriMax™ tanks in non-climate controlled areas since at least 2017 and without inspection for several years leaves the potential for unintended spills or releases from these tanks.

Additionally, historic aerial photographs show the presence of mobile fire extinguishers throughout the paved helicopter ramp area from at least 2006 until 2018. Interviewees could not confirm if the mobile fire extinguishers stored along the paved ramp area are PFAS-containing; however, given the known history of TriMax™ tanks and other AFFF storage, there is the potential for these fire extinguishers to be PFAS-containing.

If unintentional releases from the TriMax™ tanks or mobile fire extinguishers along the ramp area occurred, ground-disturbing activities at AOI 1 could result in site and construction worker exposure to potential PFAS contamination via inhalation of dust or ingestion of surface soil. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete.

The TriMax™ storage area is located on the edge of the paved asphalt parking ramp area, near grassy areas. The mobile fire extinguishers along the ramp area are all located in a paved area. Groundwater flow in these areas are generally to the west, towards the direction of private drinking water wells, while surface water flow is to the east. Drinking water within the facility is provided by a public water utility company; however, private drinking water wells are located within a half-mile of the facility (**Section 1.5.2**). The AASF 1 is surrounded by a public park, as well as residential, business, and industrial areas. Therefore, the ingestion exposure pathway for groundwater and surface water is considered potentially complete. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

6.2 AOI 2 AASF 1 Hangar

AOI 2 is the AASF 1 Hangar. As described in **Section 3.2**, a full-release of HEF was reported in 2007, following initial installation of a fire suppression system where all HEF was allowed to dissipate down the floor drains. Storage of 26 5-gallon buckets of AFFF as well as temporary

storage of several TriMax™ tanks also occurred at this location. As described in **Section 3.2**, yearly nozzle tests occur on the HEF system; however, interviewees stated that no AFFF is released during these testing events. No spills or releases of AFFF have been reported from the storage of the buckets, the storage of TriMax™ tanks, or the testing of the nozzles.

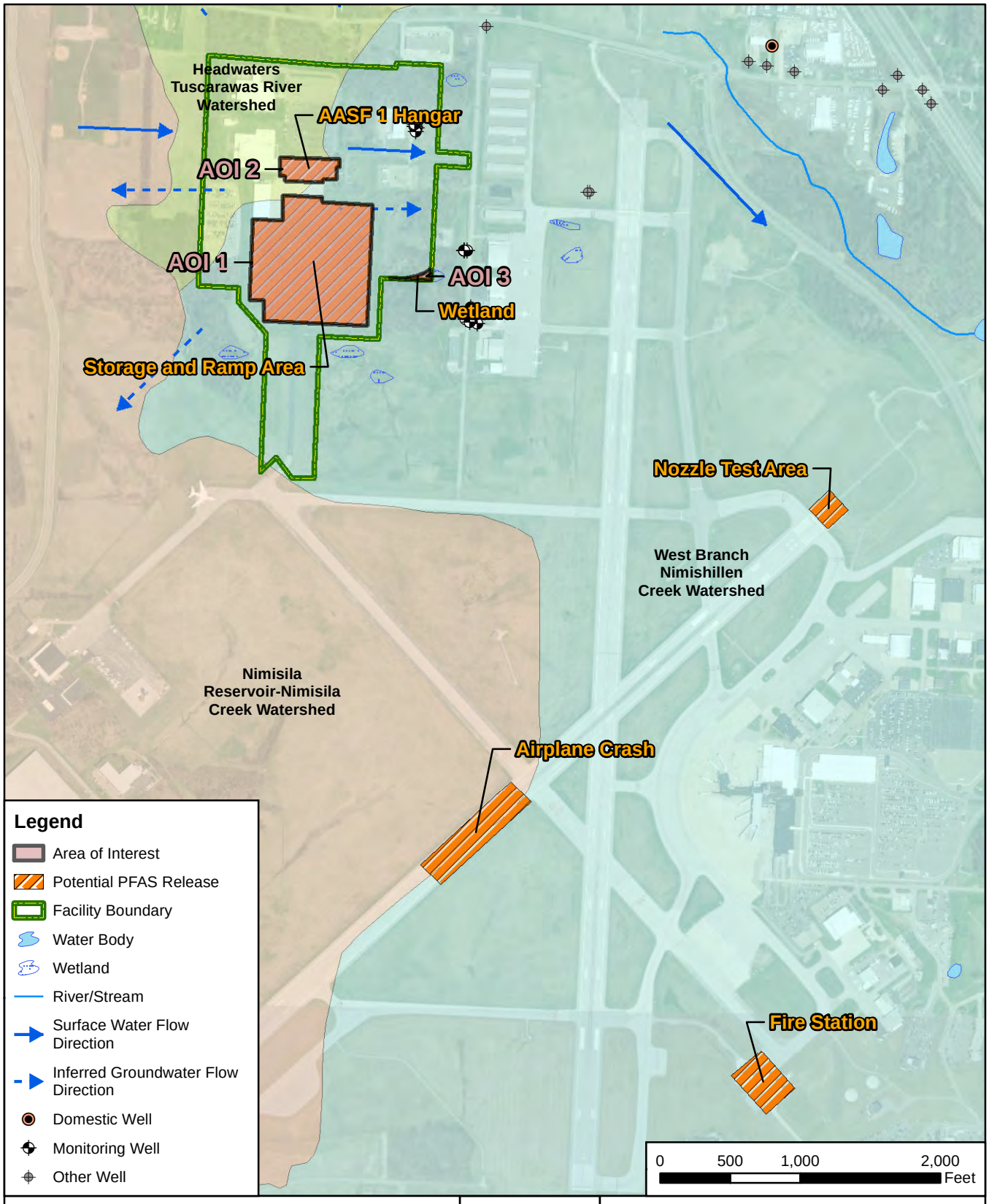
While there is no knowledge or reports of releases within the AASF 1 other than the planned HEF release, the presence of a HEF fire suppression system, the long-term storage of 5-gallon buckets of AFFF, and the previous undocumented storage of several TriMax™ tanks, leaves the potential for unintended AFFF spills or releases. Any potential releases within AOI 2 would be captured in the AASF 1 Hangar drains, which are connected to an underground oil water separator that routes any residual material to the local municipal wastewater system. Therefore, ground-disturbing activities at AOI 2 are not likely to result in site and construction worker exposure to potential PFAS contamination via inhalation of dust or ingestion of surface soil. The inhalation and ingestion pathways for these receptors are therefore considered incomplete.

Drinking water within the facility is provided by a public water utility company; however, private drinking water wells are located within a half-mile of the facility (**Section 1.5.2**). The AASF 1 is surrounded by a public park, as well as residential, business, and industrial areas, and any potential discharge from the AASF 1 or the drains surrounding the AASF 1 has the potential to impact surrounding surface water bodies. Surface drainage from the AASF 1 empties into various wetlands both within and directly surrounding the facility, as well as the unnamed streams to the north and east of the facility (**Figure 1-3**). Any surface drainage not emptied into these wetlands is captured into grated drains throughout the facility and discharged to the east of the facility, eventually flowing into Schumacher Ditch. Therefore, the ingestion exposure pathway for groundwater and surface water is considered potentially complete. The preliminary CSM for AOI 2 is shown on **Figure 6-3**.

6.3 AOI 3 Wetland

AOI 3 is the Wetland located on the southeast portion of the AASF 1. Several wetlands exist directly around the facility; however, only one wetland lies partly within the facility boundary. Surface drainage from the AASF 1 empties into various wetlands both within and directly surrounding the facility, as well as the unnamed streams to the north and east of the facility (**Figure 1-3**). While no direct releases of AFFF into this AOI have been identified, the close proximity to other potential release or storage areas as well as the known direction of surface water flow leaves the potential for AFFF residual to flow into this AOI.

Therefore, the ingestion exposure pathway for surface soil, subsurface soil, surface water/sediment and groundwater are considered potentially complete. Ground-disturbing activities at AOI 3 could result in site and construction worker exposure to potential PFAS contamination via inhalation of dust or ingestion of surface soil. Therefore, the inhalation and ingestion pathways for these receptors are considered potentially complete. The preliminary CSM for AOI 3 is shown on **Figure 6-4.**



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF1, OH			
REVISED	7/30/2019	GIS BY	MS	7/30/2019
SCALE	1:12,000	CHK BY	TK	7/30/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/30/2019

N

Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1

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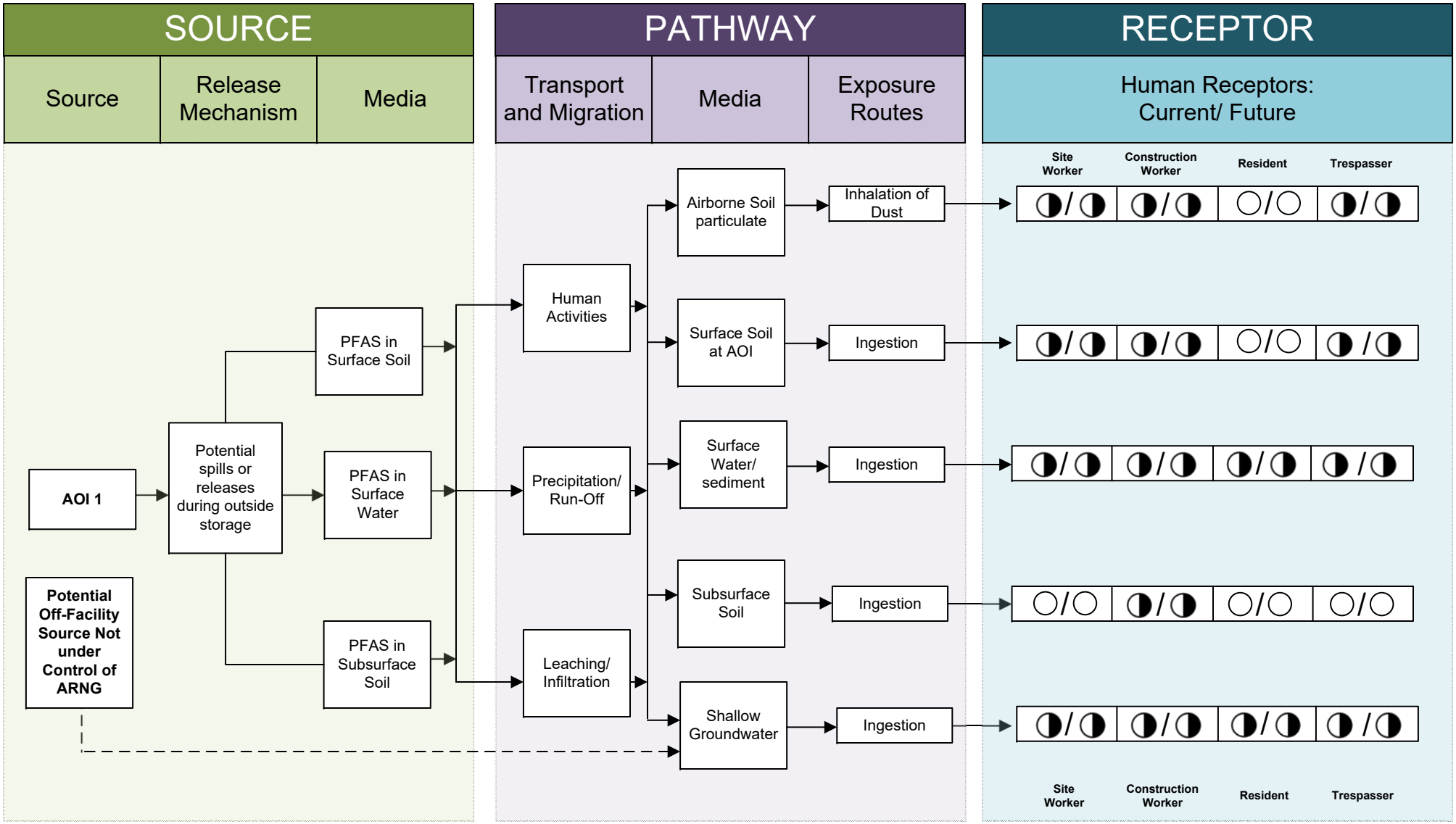


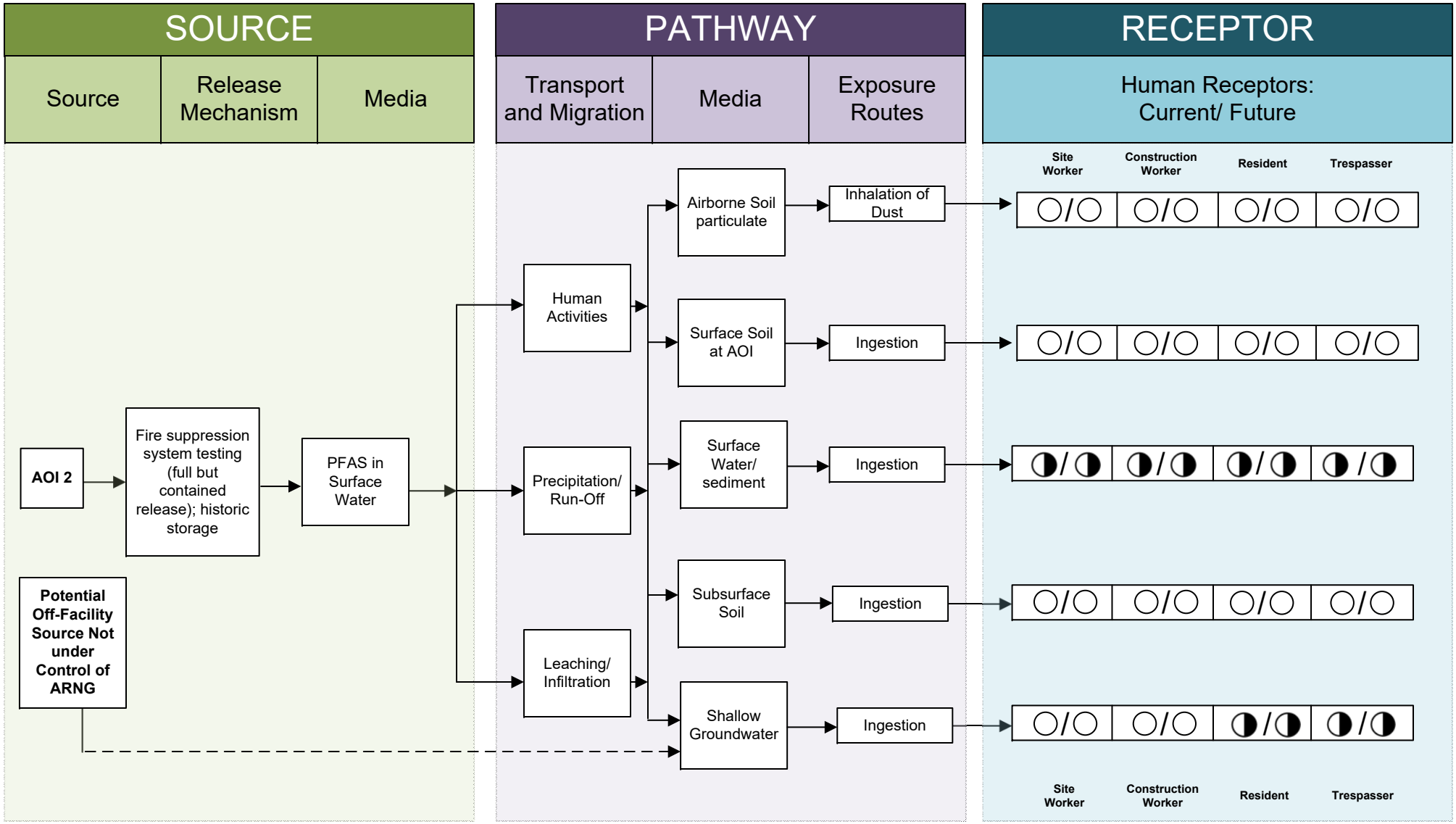
LEGEND

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

Notes:

1. The resident receptor refers to an off-site resident.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 Storage and Ramp Area
AASF1



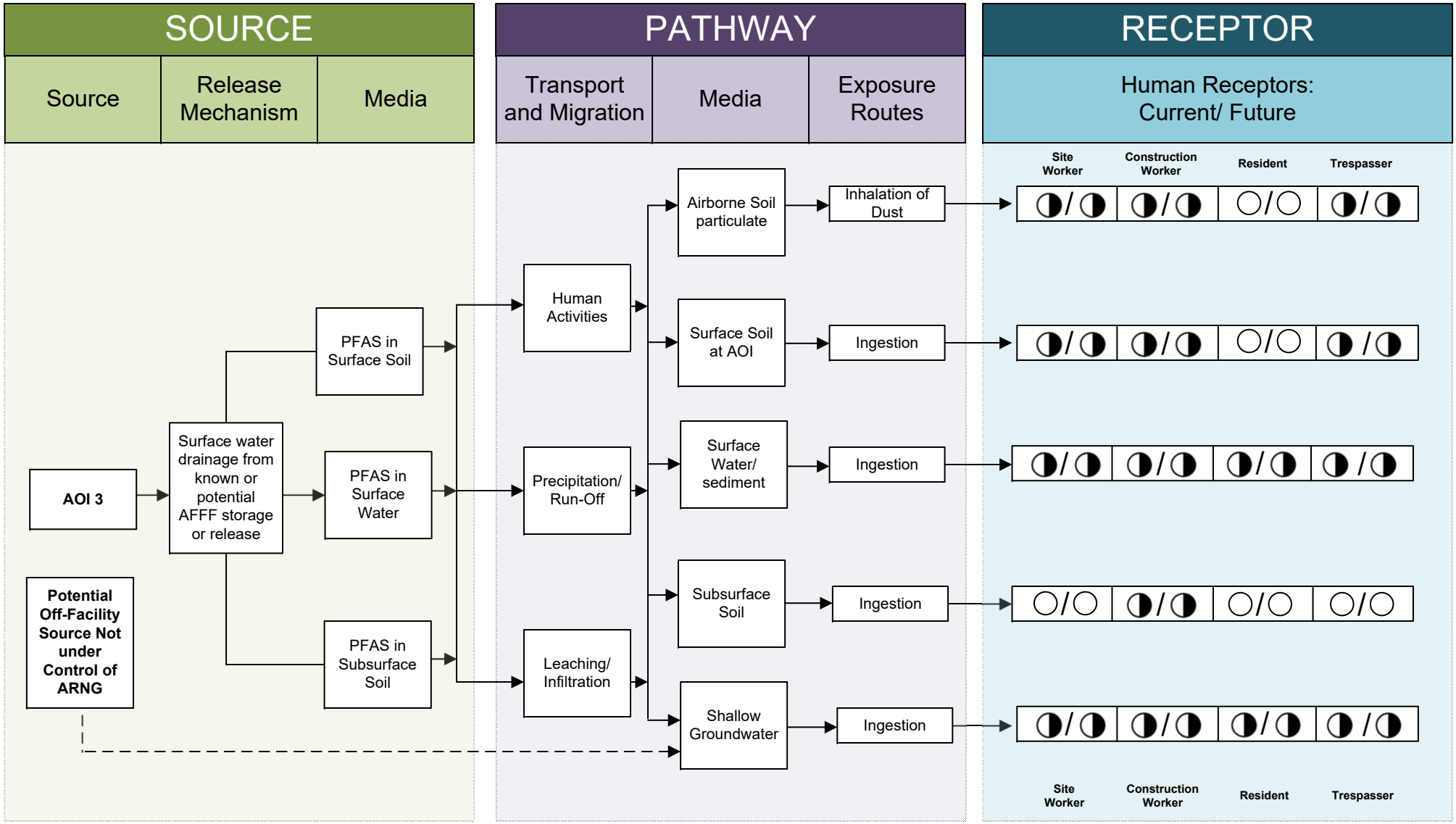
LEGEND

- 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. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-3
Preliminary Conceptual Site Model
AOI 2 AASF 1 Hangar
AASF1



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. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-4
Preliminary Conceptual Site Model
AOI 3 Wetland
AASF1

7. Conclusions

This report presents a summary of available information gathered during the PA on the use and storage of AFFF and other PFAS-related activities at the AASF 1. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

7.1 Findings

Three AOIs related to a PFAS release were identified at the AASF 1 during the PA. These AOIs are shown on **Figure 7-1** and described in **Table 7-1** below:

Table 7-1: Areas of Interest

Area of Interest	Name	Used by	Release Dates
AOI 1	Storage and Ramp Area	OHARNG	Unknown
AOI 2	AASF 1 Hangar	OHARNG	System testing in 2007
AOI 3	Wetland	OHARNG	Secondary Accumulation

Based on the exterior storage of AFFF-containing tanks at AOI 1, as well as documented presence and testing of the fire suppression system at AOI 2, there is potential for exposure to PFAS in groundwater and drinking water with potentially complete pathways to site workers, construction workers, trespassers, and resident receptors via ingestion. Receptors are less likely to be exposed to potential PFAS contamination through soil and air; however, some PFAS chemicals are water soluble and can migrate readily from soil to groundwater or surface water via leaching and run-off. Based on the outside, undocumented storage of TriMax™ tanks at AOI 1, there is potential for exposure to PFAS contamination in surface soils to site and construction workers, residents, and recreational users/trespassers, and in subsurface soils to site and construction workers via inhalation and ingestion. There is also the potential for exposure to PFAS contamination in surface water and sediment for all receptors via ingestion, and in shallow groundwater for all receptors due to the close proximity of private drinking water wells within a half mile of the facility. The preliminary CSM for the AASF 1 AOI 1 is shown on **Figure 6-2**.

As 2007 testing of the HEF system was contained within AOI 2, and all potential spills or releases from storage of AFFF happened within the facility, incomplete exposure pathways exist for soil and subsurface soil at this AOI. However, the presence of a HEF fire suppression system, the long-term storage of 5-gallon buckets of AFFF, and the previous undocumented storage of several TriMax™ tanks, leaves the potential for unintended AFFF spills or releases. Drinking water within the facility is provided by a public water utility company; however, private drinking water wells are located within a half-mile of the facility (**Section 1.5.2**). One potable well, now abandoned, is located on-site that was historically used for drinking water. Known and potential spills and releases within the facility could have resulted in migration of PFAS to groundwater. Surface drainage surrounding the AASF 1 empties into various wetlands both within and directly surrounding the facility, as well as the unnamed streams to the north and east of the facility (**Figure 1-3**). Any surface drainage not emptied into these wetlands is captured into grated drains throughout the facility and discharged to the east of the facility, eventually flowing into Schumacher Ditch. The close proximity of private drinking water wells and the high recreational use of nearby surface water bodies means potentially complete pathways exist for groundwater and drinking water to all receptors. The preliminary CSM for the AASF 1 Hangar AOI 2 is shown on **Figure 6-3**.

Known and potential AFFF releases to surface soil and surface water throughout the facility have the potential to migrate to the on-site wetland, identified as AOI 3. Based on surface water flow patterns and the potential for surface drainage and runoff to flow into AOI 3, any potential AFFF-releases to surface soil and surface water have the potential to result in PFAS exposure to site and construction workers via inhalation and ingestion of surface or subsurface soil, or potential exposure to PFAS in sediment and surface water via ingestion to site workers, construction workers, trespassers, and resident receptors at AOI 3. The preliminary CSM for AOI 3 is shown on **Figure 6-4**.

Other than the identified Adjacent Sources, which are not investigated by the ARNG, all areas identified within the AAAF1 have potential or suspected releases, use, or storage of AFFF. Therefore, all identified areas are recommended for further action.

7.2 Uncertainties

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

The conclusions of this PA are predominantly based on the information provided during interviews with personnel who had direct knowledge of PFAS use at the facility. Sometimes the provided information was vague or conflicted with other sources. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS was first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, retired and current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-2** summarizes the uncertainties associated with the PA:

Table 7-2: Sources of Uncertainty

Area of Interest	Source of Uncertainty
AOI 1 Storage and Ramp Area	The exact timeframe of storage of the TriMax™ tanks at AOI 1 is unknown. Interviewees recall these tanks being outside for several years; however, aerial photography review from May 2017 shows these tanks absent from their current storage location. Whether unintended spills or releases occurred from these tanks during storage is unknown. Whether transfer of residual AFFF from a non-operational TriMax™ tank to 5-gallon buckets occurred at this location is unknown.

Area of Interest	Source of Uncertainty
AOI 1 Storage and Ramp Area	It is unknown which entity or personnel are responsible for servicing the mobile TriMax™ tanks and other fire extinguishers found onsite. Information regarding the storage of TriMax™ tanks was obtained during interviews with personnel who began employment after storage of the tanks outside began. The source of how this information was obtained from the interviewee is unknown; therefore, there is a data gap between timeframe of interviewee employement and information relating to storage of TriMax™ tanks.
AOI 2 AASF 1 Hangar	Limited information was available on the amount of HEF foam released during the initial testing of the system in 2007. It is unknown how long the 5-gallon buckets of AFFF were stored at this facility before disposal or whether unintended spills or releases occurred from these buckets during storage. Interviewees were unable to confirm whether the bladder on the HEF system was ever replaced.
AOI 3 Wetland	Whether any potential historic releases of AFFF have resulted in direct drainage to this AOI is unknown. This area was designated as an AOI based on it's proximity to identified potential release areas combined with known surface water flow directions.
Fire Station	The AFFF tank capacity on each of the two firetrucks is unknown. The timeframe of use for these AFFF-capable firetrucks at the Akron-Canton Airport is unknown. A former ARNG firetruck was stored at the Akron-Canton Airport fire station from approximately 1986 to 1995; however, it is unknown whether this firetruck were ever deployed for emergency response or fire training activities. Exact quantities of AFFF released during the one-time training event is estimated.
Nozzle Test Area	Exact timeframe of nozzle testing is unknown. Annual nozzle testing involves the release of approximately 10 to 15 gallons of concentrated 3% AFFF within a designated location at the Akron-Canton Airport; however, while this testing is known to have occurred over the last several years, it is unknown when this yearly testing began.

7.3 Potential Future Action

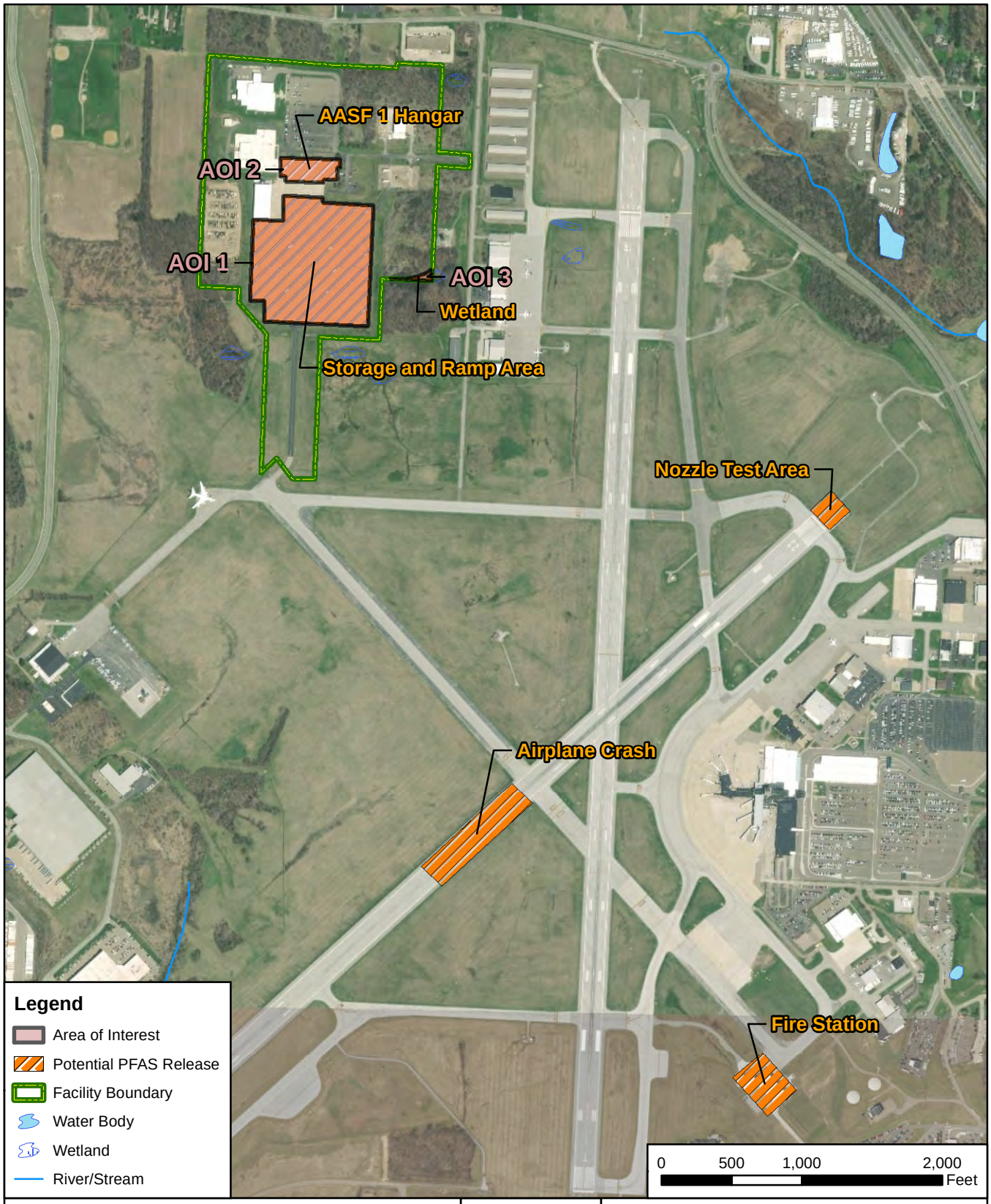
Interviews and records (covering 2013 to present) indicate that current or former ARNG activities may have resulted in potential PFAS releases at the three AOIs identified during the PA. Based on the CSMs developed for the AOIs, there is potential for receptors to be exposed to PFAS

contamination in surface and subsurface soil, sediment, surface water, groundwater, and drinking water at these AOIs. The table below summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

ARNG will evaluate the need for an SI at AASF 1 based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources. **Table 7-3** provides the rationale for determining potential future action at AASF 1.

Table 7-3: Rationale for Potential Future Action

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1 Storage and Ramp Area	40°55'31.94"N; 81°26'54.36"W (middle of ramp area)	Long-term outside storage of TriMax™ 30 tanks from approximately 2006 until 2018.	Proceed to an SI, focus on soil, sediment, surface water, drinking water, and groundwater
AOI 2 AASF 1 Hangar	40°55'37.40"N; 81°26'54.58"W	Presence of HEF fire suppression system, long-term storage of 5-gallon buckets of AFFF, and previous undocumented storage of several TriMax™ 30 tanks.	Proceed to an SI, focus on groundwater and surface water.
AOI 3 Wetland	40°55'28.68"N; 81°26'44.68"W	Known and potential historic releases combined with direction of surface water flow leaves the potential for this area to be impacted by AFFF releases.	Proceed to an SI, focus on soil, sediment, surface water, drinking water, and groundwater



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at AASF1, OH			
REVISED	7/30/2019	GIS BY	MS	7/30/2019
SCALE	1:12,000	CHK BY	TK	7/30/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	7/30/2019

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Summary of Findings

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Figure 7-1

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8. References

Aqua. 2018. “Our States: Aqua Ohio Service Territory.” *Aqua America.* https://www.aquaamerica.com/our-states/ohio.aspx. December 2018.

CHA. 2015. *Akron-Canton Airport Airport Master Plan, Final Report*. Semtember 2015.

Environmental Design Group (EDG). 1994. *The City of Green, Ohio Comprehensive Storm Water Study.* November 1994.

National Oceanic and Atmospheric Administration (NOAA). 2018. “Data Tools: 1981-2010 Normals: Akron Canton Airport, OH US.” *NOAA National Centers for Environmental Information*. https://www.ncdc.noaa.gov/cdo-web/datatools/normals. August, 2018.

Ohio Department of Natural Resources (ODNR), Division of Water Resources. 2018. Ohio Water Well Viewer. https://gis.ohiodnr.gov/MapViewer/?config=waterwells. December 2018.

Ohio Division of Geological Survey (ODGS). 1998. “Physiographic regions of Ohio.” *Ohio Department of Natural Resources, Division of Geological Survey*, page-size map with text, 2 p., scale 1:2,100,000.

ODGS. 2004. “Shaded drift-thickness map of Ohio.” *Ohio Department of Natural Resources, Division of Geological Survey*, Map SG-3, generalized page-size version with text, scale 1:2,000,000. Revised 2017.

Schmidt, J.J. 1979. “Ground Water Resources of Summit County.” *Ohio Department of Natural Resources, Division of Water, Ground Water Resources Section*, map with text, 1 p.

Slucher, E.R., Swinford, E.M., Larsen, G.E., *et al*. 2006. “Bedrock Geologic Map of Ohio.” *ODGS*, Map BG-1, version 6.0, scale 1:500,000.

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

Appendix A
Data Resources

Data Resources will be provided separately on CD. Data Resources for the Green AASF 1 includes:

Green AASF 1 Leases, Licenses, and Permits

- 2010 Amendment to Lease between Akron-Canton Regional Airport Authority and the State of Ohio.

Green AASF 1 AFFF-Related Information

- 2018 Disposal manifest for firefighting foam from Green AASF 1
- 1997 AFFF MSDS from Minnesota Mining & MFG Co Industrial Chem Products
- 2000 MSDS for TriMax Arctic Minus 40 Degree AFFF

Previous Investigations Completed at Green AASF 1

- 2015 Akron-Canton Airport Master Plan
- 2018 GIS Data Request

Green AASF 1 Installation Maps

- 1994-2018 Aerial Photos
- 2018 OHARNG Green AASF 1 Utility Map
- 2018 Installation Map

Green AASF 1 As-Builts

- 2006 As-Builts from installation

Green AASF 1 Correspondence

- 2018 E-Mail Confirming Ownership Information
- 2018 E-Mail Confirming Potential Off-Site Release Area

Green AASF 1 EDR Report

- 2018 Green AASF 1 EDR Report

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Other

Facility: Green/AASF1
Interviewer: [redacted]
Date/Time: 4/19/19

Interviewee: [redacted] **Title:** Facilities Manager + Operations Mgr. **Phone Number:** — **Email:** —	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

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

[redacted] - Facilities Manager ~40 years (@ Airport)

[redacted] - Operations Manager ~16 years (@ Airport)

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
No known fire training activities; only mobile trainer (Propane trainer)	Use
	Procurement
FAA annual inspections - only water	Disposition
	Storage (Mixed)
Nozzle testing does occur (yearly) ~10-15 gallons AFFF released / testing on paved/grassy area west of Runway 3	Storage (Solution)
	Inventory, Off-Spec
	Containment
	SOP on Filling
One joint training ~2 years ago; National Guard brought portable trainer + used 1 TriMax (~Taxiway K+E)	Leaking Vehicles
	Nozzle and Suppression System Testing
	Dining Facilities
	Vehicle Washing
~2010 emergency response incident around 1,000 ft. from Runway 5; AFFF used (~50 gallons) → 3% AFFF	Ramp Washing
	Fuel Spill Washing and Fueling Stations
	Chrome Plating or Waterproofing

PA Interview Questionnaire - Other

Facility:_____
Interviewer:_____
Date/Time:_____

2 fire trucks in fire station w/ AFFF tanks (AFFF is 3%)
Fire station stores 55-gallon drums, 5-gallon buckets, and 340-gallon totes of AFFF 3%

All fire trucks are filled directly @ station (manually by hand)

1986-1995 Firetruck from National Guard was @ Airport; unsure of use

No known trainings or releases of AFFF @ ARNG facility

In late 70's early 80's - tanker fire a few miles from airport @ Interstate 77; don't believe foam was used

No fire suppression systems @ airport w/ AFFF only dry chemical extinguishers (portable + on trucks)

PA Interview Questionnaire - Other

Facility: Green Armory
Interviewer: [redacted]
Date/Time: 7/24 + 12/6/18

Interviewee: [redacted] CDT. an your name/role be used in the PA Report? Y or N
Title: Safety officer / Haz Waste Manager
Phone Number:
Email:
Can you recommend anyone we can interview?
Y or N

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

Been safety officer @ Green Armory ~5-6 years
[redacted] in Haz Waste Manager for Ohio ARNG (~6 years)

PFAS Use: Identify accidental/intentional release locations, time frame of release, frequency of releases, storage container size (maintenance, fire training, firefighting, buildings with suppression systems (as builts), fueling stations, crash sites, pest management, recreational, dining facilities, metals plating, or waterproofing). How are materials ordered/purchased/disposed/shared with others?

	Known Uses
Recalls 6 covered/old TriMax tanks from old hangar; 5 from new hangar; 2 are empty; estimated 15-20 years old	Use
	Procurement
Hangar release 2007: doors closed + residual washed down drains → drainage ditch	Disposition
	Storage (Mixed)
	Storage (Solution)
Recalls training 3-4 years ago; trainer brought in 2 TriMax tanks for training @ nearby airport; used ~30 gallons; only training recalled	Inventory, Off-Spec
	Containment
	SOP on Filling
	Leaking Vehicles
→ ⊕ 1 bucket wildland fire fighting foam	Nozzle and Suppression System Testing
~24 5-gallon buckets disposed from AASF 1 building in 2018; at least 10 years old; non-haz manifest available	Dining Facilities
	Vehicle Washing
	Ramp Washing
	Fuel Spill Washing and Fueling Stations
→ 1 tank empty from training; other tank didn't work; emptied (unsure where) + contents put in 5-gallon buckets for disposal	Chrome Plating or Waterproofing

All full/unopened

PA Interview Questionnaire - Other

Facility:_____
Interviewer:_____
Date/Time:_____

- Green Armory has old drinking water well; not shut off (for last ~10 years) + drinking water supplied by Aqua Ohio

- Inside hangar, drains → OWS → unsure
  ramp → sewers
  waste → local WWTP

- Nozzle testing (yearly) only releases H_2O, no AFFF
- Detention pond nearby on SE corner of facility

- Main hangar constructed ~1987-1988; 2006 expansion; 2007 initial testing release

- Several TriMax tanks previously before HEF system; throughout hangar in non-climate controlled areas

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

Interviewee: [redacted] **Title: Operations Manager (Akron-Canton Airport)** **Phone Number:** [redacted] **Email:_____**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N _____

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

Public safety officer and operations manager @ adjacent Akron-Canton Airport

2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.

   Maintenance (e.g., ramp washing)
   Fire Training Areas
   Firefighting (Active Fire)
   Crash
   Fire Suppression Systems (Hangers/Dining Facilities)
   Fire Protection at Fueling Stations
   Non-Technical/Recreational/ Pest Management

3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?

No fire suppression systems or high expansion foam systems with AFFF

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

No

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

Unsure

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?

Unsure

7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?

No

8. Where is the AFFF stored? How is it stored (tanks, 55-gallon drums, 5-gallon buckets)? What size are the storage tanks? Is the AFFF stored as a mixed solution (3% or 6%) or concentrated material?

Only recall mobile tanks, no other FSS/HEF systems at the airport. Likely some type of AFFF at the fire station; however, unsure

9. How is the AFFF transferred to emergency response vehicles, suppression systems, flightline extinguishers? Is/was there a specified area on the facility where vehicles are filled with AFFF and does this area have secondary containment in case of spills? How and where are vehicles storing AFFF cleaned/decontaminated?

Mobile AFFF fire extinguishers have been used in the past to extinguish fires

Recall crash from around 2010 that involved an aircraft; at least one TriMax tank was used to suppress fires. Crash occurred on north side of runway 5 and confirmed AFFF was used; however, quantity is unknown.

Can recall several other crashes but information about location, quantity, and timeframe is unknown

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

Possibly on firetrucks, but unsure

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

11. Any vehicles have a history of leaking AFFF? Do you/did you test the vehicles spray patterns to make sure equipment is working properly? How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?

Unsure

12. How many FTAs are/were on this facility and where are they? Locate on a map. How many FTAs are active and inactive? For inactive FTAs, when was the last time that fire training using AFFF was conducted at them?

Recalls one fire training event occurring at the fire station located at the airport (address 4763 Mt. Pleasant Rd. North Canton, Ohio). At least one mobile extinguisher brought in. Only recall OHANG personnel attending this training

Other fire training events involving AFFF in and around the airport have occurred in past; however, details are unknown

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

Unsure if any

14. What was the frequency of AFFF use at each location? When a release of AFFF occurs during a fire training exercise, now and in the past, how is/was the AFFF cleaned and disposed of? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

Unsure

15. Are there mutual aid/use agreements between county, city, local fire department? Please list, even if informal. If formalized, may we have a copy of the agreement? Can you recall specific times when city, county, state personnel came on-post for training? If so, please state which state/county agency, military entity? Do you have any records, including photographs to share with us?

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

16. Did individual units come on-post with their own safety personnel, did they also bring their own AFFF? Was training with AFFF part of these exercises? How were emergencies handled under these circumstances?

TriMax tanks during one-time training were brought in from the nearby OHARNG facility

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

17. Did military routinely or occasionally fire train off-post? List units that you can recall used/trained at various areas.
18. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?
19. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?
20. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?
21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

PA Interview Questionnaire – Fire Station

Facility:____Green_____
Interviewer:____[redacted]
Date/Time:___7/24/18 & 12/5/18_____

22. Are you aware of any other creative uses of AFFF? If so, how was AFFF used? What entities were involved?
23. How is off-spec AFFF disposed (used for training, turned in, or given to a local Fire Station)? If applicable, do you know the name of the vendor that removes off-spec AFFF? Do you have copies of the manifest or B/L?
24. Do you recommend anyone else we can interview? If so, do you have contact information for them?

Appendix B.2
Visual Site Inspection Checklists

Visual Site Inspection Checklist

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

Recorded by: [redacted]

ARNG Contact: [redacted]

Date and Time: 7/24/18

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

Source/Release Information

Site Name / Area Name / Unique ID: Green Armory AASF

Site / Area Acreage: Tri Max Storage Area

Historic Site Use (Brief Description): paved asphalt area for storage of supplies

Current Site Use (Brief Description): same as historic

Physical barriers or access restrictions: Gated entrance into facility

1. Was PFAS used (or spilled) at the site/area? Y (N)

1a. If yes, document how PFAS was used and usage time (e.g., fire fighting training 2001 to 2014):

2. Has usage been documented? Y (N)

2a. If yes, keep a record (place electronic files on a disk):

3. What types of businesses are located near the site? **Industrial / Commercial / Plating / Waterproofing / Residential**

3a. Indicate what businesses are located near the site

Adjacent airport

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

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

@ north end of public Akron-Canton airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? (Y) / N

1a. If yes, indicate which type of AFFF has been used:

HEF system inside AASF 1

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

yearly nozzle testing but w/ H_2O only

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

unsure; estimated ~5 years

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

Yes; inside hangar → OWS → drainage ditch stormwater → SW drains → drainage ditch (called Schumacher Ditch) OR onsite/near wetlands

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location:

Drainage collects in onsite wetlands or flows to offsite drainage ditch

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

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

Towards S wetlands. GW SW divide; W of facility flows W; E of facility flows E

3. Are monitoring or drinking water wells located near the site? (Y) / N

3a. If so, please note the location:

MW on-site @ former UST area; former DW well onsite (now abandoned); private DW well w/in a mile

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

4a. If so, please note the location:

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

5a. If so, please note and observe the location.

From Akron-Canton Airport

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

6a. If so, please note the source and location.

Emergency response + FTA @ fire station; both @ Akron-Canton Airport

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

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? (Y) N

1a. If so, please describe change (ex. Structures no longer exist):

Building 5 constructed after 2006

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

2a. If not vegetated, briefly describe the site/area composition:

Around buildings are trees and vegetated areas to W, N, + E

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:

Ponding near wetland areas

Receptor Information

1. Is access to the site restricted? (Y) N

1a. If so, please note to what extent:

Gated entrance into facility

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:

To east, north, and west

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

4a. If so, please note the location/distance/type:

NO

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

5a. If so, please note the location/distance/type:

Yes, ~~two~~ three on-site

One on NE corner of facility
Two on SE boundary of facility
several surrounding facility (close in report)

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
#7	7/24/18 @ TriMax storage area	11 TriMax tanks stored outside on edge of asphalt

Visual Site Inspection Checklist

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

Recorded by: [redacted]

ARNG Contact [redacted]

Date and Time: 7/24/18

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

Source/Release Information

Site Name / Area Name / Unique ID: Green Armory

Site / Area Acreage: AASF 1 Building/Hangar

Historic Site Use (Brief Description): Main hangar for maintenance, storage of aircraft

Current Site Use (Brief Description): Same as historic

Physical barriers or access restrictions: Gated entrance to facility

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):

HEF FSS release after initial installation, ~2007; storage of buckets + TriMax tanks; undocumented

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

Adjacent airport

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

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

Akron-Canton Regional Airport (CAK)

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system? (Y) / N

1a. If yes, indicate which type of AFFF has been used:

HEF (Buckeye 2.2%) in AASF I

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

yearly nozzle tests w/ H_2O only; no AFFF released

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

unsure; estimate ~5 years

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

yes; inside hangar → OWS → drainage ditch
stormwater → SW drains → drainage ditch or onsite or nearby wetlands

Transport / Pathway Information

Migration Potential:

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

1a. If so, note observation and location:

Drainage flows to NE and SE wetlands and offsite drainage ditch

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

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

Towards onsite wetlands OR SW drainage ditch.

3. Are monitoring or drinking water wells located near the site? (Y) / N

3a. If so, please note the location:

MW on-site @ previous UST area; former DW well onsite (now abandoned); private DW wells w/ in 1 mile

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

4a. If so, please note the location:

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

5a. If so, please note and observe the location.

Akron-Canton Airport

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

6a. If so, please note the source and location.

yes, from nearby airport

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

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? (Y) / N

1a. If so, please describe change (ex. Structures no longer exist):

Building 5 constructed after 2006

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

2a. If not vegetated, briefly describe the site/area composition:

Around buildings is vegetation to W, N, + E

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:

Near/at onsite wetlands or nearby offsite wetlands

Receptor Information

1. Is access to the site restricted? (Y) / N

1a. If so, please note to what extent:

Gated entrance into facility

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:

To east, north, + west (w/in 1 mile)

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

4a. If so, please note the location/distance/type:

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

5a. If so, please note the location/distance/type:

Yes, 3 onsite; several nearby
one on NE corner, Two on SE boundary
several surrounding facility

Visual Survey Inspection Log

Additional Notes

Photographic Log

Photo ID/Name	Date & Location	Photograph Description
1	7/24/18 @ AASF I	HEF FSS
2		thermal sensor
3		nozzle test area
4		400-gallon HEF tank
5		floor drains inside hangar

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Green Armory

Why has this location been identified as a site?

Fire suppression system in main hangar; close proximity to surrounding airfield and runways

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

Not current activities, no; only historical adjacent sources.

Training Events

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

If so, how often? N/A

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

Identify Potential Pathways: Do we have enough information to fully understand over land surface water flow, groundwater flow, and geological formations on and around the facility? Any direct pathways to larger water bodies?

Surface Water:

Surface water flow direction? East/Northeast

Average rainfall? 39.62 inches/year

Any flooding during rainy season? No

Direct or indirect pathway to ditches? Direct pathway to drainage ditches

Direct or indirect pathway to larger bodies of water? Indirect

Does surface water pond any place on site? Yes, several small wetlands directly surrounding facility

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? Surface water flows east/northeast towards West Branch of Nimishillen Creek Watershed and other surrounding tributaries

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? On groundwater divide; east side of facility flows east, west side of the facility flows west

Depth to groundwater? 10-80 ft bgs

Uses (agricultural, drinking water, irrigation)? Drinking water, industrial, irrigation

Any groundwater treatment systems? No

Any groundwater monitoring well locations near the site? Yes, see Figure 1-2 and 1-3

Is groundwater used for drinking water? Yes but no potable wells within facility

Are there drinking water supply wells on installation? No

Do they serve off-post populations? N/A

Are there off-post drinking water wells downgradient? Yes

Waste Water Treatment Plant:

Has the installation ever had a WWTP, past or present? No. Waste transferred to off-site WWTP

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

Do we understand the fate of sludge waste? Yes. Sludge from OWS evaporator is collected and disposed of as hazardous waste

Is surface water from potential contaminated sites treated? Unknown

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go? N/A (no fire station within the facility)

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?

N/A

3. Other? N/A

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker: Surface water/sediment ingestion

Construction Worker: Surface water/sediment ingestion

Recreational User: Surface water, sediment and shallow groundwater ingestion

Residential: Surface water, sediment, and shallow groundwater ingestion

Child: Surface water, sediment, and shallow groundwater ingestion

Ecological: Fish/marine life within Big Walnut Creek and nearby tributaries

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

Airport to the south/southeast, campground to the east, church to the west, park to the west

Documentation

Ask for Engineering drawings (if applicable).

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

N/A

Appendix C
Photographic Log

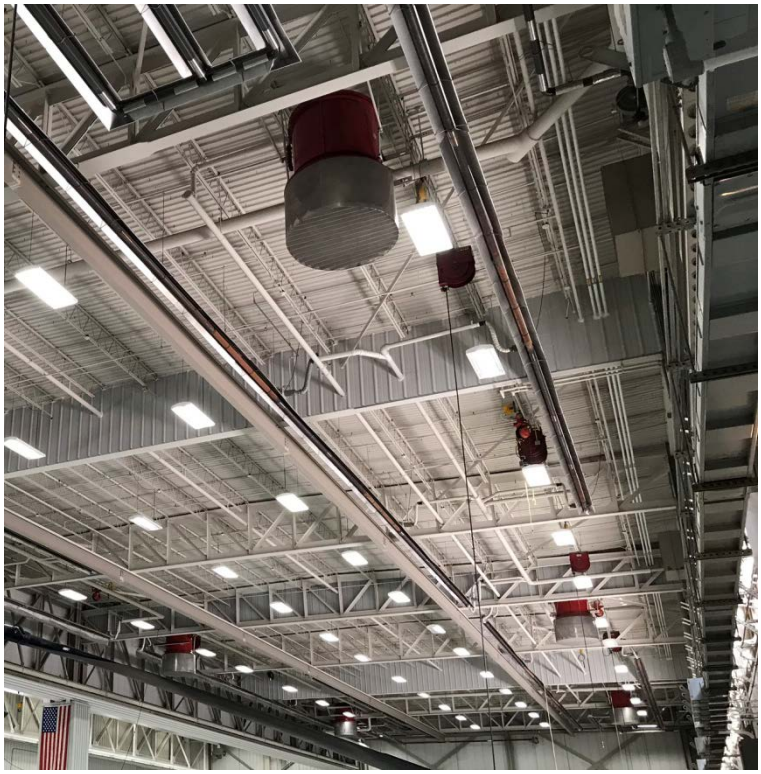
APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Green Armory AASF	Green, Ohio

Photograph No. 1

Description:

The overhead high expansion foam (HEF) fire suppression system inside of the AASF 1.



Photograph No. 2

Description:

The thermal sensor used in the HEF fire suppression system within the AASF 1.

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Green Armory AASF	Green, Ohio

Photograph No. 3

Description:

The nozzle testing area within the AASF 1.

Photograph No. 4

Description:

The 400-gallon tank containing Buckeye 2.2% HEF within the AASF 1 building.

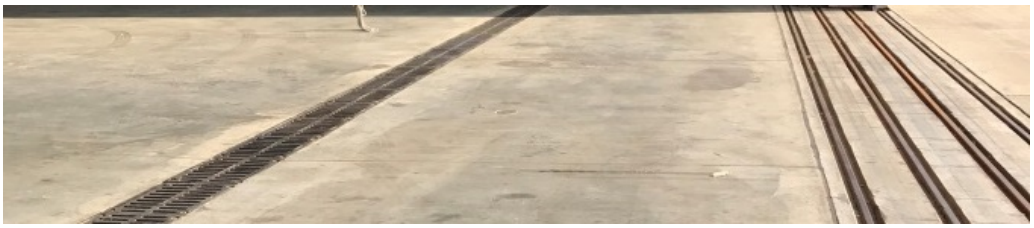
APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Green Armory AASF	Green, Ohio

Photograph No. 5

Description:

Facing east. View of the floor drains inside of the AASF 1 hangar.



Photograph No. 6

Description:

Facing north. The view of the AASF 1 hangar from the front of Building 5. Storm drains are located throughout the paved asphalt area, with the closest drain approximately 100 feet from the AASF 1 hangar doors.

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Green Armory AASF	Green, Ohio

Photograph No. 7

Description:

Facing south. View of the 11 TriMax tanks lined up on the paved asphalt area, approximately 200 feet from Building 5.