FINAL
Site Inspection Report
Rochester Army Aviation Support Facility #2
Rochester, New York

Site Inspections for Perfluorooctanoic Acid (PFOA), Perfluorooctanesulfonic Acid (PFOS), Perfluorohexanesulfonic Acid (PFHxS), Perfluorononanoic Acid (PFNA), Hexafluoropropylene oxide dimer Acid (HFPO-DA) and Perfluorobutanesulfonic Acid (PFBS)
ARNG Installations, Nationwide

September 2023

Prepared for:

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

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
%	Percent
µg/kg	Microgram(s) per kilogram
µg/L	Microgram(s) per liter
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	Aqueous film forming foam
amsl	Above mean sea level
AOI	Area of Interest
ARNG	Army National Guard
AST	Aboveground storage tank
bgs	Below ground surface
btoc	Below top of casing
CAMP	Community Air Monitoring Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual site model
DoD	Department of Defense
DPT	Direct-push technology
DQO	Data quality objective
DUA	Data Usability Assessment
EA	EA Engineering, Science, and Technology, Inc., PBC
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
EB	Equipment Blank
FB	Field blank
FedEx	Federal Express
ft	Foot (feet)
gal	Gallon(s)
GIS	Geographic information system
GPS	Global positioning system
HDPE	High-density polyethylene
HFPO-DA	Hexafluoropropylene oxide-dimer acid
IDW	Investigation-derived waste
in.	Inch(es)
ITRC	Interstate Technology Regulatory Council

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

LC/MS/MS	Liquid Chromatography Tandem Mass Spectrometry
MS	Matrix spike
MSD	Matrix spike duplicate
NELAP	National Environmental Laboratory Accreditation Program
ng/L	Nanogram(s) per liter
No.	Number
NYARNG	New York Army National Guard
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PFAS	Per- and polyfluoroalkyl substances
PFBS	Perfluorobutanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PFNA	Perfluorononanoic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PID	Photoionization detector
PVC	Poly-vinyl chloride
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
RI	Remedial investigation
RPD	Relative percent difference
SI	Site Inspection
SL	Screening level
SOP	Standard Operating Procedure
TOC	Total organic carbon
TPP	Technical Project Planning
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

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EXECUTIVE SUMMARY

The Army National Guard (ARNG) G9 is performing Preliminary Assessments (PAs) and Site Inspections (SIs) at ARNG facilities nationwide based on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on the six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) (Assistant Secretary of Defense) dated 6 July 2022. The six compounds listed in the OSD memorandum include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA)[1]. These compounds are collectively referred to as "relevant compounds" throughout the document and the applicable Screening Levels (SLs) are provided below in **Table ES-1**.

The PA identified one Areas of Interest (AOI) where PFAS-containing materials may have been stored, disposed, or released historically (see table ES-2 for AOI location). The objective of the SI is to identify whether there has been a release to the environment from the AOI identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on a comparison of SI results to screening levels (SLs) for the relevant compounds. This SI was completed at the Rochester Army Aviation Support Facility #2 (AASF #2) in Rochester, New York, and determined further investigation is warranted for AOI 1: Hangar Release and Hazardous Waste Storage. Rochester AASF #2 will be referred to as the "Facility" throughout this document.

The Facility, operated by the New York ARNG (NYARNG), is located within the Greater Rochester International Airport in Monroe County, western New York, in the City of Rochester. Monroe County is a predominately suburban area largely consisting of plateaus in the Lake Ontario Lowlands of western New York. Rochester AASF #2 is located less than 5 miles south from the City of Rochester. The Facility was established in 1991, when a small airplane hangar was built, and is utilized as a NYARNG installation that is used for training, maintenance, and unit administration. Prior to 1991, the property was undeveloped. Approximately 500 ft to the east of the Facility is the Genesee River.

The PA Report identified three potential PFAS release areas that were grouped into one AOI at the Facility: the Old Hangar, the New Hangar, and the Hazardous Waste Storage Shed (AECOM Technical Services, Inc. 2020). SI sampling results from the AOI were compared to OSD SLs. **Table ES-2** summarizes the SI results for the AOI. Based on the results of this SI, a remedial investigation (RI) is warranted for AOI 1.

[1] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS

Table ES-1. Screening Levels (Soil and Groundwater)

Analyte[2]	Residential (Soil) (µg/kg)[1]	Industrial / Commercial Composite Worker (Soil) (µg/kg) [1]	Tap Water (Groundwater) (ng/L) [1]
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:

1. Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. Hazard Quotient (HQ) = 0.1. 6 July 2022.
2. Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS

ng/L = Nanogram(s) per liter

Table ES-2. Summary of Site Inspection Findings and Recommendations

AOI	Potential Release Area	Soil AOI	Groundwater AOI	Groundwater Facility Boundary	Future Action
1	Rochester AASF #2 Hangar Release and Hazardous Waste Storage	◐	●	●	Proceed to RI

Legend:

● = Detected; exceedance of screening levels

◐ = Detected; no exceedance of screening levels

○ = Not detected

1. INTRODUCTION

1.1 PROJECT AUTHORIZATION

The Army National Guard (ARNG) G9 is the lead agency in performing Preliminary Assessments (PAs) and Site Inspections (SIs) at ARNG facilities nationwide based on the current or potential historical use of per- and polyfluoroalkyl substances (PFAS) with a focus on six compounds presented in the memorandum from the Office of the Secretary of Defense (OSD) dated 6 July 2022 (Assistant Secretary of Defense 2022). The six compounds listed in the OSD memorandum will be referred to as "relevant compounds" throughout this document and include perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide-dimer acid (HFPO-DA)[2] at ARNG facilities nationwide. The ARNG performed this SI at the Rochester Army Aviation Support Facility #2 (AASF #2) in Rochester, New York. The Rochester AASF #2 will be referred to as the "Facility" throughout this document.

The SI project elements were performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (U.S. Environmental Protection Agency [USEPA] 1980), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300; USEPA 1994), and in compliance with U.S. Department of the Army (DA) requirements and guidance for field investigations.

1.2 SITE INVESTIGATION PURPOSE

A PA was performed at the Rochester Army Aviation Support Facility #2 (AECOM Technical Services, Inc. [AECOM] 2020) that identified one Area of Interest (AOI) where PFAS-containing materials may have been used, stored, disposed, or released historically. The objective of the SI is to identify whether there has been a release to the environment from the AOI identified in the PA and determine whether further investigation is warranted, a removal action is required to address immediate threats, or no further action is required based on screening levels (SLs) for the relevant compounds.

[2] Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the conceptual site model (CSM) developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of military specification (MIL-SPEC) aqueous film forming foam (AFFF) and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS

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2. FACILITY BACKGROUND

2.1 FACILITY LOCATION AND DESCRIPTION

Rochester AASF #2 is located in Monroe County, western New York, in the City of Rochester **(Figure 2-1)**. Since the Facility's establishment in 1991, it has been located on the Greater Rochester International Airport and is leased to the National Guard for land use of the Facility. The Facility is accessed from Patriot Way on the southern side of the Greater Rochester International Airport. The Facility is located approximately 0.75 miles south of the airport terminal and 4 miles southwest from the Rochester City Center. Interstate 390 borders the airport property directly to the northeast.

Prior to 1991, the property was undeveloped. An airplane hangar (the Old Hangar) was built in 1991, which the New York (NYARNG) began operating shortly after. In 2008, a second hangar (the 'New Hangar') connected to the original hangar was constructed, with each hangar covering roughly 32,600 square feet. A separate detached storage building was also constructed (AECOM 2020) and is used for hazardous waste storage. The New Hangar is located on the western side of the Old Hangar; both hangars are located in the approximate center of the Facility, south of the helicopter apron and west of the support building. The Rochester AASF #2 hangars are located 0.70 miles northeast from the end of the southern runway. There is a small retention pond located on the southwestern side of the Facility. Further west of the retention pond (outside of the AASF #2 property) is a wetland area that bounds the active runway portion of the airport.

The property that is now the Greater Rochester International Airport was used for aviation purposes throughout most of the 20th century. The first development occurred in 1927 with the construction of a hangar and aviation field, formerly known as Britton Field. By 1948, the Monroe County took possession of the property and began making improvements on the existing runways, building a new runway and building a terminal complex. The Greater Rochester International Airport now covers 1,136 acres and has three runways.

2.2 FACILITY ENVIRONMENTAL SETTING

Monroe County is a predominately suburban area largely consisting of plateaus **(Figure 2-2)** in the Lake Ontario Lowlands of western New York. Monroe County has a total of 1,367 square miles, 52 percent (%) of which are water (National Association of Counties 2017). Rochester AASF #2 is located on the southwestern side of the City of Rochester, approximately 500 feet (ft) west of the Genesee River. The Facility is located in a mixed-use area, surrounded by a mix of industrial, residential, and commercial properties. Several industries are less than 1 mile to the south, west, and southwest of the Facility. Westgate Community Plaza is 2 miles to the west of the Facility. The terrain of the Facility is generally flat, consistent with the rest of Rochester.

2.2.1 Geology

Rochester AASF #2 is located west of the Genesee River, within the northwestern geological region of the Ontario Lowlands, which is a segment of the Erie and Ontario lowlands physiographic province (U.S. Geological Survey [USGS] 1988). This region forms part of the

plains that border the Great Lakes. The Ontario lowlands are an area of generally low and flat topography that was shaped from deglaciation.

Glacial meltwater deposited fluvial sand, gravel, and lacustrine clay, silt, and fine sand throughout the region. As a result, glacially-derived landforms are present near the Rochester AASF #2, including drumlins, eskers, kettles, moraines, and massive deposits of sand and gravel, known as kame, laid down at the periphery of ice sheets during glacial drainage (Isachsen et al. 2000). The Rochester AASF #2 lies at the southwestern edge of the Rochester Kame-Moraine, which is a part of the Brighton-division of the Pinnacle Hills; a system of three different kame-moraine divisions that create sporadic and unusual topographic highs for Rochester and the surrounding 4 miles (Fairchild 1896). The Pinnacle Hills rise approximately 740 ft above mean sea level (amsl), compared to the Rochester average mean sea level of 475 ft.

Both the surface and underlying material of Rochester AASF #2 are comprised of a mix of Pleistocene age unconsolidated glacial deposits, recent floodplain deposits, and lacustrine delta. These sediments consist of silts and clays underlain by fine sands and gravels of variable thicknesses ranging between 20 to nearly 300 ft (USGS 1982). Bedrock underlying the glacial deposits consists of limestone, dolostone, and shale deposits of Upper Silurian age (New York State Museum and Science Service 1970). Many of the drinking water wells in the Genesee River basin come from bedrock; however, they do not yield as much as unconsolidated sediments (USGS 1988).

Soils encountered during the SI activities consisted of tight silt and clay with some sand and gravel. In general, clayey silts were observed closer to the ground surface, transitioning to sandy silts or similar as explorations reached terminal depths (up to 18 ft below grade). In the general chemistry and grain size analyses, soil pH was noted to be 7.1 (neutral) and TOC was 3,900 milligrams per kilogram, indicating low organic-matter content in the soil. The grain size analysis of the sample within AOI 1 showed that the sample was comprised of 25% clay, 34% silt, 30% sand, and 11% gravel. This soil type is called a “clay loam.”

2.2.2 Hydrogeology

Based on review of USEPA’s map of Sole Source Aquifers, Rochester AASF #2 is not located over a sole source aquifer (USEPA 2022). Based on review of the New York State Department of Environmental Conservation’s (NYSDEC) Map of Principal and Primary Aquifers in New York State, the Rochester AASF #2 facility area is not located over a principal or primary aquifer (NYSDEC 2022). **Figure 2-3** shows potable wells, potential private wells, and USGS inactive monitoring wells. The principal preglacial buried-valley aquifer system underlies the Irondequoit and Genesee River valleys (USGS 1982) **(Figure 2-4)**. This unconsolidated aquifer spans the entire Rochester AASF #2, with precipitation and runoff being the sole source of recharge (USGS 1982).

The glacio-lacustrine silt and very fine sand, as well as kame deposits, create unique hydrogeological conditions. Unconsolidated glacial deposits of thick, permeable sand and gravel underlie floodplains and terraces of the less permeable silt loam, causing different zones of infiltration. This creates a challenge in predicting local groundwater flow direction as there is a high water table and low drainage potential. The unconsolidated deposits yield the largest supply

to wells in Monroe County, with yields as much as 10 million gallons (gal) per day across the entire aquifer (USGS 1985). More permeable material is present south of and on the Rochester AASF #2; and thus, infiltration and precipitation are the primary sources of recharge in these locations (USGS 1985).

Information gathered from the PA indicated that the groundwater flow direction in the Facility is generally from west to east, towards the Genesee River, which flows into Lake Ontario. However, localized flow at the AASF #2 appears to vary. Based on the observed depths to groundwater and surveyed well elevations collected during this SI, the groundwater contour map provided as **Figure 2-5** was generated. This flow map indicates that localized groundwater generally flows east to west across the Facility.

Within the PA, AECOM obtained an EDR™ Report that conducted a well search for a 1-mile radius surrounding the Facility. Using additional online resources, such as state and local geographic information system (GIS) databases, wells were researched to a 4-mile radius of the Facility. Data from the USGS National Water Information System Mapper indicated there are no active USGS monitoring wells and 418 inactive monitoring wells within a 4-mile radius of the Facility. Well data from New York State indicate there are six potable water wells within a 4-mile radius of the Facility boundary, one to the northwest (upgradient), one to the southwest (side- gradient), and four to the southeast beyond the Genesee River. Information regarding well screen depths was not available, but the total well depths of the 6 wells range between 53 and 400 ft below ground surface (bgs) (AECOM 2020).

There are several bedrock wells located side-gradient within 1.5 miles to the south-southeast and to the northwest of Rochester AASF #2 (**Figure 2-5**). The PA Report indicates that the average depth to groundwater in the Rochester area is between 16 and 37 ft bgs, with average well depths of 28 to 101 ft, and yield anywhere from 8 to 287 gal per minute (AECOM 2020). Depth to groundwater measured during the SI was between approximately 1 and 9 ft bgs, significantly shallower than expected based on the records reviewed during the PA development.

The Facility receives water from the Monroe County Water Authority. The majority of drinking water supplied within Monroe County and the City of Rochester comes from Lake Ontario and Hemlock Lake, though there are 4,500 privately-owned drinking water wells within the county. Hemlock Lake is located approximately 25 miles south of Rochester AASF #2. Lake Ontario is located approximately 12 miles north of Rochester AASF #2 (AECOM 2020).

2.2.3 Hydrology

Rochester AASF #2 is located within the Lower Genesee Watershed, which covers 1,100 square miles, drains over 8,000 square miles of streams, and covers Genesee, Livingston, Monroe, Ontario, and Wyoming counties (U.S. Department of Agriculture 2009). The Lower Genesee Watershed is a part of the 2,500 square mile Genesee River Watershed in the Great Lakes Basin. Little Black Creek, Red Creek, Allen Creek, Black Creek, and Town of Gates-Genesee River watersheds are all a part of the Lower Genesee Watershed (**Figure 2-4**).

Surface water resources near the Rochester AASF #2 include natural streams, rivers, and open water features. Surface water runoff from the Rochester AASF #2 area drains into the Genesee

River, located approximately 0.35 miles southeast of Rochester AASF #2's eastern and southern boundaries. The Genesee River converges with the Erie Canal, located approximately 0.75 miles north-northeast of the Facility across from Interstate 390, before continuing on to Lake Ontario.

On the western side of the Rochester AASF #2 is Little Black Creek, which runs south and connects to a drainage ditch below the southern runway (Runway 4) and travels east along Paul Road 252 before converging into the Genesee River. The wetland features located adjacent to the Facility on the west drain/connect to the aforementioned ditch. Another drainage ditch at the end of Runway 10 travels south and connects to Little Black Creek. Black Creek is 0.5 miles south of the Facility, which is less than 300 ft from Little Black Creek near Paul Road 252, where it also converges into the Genesee River.

Both the Genesee River and Lake Ontario are popular for recreational use. Some recreational uses include boating, fishing, and hiking (City of Rochester 2022).

2.2.4 Climate

The climate in the Rochester AASF #2 area and surrounding Greater Rochester International Airport is predominately continental, with cold and snowy winters and warm to hot summers. Temperatures vary from an average summer high of 70.2 degrees Fahrenheit (°F) to an average winter low of 28.5°F, with an average annual temperature of 49.5°F. The total mean annual precipitation is 35.09 inches (in.), and the total mean snowfall is 102 in. January experiences the most snowfall, with an average of 27.4 in., and July experiences the most rainfall, with an average of 3.56 in. (National Oceanic and Atmospheric Administration 2022).

2.2.5 Current and Future Land Use

Rochester AASF #2 is a private Facility with access only through a guarded security gate. The property is a NYARNG installation that is used for training, maintenance, and unit administration. The Facility is encircled by a fence and access is gained through a guarded entrance. There are no current expansion plans for the Facility, and in general, the future use of the Facility is not expected to change (AECOM 2020).

2.2.6 Sensitive Habitat and Threatened/Endangered Species

A wildlife survey has not occurred at the Facility, and the Facility does not have any significant areas of habitat. The following species have not been identified at the Facility but may be present in the surrounding area (U.S. Fish and Wildlife Service 2021):

- Insects: Monarch Butterfly – *Danaus plexippus* (Candidate).

2.3 HISTORY OF PFAS USE

Three potential PFAS release areas (Old Hangar, New Hangar, and Hazardous Waste Storage Shed) were identified at the Facility during the PA. Interviews and records obtained during the PA indicate that a release of an unknown amount of PFAS-containing aqueous film forming foam (AFFF) occurred in 2017 within the boiler room and into the Old Hangar. According to

interviews, no fire training areas were ever present at the Facility; however, PFAS-containing materials were stored on the property, and it is possible that unknown or undocumented releases have occurred at the Rochester AASF #2 (AECOM 2020). A description of each feature within the AOI and the potential release scenarios is presented in **Section 3**.

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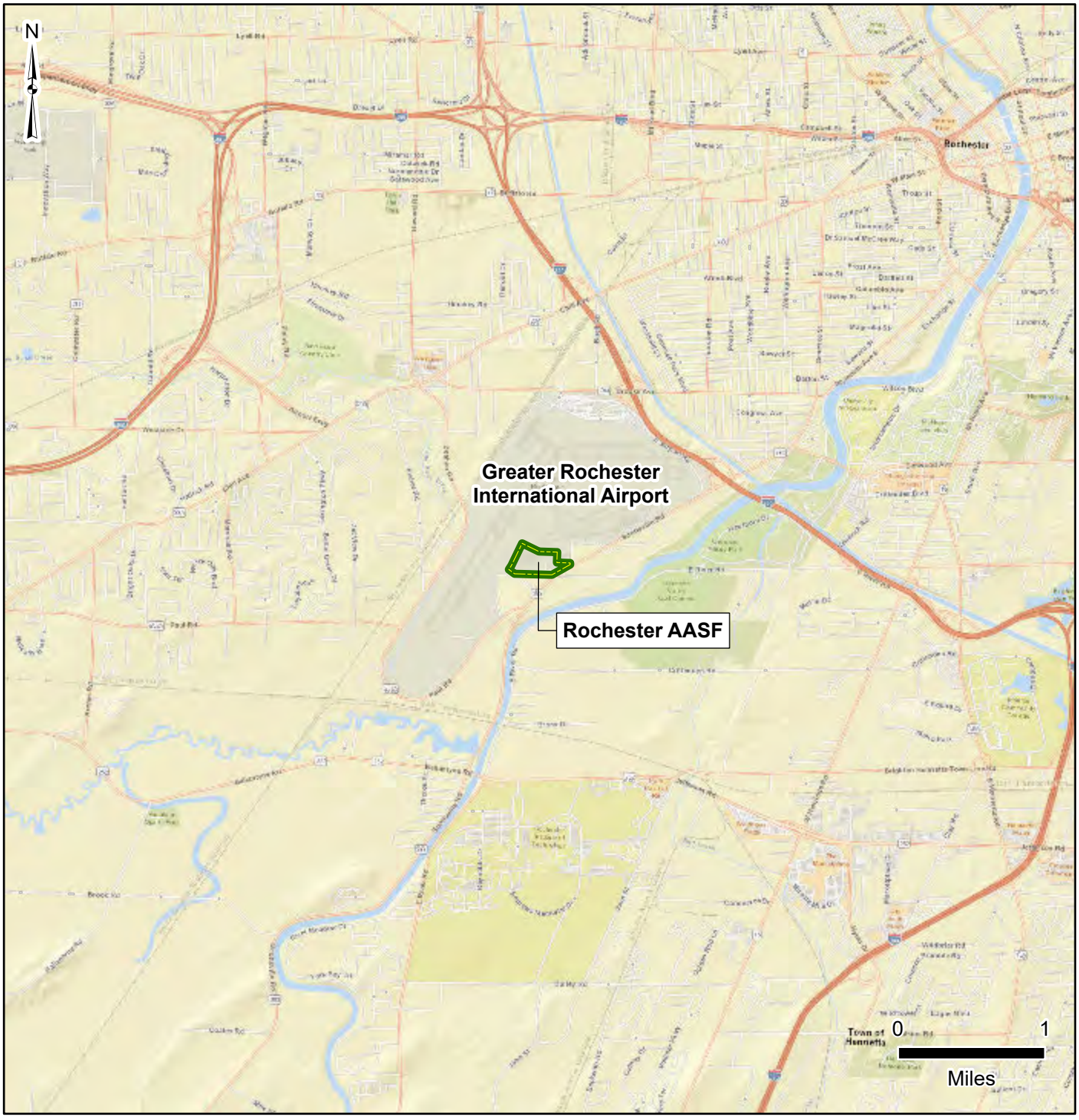
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 2-1
Facility Location



Facility Data

Facility Boundary

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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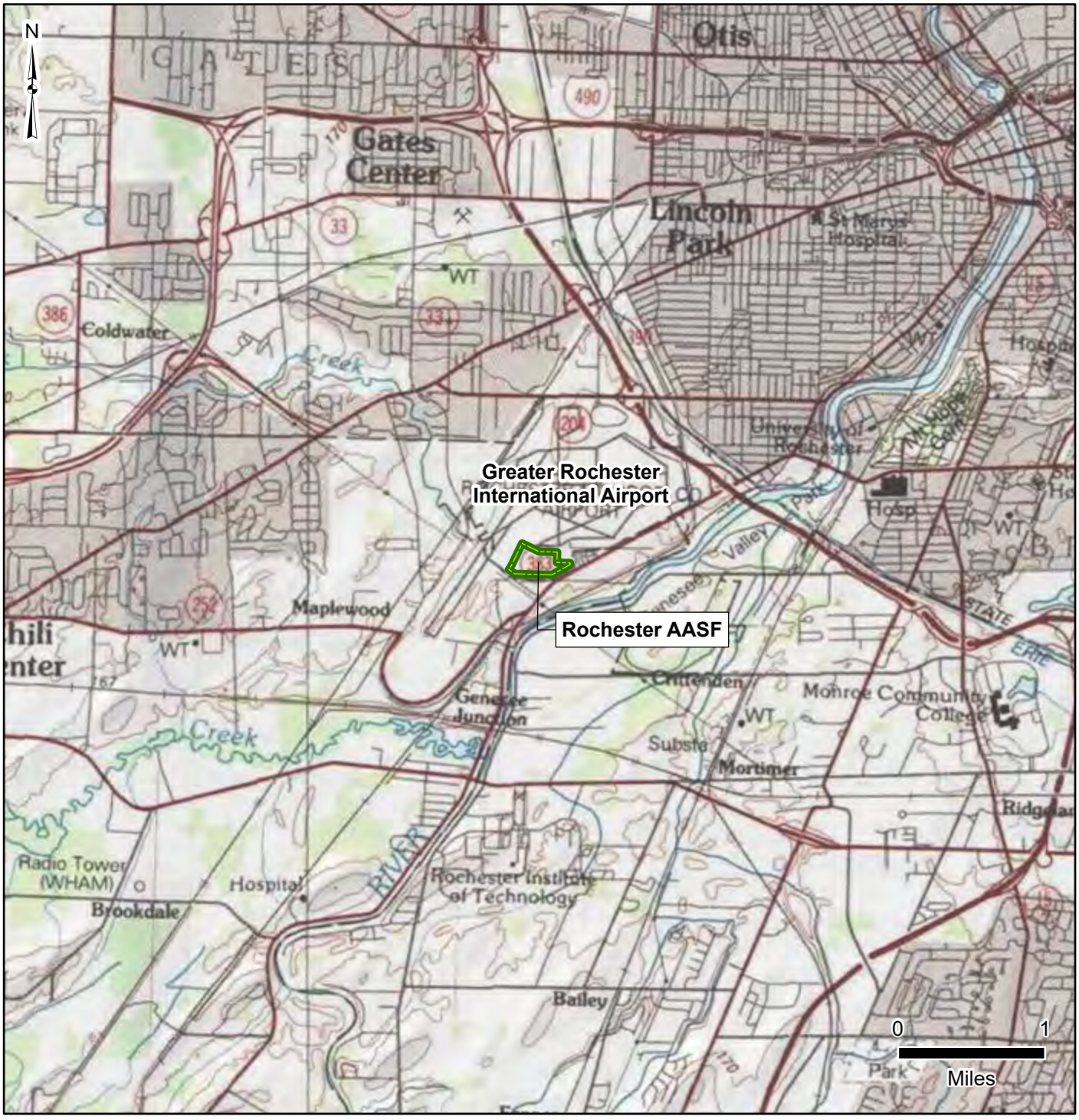
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 2-2
Facility Topography



Facility Data

Facility Boundary

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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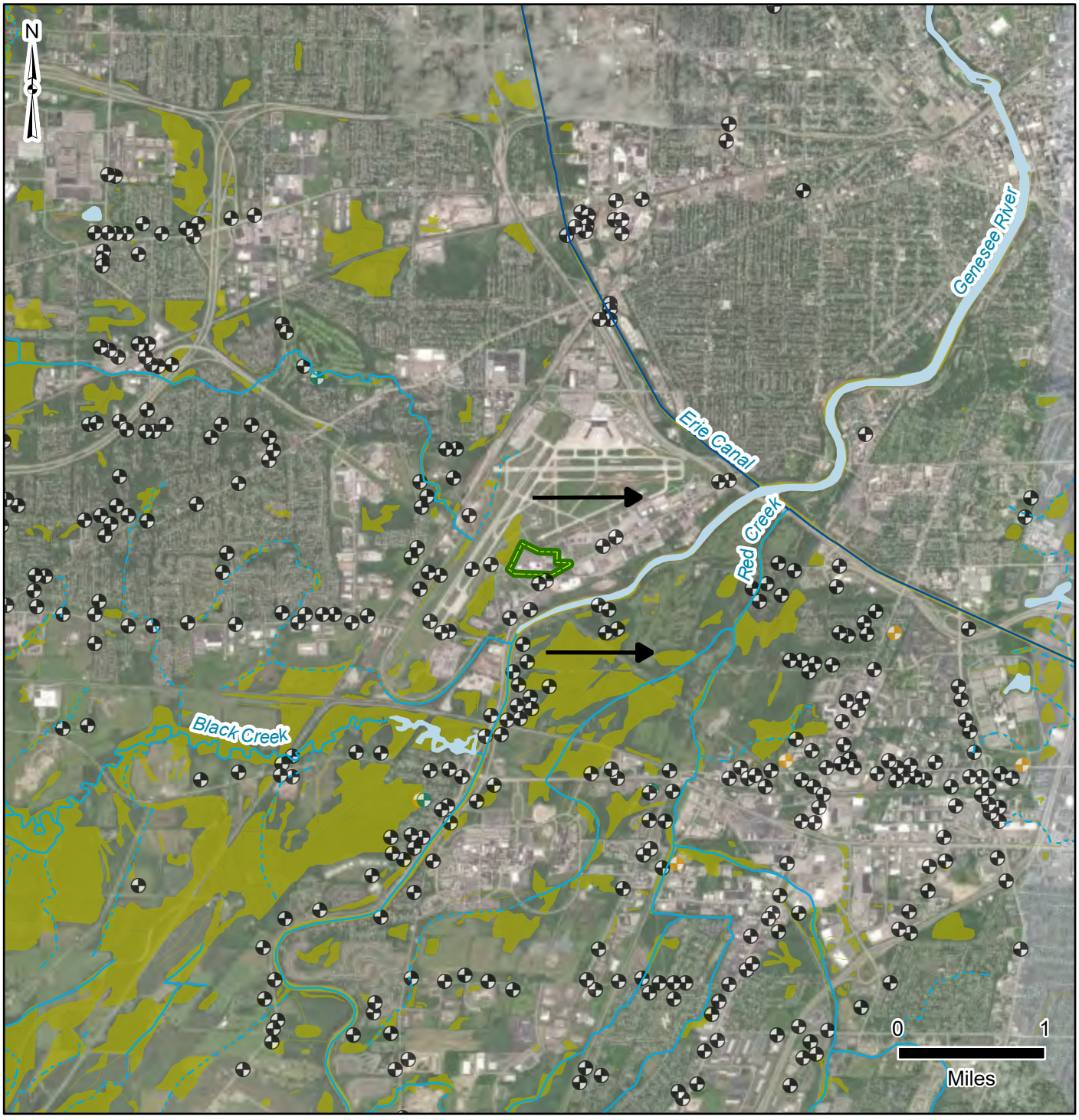
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 2-3
Groundwater Features



Facility Data
- Facility Boundary

Well Type
- Potable
- Potential Private Well
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Perennial Creek/Stream
- Intermittent Creek/Stream
- Canal/Ditch
- Waterbody
- Wetlands

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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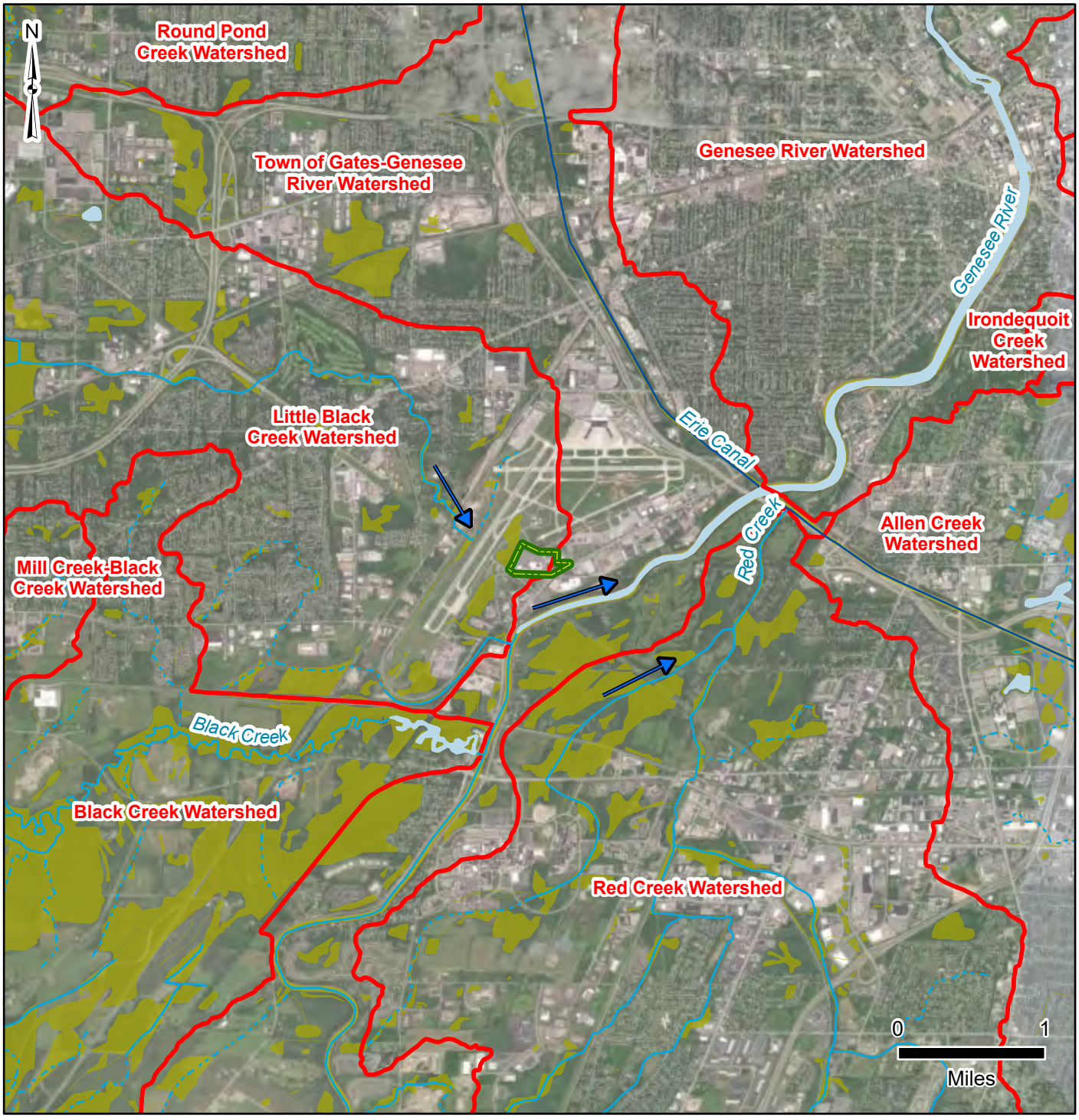
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 2-4
Surface Water Features



Facility Data
- Facility Boundary

Hydrology
- Surface Water Flow Direction
- Perennial Creek/Stream
- Intermittent Creek/Stream
- Canal/Ditch
- Waterbody
- Wetlands
- Watersheds

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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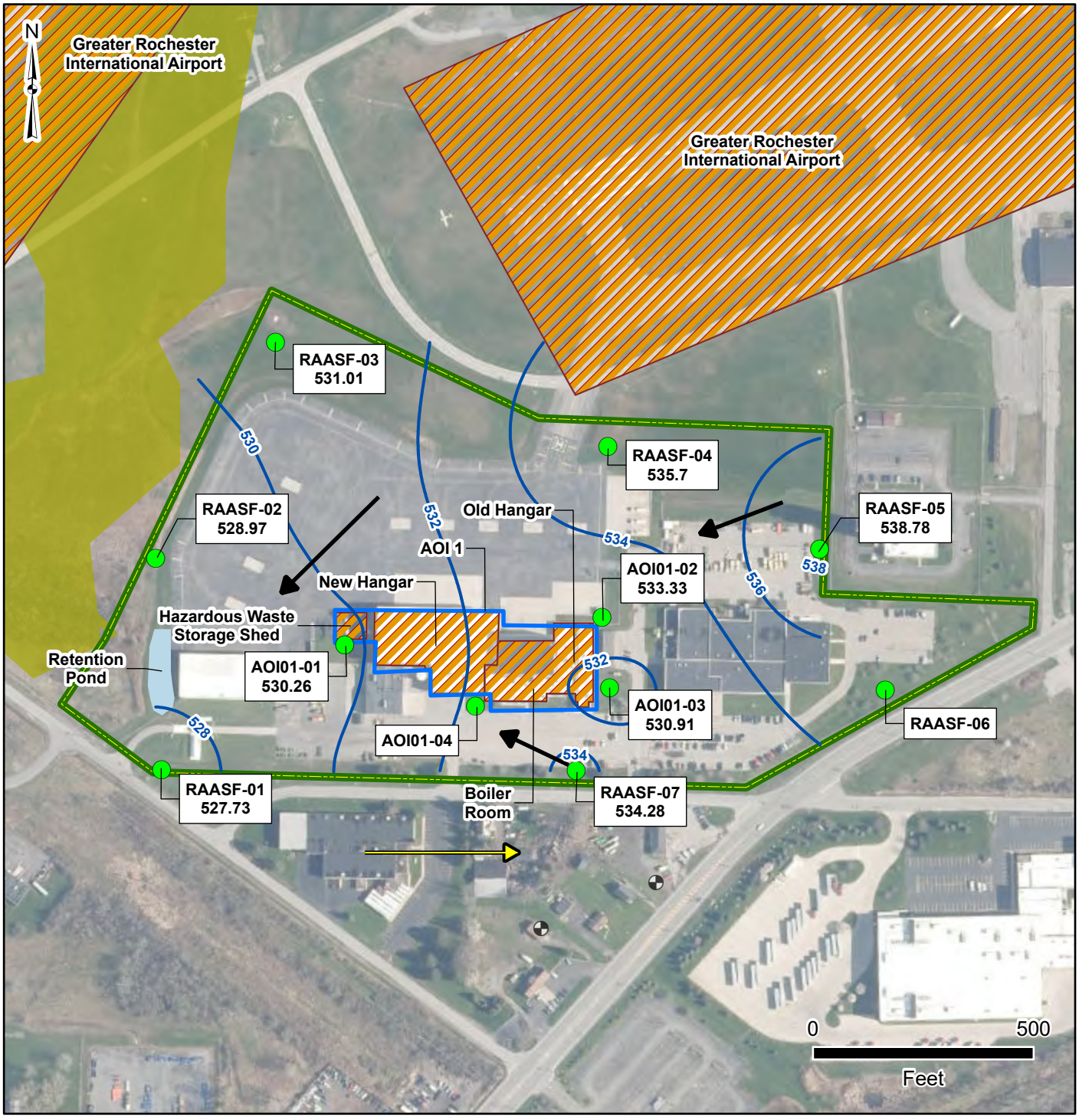
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 2-5
Groundwater Elevations, March 2022



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

*Depths in call out boxes expressed as feet above mean sea level

Sample Locations
- DPT

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Local Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Groundwater Elevation Contour Interval (2 foot)
- Waterbody
- Wetlands

Data Sources:
ESRI 2020
AECOM 2020

Date:..... September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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3. SUMMARY OF AREAS OF INTEREST

The PA evaluated areas where PFAS-containing materials may have been used, stored, disposed, or released historically. Based on the PA findings, three potential release areas were identified at Rochester AASF #2 and grouped into one AOI (AOI 1): Old Hangar, New Hangar, and Hazardous Waste Storage Shed. Additionally, there are off-Facility potential source areas as detailed in **Section 3.2**. The potential source areas are shown on **Figure 3-1** and described in subsequent sections.

3.1 AOI 1 – OLD HANGAR, NEW HANGAR, AND HAZARDOUS WASTE STORAGE SHED

AOI 1 consists of the Rochester AASF #2 Old Hangar, New Hangar, and Hazardous Waste Storage Shed, all of which are located in the south/central portion of the Facility adjacent to one another. Each of these areas is described below and shown on **Figure 3-1**.

3.1.1 AOI 1 – Old Hangar

The Old Hangar is located in the southeastern portion of the Greater Rochester International Airport and was built in 1991, in a roughly 32,600 square ft area; it is still active at the time of reporting. The Old Hangar has a boiler room on the eastern side containing two 500-gal 3% AFFF storage tanks connected to a deluge system. This system was previously reported to drain to a 25,000-gal aboveground storage tank (AST). Records research conducted by ARNG following SI field activities verified that the Old Hangar drains to a 25,000-gal underground storage tank (UST) located on the north side of the hangar. The AST previously reported is the water supply for the hangar deluge systems. While no initial test of the deluge system after its installation was reported, it has been common practice at the other AASF locations in the State of New York. There are also three 36-gal 3% AFFF manual tank units set up within the Old Hangar that are reported to have never had releases (AECOM 2020).

A 2018 September Record of Release notes a release of AFFF and water that occurred on 20 June 2017. The bladders on the two 500-gal 3% AFFF storage tanks in the boiler room malfunctioned, causing a release in the boiler room that flowed into the Old Hangar. Interviews with Rochester AASF #2 staff said it is unclear as to how much AFFF was released from the tanks. Interviews and documented reports state the spill was contained by the deluge system, and AFFF went into the drains and was completely contained by the 25,000-gal UST. Due to general hydraulics, the floor drains have a system (pump room) that pumps floor drainage into the UST. A retrofitting event occurred shortly after, during which, the 500-gal AFFF storage tanks were refilled with 3% AFFF. The 25,000-gal UST was later emptied and disposed of by a contractor without incident (AECOM 2020).

3.1.2 AOI 1 – New Hangar

A New Hangar was established in 2008. The 2020 PA reported that the New Hangar has a fire pump room containing one 300-gal 1.5% AFFF storage tank connected to a deluge system. Site visit and records research conducted by ARNG following SI field activities verified that the New Hangar's deluge system is equipped with a 300-gal 1.5% high expansion foam (HEF) tank, not

AFFF. Additionally, the system was verified to drain to a 35,000-gal UST[3] located to the northwest of the hangar. The AST previously reported is the water supply for the hangar deluge systems. A storage room contains seven 5-gal buckets of 3% AFFF left over from the 2017 retrofitting event. Two 36-gal 3% AFFF manual tank units are also set up within the New Hangar. Similar to the Old Hangar, no initial deluge system test was reported to have been conducted when the New Hangar was constructed. Testing of the hangar deluge system occurs annually but bypasses the HEF storage tank, using only water to conduct the tests. There have been no documented reports of AFFF releases at the New Hangar since its installation in 2008; however, due to the storage of AFFF, this location is considered a potential PFAS release area (AECOM 2020).

3.1.3 AOI 1 – Hazardous Waste Storage Shed

The Hazardous Waste Storage Shed is located approximately 300 ft to the west of the New Hangar. One 55-gal drum of 3% AFFF was found inside the Hazardous Waste Storage Shed. This drum is part of the extra material from the 2007 retrofitting event. There is no evidence to suggest any spills, leaks, or releases have occurred inside the storage shed; however, due to the storage of AFFF within the Hazardous Waste Storage Shed, this location is considered potential PFAS-release area (AECOM 2020).

3.2 ADJACENT SOURCES

Four potential off-Facility sources of PFAS are located adjacent to the Facility and are not under the control of the NYARNG. The adjacent potential sources are shown on **Figure 3-1** and described in the following sections for informational purposes only and will not be investigated as part of this SI.

3.2.1 Greater Rochester International Airport

The first development at what is now the Greater Rochester International Airport occurred in 1927 with the construction of a hangar and aviation field, formerly known as Britton Field. Over the years, operations at the airport have included passenger flights, cadet flight school, and civilian pilot training. Monroe County took over airport property ownership in 1948. Operations within private hangars located at the Greater Rochester International Airport include aircraft maintenance, air cargo handling, ground service equipment maintenance, private aircraft rentals, and a flight school. The Rochester AASF #2 is located on the southern side of the airport property (**Figure 3-1**). Although information was not available during the PA interviews regarding AFFF usage or storage at the airport, there could have been potential use of AFFF in association with typical airport operations at the airport terminal, along the flight lines, or within the associated hangars. Additionally, as it is unknown whether there are fire suppression systems in any of the private hangars, or if AFFF has been used for training or as a fire suppressant at any time, these hangars have been included as potential adjacent sources at the airport. Therefore, the Greater Rochester International Airport is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Greater Rochester International Airport is located upgradient, cross-gradient, and downgradient to the Facility.

[3] The old and new hangar systems each drain to separate USTs.

3.2.2 Greater Rochester International Airport Fire Department

The greater Rochester International Airport Fire Department is located less than 0.25 miles north of Rochester AASF #2 in a central area between the airport's three runways (**Figure 3-1**). Although information was not available during the PA interviews regarding AFFF usage or storage, according to current Federal Aviation Administration regulations (at the time of reporting), AFFF is required to be stored and used for any potential firefighting activities and firefighting training since commercial aviation activities occur at the airport. Therefore, the Greater Rochester International Airport Fire Department is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Greater Rochester International Airport Fire Department is located upgradient/cross-gradient to the Facility.

3.2.3 Gates Fire District

The closest local fire department, Gate Fire District, is located 1.5 miles northwest of Rochester AASF #2. This fire department would respond to emergencies at Rochester AASF #2. Information was not available during the PA interviews regarding AFFF usage or storage at this location. Because the presence or absence of AFFF cannot be confirmed, the Gates Fire District is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Gates Fire District is located cross-gradient to the Facility.

3.2.4 Rochester Fire Academy

The Rochester Fire Academy is located approximately 1-mile east northeast of Rochester AASF #2. Since 1954, the Rochester Fire Academy has been owned and operated by the City of Rochester as a training facility for the fire and police departments. During the period of 1954 to 1980, various chemicals from local hazardous waste generators were burned and/or disposed of during training exercises. It is unknown whether or not AFFF were used at the academy. Because the presence or absence of AFFF cannot be confirmed, the Rochester Fire Academy is considered a potential adjacent off-facility source of PFAS (AECOM 2020). The Rochester Fire Academy is located cross-gradient from the Facility.

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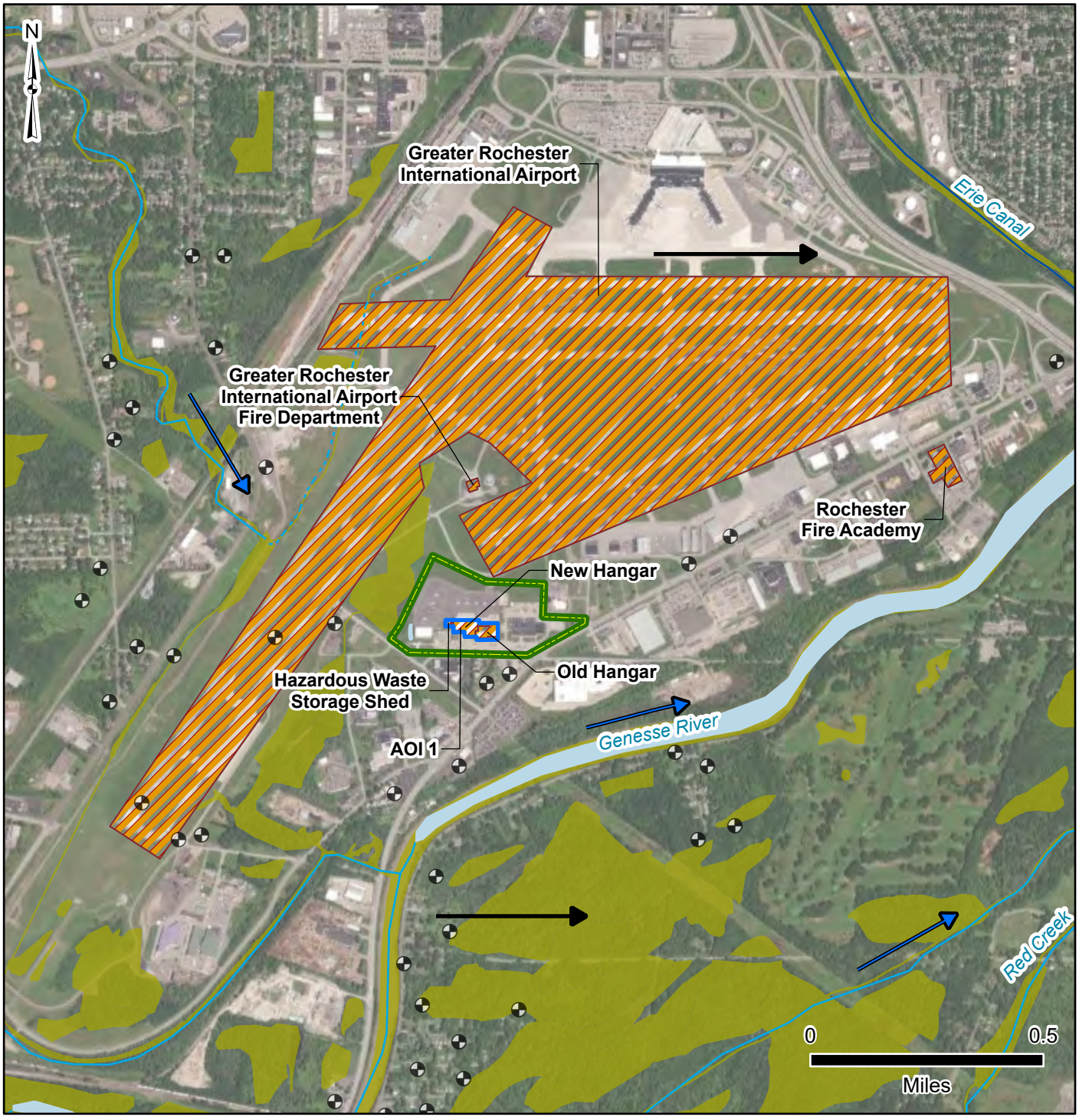
Figure 3-1
Areas of Interest



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well
- Potable
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Surface Water Flow Direction
- Groundwater Flow Direction
- Perennial Creek/Stream
- Intermittent Creek/Stream
- Canal/Ditch
- Waterbody
- Wetlands

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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4. PROJECT DATA QUALITY OBJECTIVES

As identified during the data quality objective (DQO) process and outlined in the SI Uniform Federal Policy- (UFP) Quality Assurance Project Plan (QAPP) Addendum (EA Engineering, Science, and Technology, Inc., PBC [EA] 2021a), the objective of the SI is to identify whether there has been a release to the environment at the AOI identified in the PA. For the AOI, ARNG determines if further investigation is warranted, a removal action is required to address immediate threats, or whether no further action is warranted. This SI evaluated groundwater and soil for presence or absence of relevant compounds at the AOI.

4.1 PROBLEM STATEMENT

ARNG will recommend AOIs for remedial investigation (RI) if site-related soil and groundwater samples have concentrations of the relevant compounds above the OSD risk-based screening levels. The SLs are presented in **Section 6.1** of this report.

4.2 INFORMATION INPUTS

Primary information inputs for the SI include the following:

- The PA Report for the Rochester AASF #2 (AECOM 2020)
- Groundwater and soil sample data collected as part of this SI in accordance with the site-specific UFP-QAPP Addendum (EA 2021a)
- Field data collected including groundwater elevation and water quality parameters measured at the time of sampling.

4.3 STUDY BOUNDARIES

The scope of the SI was bounded horizontally by the property limits of the Facility (**Figure 2-2**). Off-Facility sampling was not included in the scope of this SI. If future off-Facility sampling is required, the proper stakeholders will be notified, and necessary rights-of-entry will be obtained by ARNG with property owner(s). The vertical boundaries of the subsurface investigation was based on the depth of target samples and advancement to achieve temporary well construction. The maximum depth of investigation was 20 ft below grade. Temporal boundaries were limited to the earliest available time field resources were available to complete the study.

4.4 ANALYTICAL APPROACH

Samples were analyzed by Eurofins Lancaster Laboratories Environmental LLC, accredited for PFAS analysis and is compliant with Table B-15 of the DoD QSM. PFAS data underwent 100% Stage 2B validation in accordance with the DoD General Data Validation Guidelines (2019a) and DoD Data Validation Guidelines Module 3: Data Validation Procedure of Per- and Polyfluoroalkyl Substances Analysis by Quality Systems Manual (QSM) Table B-15 (2020).

Data were compared to applicable SLs and decision rules as defined in the UFP-QAPP Addendum (EA 2021a).

4.5 DATA USABILITY SUMMARY

The Data Usability Assessment (DUA), which is provided in **Appendix A**, is an evaluation at the conclusion of data collection activities that uses the results of both data verification and validation in the context of the overall project decisions or objectives. Using both quantitative and qualitative methods, the assessment determines whether project execution and the resulting data have met installation-specific DQOs. Both sampling and analytical activities are considered to assess whether the collected data are of the right type, quality, and quantity to support the decision- making (DoD 2019a, 2019b; USEPA 2017).

Based on the DUA, the environmental data collected during the SI were found to be acceptable and usable for this SI evaluation with the qualifications documented in the DUA and its associated data validation reports. These data are of sufficient quality to meet the objectives and requirements of the UFP-QAPP Addendum (EA 2021a).

5. SITE INSPECTION ACTIVITES

This section describes the environmental investigation and sampling activities that occurred as part of the SI. The SI sampling approach was based on the findings of the PA and was implemented in accordance with the following approved documents.

- *Final Preliminary Assessment Report, Rochester Army Aviation Support Facility #2, New York,* dated July 2020 (AECOM 2020)

- *Final Programmatic Uniform Federal Policy-Quality Assurance Project Plan, Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide*, dated December 2020 (EA 2020a)

- *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Rochester Army Aviation Support Facility #2, New York* dated October 2021 (EA 2021a)

- *Programmatic Accident Prevention Plan, Revision 1*, dated November 2020 (EA 2020b)

- *Final Accident Prevention Plan Site Safety and Health Plan, Rochester Army Aviation Support Facility #2, New York, Revision 1* dated October 2021 (EA 2021b).

The SI field activities were conducted from 21 to 25 March 2022 and consisted of direct-push technology (DPT) boring and soil sample collection, temporary monitoring well installation, and grab groundwater sample collection. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA 2021a), except as noted in **Section 5.10**.

The following samples were collected during the SI and analyzed for a subset of 24 compounds via liquid chromatography tandem mass spectrometry (LC/MS/MS) compliant with QSM Version 5.3 Table B-15 to fulfill the project DQOs:

- Thirty-two (32) soil samples from 11 locations (soil borings locations)
- Eleven (11) grab groundwater samples from 11 temporary well locations
- Seventeen (17) various quality assurance/quality control samples.

Figure 5-1 provides the sample locations for all media across the Facility. **Table 5-1** presents the list of samples collected for each medium. Field documentation is provided in **Appendix B**. A log of Daily Notice of Field Activity was completed throughout the SI field activities, which is provided in **Appendix B1**. Additionally, a photographic log of field activities is provided in **Appendix C**.

5.1 PRE-INVESTIGATION ACTIVITIES

In preparation for the SI field activities, project team members participated in Technical Project Planning (TPP) meetings, performed utility clearance, and sampled decontamination source water. Details of these activities are presented below.

5.1.1 Technical Project Planning

The U.S. Army Corps of Engineers (USACE) TPP Process, Engineer Manual (EM) 200-1-2 (Department of the Army 2016) defines four phases to project planning: (1) defining the project phase; (2) determining data needs; (3) developing data collection strategies; and (4) finalizing the data collection plan. The process encourages stakeholder involvement in the SI, beginning with defining overall project objectives, including DQOs, and formulating a sampling approach to address the AOI identified in the PA.

A combined TPP Meeting 1 and 2 was held on 11 August 2021, prior to SI field activities. The combined TPP Meeting 1 and 2 was conducted in general accordance with EM 200-1-2. The stakeholders for this SI include the ARNG, NYARNG, USACE, NYSDEC, and New York State Department of Health (NYSDOH) representatives familiar with the facility, the regulations, and the community. Stakeholders were provided the opportunity to make comments on the technical sampling approach and methods at the combined TPP Meeting 1 and 2. The outcome of the combined TPP Meeting 1 and 2 was memorialized in the UFP-QAPP Addendum (EA 2021a).

A TPP Meeting 3 was held after the field event to discuss the results of the SI. Meeting minutes for TPP 3 are included in **Appendix D** of this report. Future TPP meetings will provide an opportunity to discuss the results and findings, and future actions, where warranted.

5.1.2 Utility Clearance

EA contacted the New York One-call 811 to notify them of intrusive work at the Facility. EA contracted Ravi Engineering and Land Surveying, P.C., a private utility location service, to perform utility clearance at the Facility. Utility clearance was performed at each of the proposed boring locations on 17 March 2022 with input from the EA field team and NYARNG facilities staff knowledgeable of on-Facility utilities. A combination of electromagnetic, radio frequency, and ground-penetrating radar scanning technologies were utilized to detect the existence and approximate horizontal location of subsurface utilities. Additionally, the first 5 ft of each boring were pre-cleared by EA's drilling subcontractor, Cascade Remediation Services, using a hand auger to verify utility clearance in shallow subsurface where utilities would typically be encountered.

5.1.3 Source Water and PFAS sampling Equipment Acceptability

A sample from a deionized water source at the EA Ecotoxicological Laboratory was collected on 31 March 2021, prior to mobilization. Results of the sample confirmed this source to be acceptable for use in this investigation; therefore, it was used throughout the field activities. Specifically, the samples were analyzed by LC/MS/MS compliant with QSM 5.3 Table B-15. A discussion of the results is presented in the DUA (Appendix A).

Materials that were used within the sampling zone were confirmed as acceptable for use in the PFAS sampling environment. The checklist of acceptable materials for use in the PFAS sampling environment was provided in the Standard Operating Procedures appendix (Appendix A) to the Programmatic UFP-QAPP (EA 2020a).

5.2 SOIL BORINGS AND SOIL SAMPLING

Beyond 5 ft depth, soil samples were collected via DPT drilling methods in accordance with SOP 047 *Direct-Push Technology Sampling* (EA 2021a). A Geoprobe® 7822DT dual-tube sampling system was used to collect continuous soil cores to the target depth. A hand auger was used to collect soil from the top five feet of the boring, in accordance with EA utility clearance procedures. Drilling/soil sampling was initiated on 21 March 2022 and completed on 24 March 2022.

Three discrete soil samples were planned to be collected for chemical analysis from each soil boring; one sample at the surface (0 to 2 ft bgs) and two subsurface soil samples. One subsurface soil sample was to be collected approximately 1 ft above the groundwater table and one was to be collected at the mid-point between the surface and the groundwater table (not to exceed 15 ft bgs). Groundwater was encountered at depths ranging from 6 to 13 ft bgs during drilling based on soil saturation, though the fine-grained material made it difficult to determine the water table from the soil cores. Total boring completion depths to accommodate temporary well installation ranged from 10 to 20 ft bgs. One surface soil sample (0 to 2 ft bgs) was collected at each boring location, along with at least one subsurface sample, based on depths of observed groundwater. Borings RAASF-02 and RAASF-05 had only one subsurface sample collected.

All soil sample locations are shown on **Figure 5-1**, and boring sample depths are provided in **Table 5-1**. The soil boring locations were selected based on the AOI information provided in the PA (AECOM 2020) and as agreed upon by stakeholders during the TPP and review of the UFP-QAPP Addendum (EA 2021a).

During the drilling, the soil cores were continuously logged for lithological descriptions by a field geologist using the Unified Soil Classification System. A photoionization detector (PID) was used to screen the breathing zone during boring activities as a part of personal safety requirements. Observations and measurements were recorded on sampling forms (**Appendix B2**) and in a non-treated field logbook. Depth interval, recovery thickness, PID concentrations, moisture, relative density, Munsell color, and Unified Soil Classification System texture were recorded. The boring logs are provided in **Appendix E**.

The hand auger, post-hole digger, throw bar (where applicable), and cutting shoe were decontaminated between locations using a six-step, PFAS-free decontamination procedure with Liquinox, PFAS-free deionization water, and methyl alcohol (methanol). The drill casing was also rinsed with PFAS-free deionization water between locations, though the casing did not come in contact with soil samples due to the use of the acetate core liner.
Each sample was collected into a laboratory-supplied PFAS-free high-density polyethylene (HDPE) bottle and labeled using a PFAS-free marker or pen. Samples were packaged on ice and transported via Federal Express (FedEx) under standard chain-of-custody procedures to the laboratory and analyzed for PFAS (LC/MS/MS compliant with QSM Version 5.3 Table B-15),

total organic carbon (TOC) (USEPA Method 9060A), pH (USEPA Method 9045D), and grain size (ASTM D422) in accordance with the UFP-QAPP Addendum (EA 2021a).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. Matrix spike (MS)/matrix spike duplicates (MSDs) were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. In instances when non-dedicated sampling equipment was used, such as a hand auger for the shallow soil samples, equipment blanks (EBs) were collected at a rate of 5% and analyzed for the same parameters as the soil samples. A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6 degrees Celsius (°C) during shipment.

DPT borings were converted to temporary wells, which were subsequently abandoned after sampling and surveying in accordance with the UFP-QAPP Addendum (EA 2021a). After removal of the casings, boreholes were abandoned using bentonite chips. Borings were installed in grass areas to avoid disturbing concrete or asphalt surfaces.

5.3 TEMPORARY WELL INSTALLATION AND GROUNDWATER GRAB SAMPLING

Temporary wells were installed using the DPT system as described in **Section 5.3**. Once the borehole was advanced to the desired depth, a temporary well was constructed of a 5-ft section of 1-in. Schedule 40 poly-vinyl chloride (PVC) screen with sufficient casing to reach the ground surface. New PVC pipe and screen were used at each location to avoid cross contamination between locations. The screen intervals for the temporary wells are provided in **Table 5-2**.

Purging and sampling of wells was completed in accordance with the SI QAPP Addendum (EA 2021a). Samples were collected via low-flow sampling methods using a combination of peristaltic and bladder pumps with disposable PFAS-free, HDPE tubing. New tubing was used at each well and the pumps were decontaminated between each well. The wells were purged at a rate determined in the field to reduce draw down prior to sampling. Water quality parameters (e.g., temperature, specific conductance, pH, DO, and ORP) were measured using a water quality meter and recorded on the field sampling form (**Appendix B2**). Water levels were measured to the nearest 0.01 inch and recorded. Additionally, a subsample of each groundwater sample was collected in a separate container and a shaker test was completed to identify if there was any foaming. No foaming was noted in any of the groundwater samples.

Samples were packaged on ice and transported via FedEx under standard chain-of-custody procedures to the laboratory and analyzed for PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 in accordance with the UFP-QAPP Addendum (EA 2021a).

Field duplicate samples were collected at a rate of 10% and analyzed for the same parameters as the accompanying samples. MS/MSDs were collected at a rate of 5% and analyzed for the same parameters as the accompanying samples. One field reagent blank was collected per day in accordance with the UFP-QAPP Addendum (EA 2021a). A temperature blank was placed in each cooler to ensure that samples were preserved at or below 6°C during shipment.

Temporary wells were abandoned in accordance with the UFP-QAPP Addendum (EA 2021a) by removing the PVC and backfilling the hole with bentonite chips, drill cuttings from that boring, and clean sand. Surfaces were completed with clean sand to match the surrounding material.

5.4 SYNOPTIC WATER LEVEL MEASUREMENTS

Groundwater levels were used to monitor Facility-wide groundwater elevations and assess groundwater flow. Synoptic water level elevation measurements were collected from the newly installed temporary monitoring wells, taken from the survey mark on the northern side of the well casing. Groundwater elevation data is provided in **Table 5-3**, and the resulting groundwater contours are depicted on **Figure 2-5**.

5.5 SURVEYING

The northern side of each well casing was surveyed by EA's subcontractor Ravi Engineering on 25 March 2022, prior to well abandonment. Horizontal locations of each temporary well location were collected utilizing global positioning system (GPS) techniques. Topcon HiPer V GPS Network receivers were used in this collection. Satisfactory checks were made to on-Facility survey control before continuing to locate sample points. Vertical locations of the northern side of each temporary monitoring well was collected utilizing differential leveling techniques. A Topcon DL-103 digital level was used for this collection. A closed level loop was performed to ensure the desired accuracy standard was met. Survey data was collected in the applicable Universal Transverse Mercator zone projection with World Geodetic System 1984 datum (horizontal) and North American Vertical Datum 1988 (vertical). Results of the survey are provided in **Appendix B3** and utilized in the figures associated with this report.

5.6 DUST MONITORING

In accordance with the UFP-QAPP Addendum (EA 2021a), a Community Air Monitoring Plan (CAMP) was instituted during ground disturbing activities at the Facility. The CAMP was performed in general accordance with the NYSDOH Generic CAMP, Attachment 1A of the NYSDEC Division of Environmental Remediation-10 Technical Guidance for Site Investigation and Remediation. A TSI 8530 Dust Trak II was used to monitor particulate levels continuously downwind of the drill rig when operating. Readings were recorded for reference approximately every 30 minutes during drill rig operation and are included in **Appendix B2**. A background (upwind) ambient reading was also collected at least daily. All recorded dust concentrations were well below the 100 milligrams per cubic meter threshold in the CAMP for instituting dust suppression techniques. No visible dust was observed during the DPT drilling.

5.7 INVESTIGATION-DERIVED WASTE

As of the date of this report, the disposal of PFAS investigation-derived waste (IDW) is not regulated federally. PFAS IDW generated during the SI is considered non-hazardous waste and was managed in accordance with the UFP-QAPP Addendum (EA 2021a) and with the DA Guidance for Addressing Releases of PFAS, Q18 (DA, 2018).

Soil IDW (i.e., soil cuttings) generated during SI activities was left in place at the point of the source and distributed on the downgradient side of the borehole. Liquid IDW (i.e., purge water, development water, and decontamination fluids) generated during the SI activities was containerized in one 55-gal drums and secured on-Facility.

Other solids such as spent personal protective equipment, plastic sheeting, tubing, rope, unused monitoring well construction materials, and other consumables generated during the field activities were disposed of at a licensed solid waste landfill.

5.8 LABORATORY ANALYTICAL METHODS

Samples were analyzed PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 at Eurofins Lancaster Laboratories Environmental LLC, in Lancaster, Pennsylvania, a DoD ELAP- and NELAP-certified laboratory.

One soil sample per AOI from a location in the source area were also analyzed for TOC using USEPA Method 9060A and pH by USEPA Method 9045D. Additionally, one soil sample, AOI01-03-SB-3-5, was submitted for grain size analysis (ASTM D-422) (i.e., clay content). The grain size analysis was performed where extensive horizontal and vertical clay units were identified by the field geologist.

5.9 DEVIATIONS FROM UFP-QAPP ADDENDUM

Deviations from the UFP-QAPP Addendum occurred based on conditions encountered during the field investigation activities. These deviations were discussed between EA, ARNG, USACE, and NYARNG. Two deviations from the UFP-QAPP Addendum are noted below and were submitted to stakeholders on a field change request form (**Appendix B4)**:

- Sand was added around the temporary slotted screen of well AOI01-02. An attempt was made to sample water at temporary well AOI01-02; however, it was not successful due to an abundance of fines migrating through the screen, resulting in a slurry-like sample. Sand was added to the boring around the slotted screen to act as a sand pack and the well was resampled successfully on 24 March 2022.

- Stiff silt refusal was encountered at the proposed soil boring/temporary monitoring well location AOI01-04 at a depth of 15 ft bgs. As such, per the UFP-QAPP Addendum, two offsets were performed. Based on the small grass area and the presence of several utilities in the vicinity of the boring, offset options were limited to areas approximately 8 ft to the east and west of the original location. At both offsets, refusal was encountered at approximately 15 ft bgs. A well was set in the original boring as some moisture was present. A sample was collected from AOI01-04 the following day.

Additionally, field conditions were such that the water table was both much shallower than expected (estimated at 30–40 ft in the UFP-QAPP) and difficult to estimate from soil observations based on the fine-grained silts and clays encountered, i.e., moist instead of fully saturated soils were indeed indicative of the groundwater table. Due to these challenges,

monitoring wells were generally set at an elevation where the screen was fully submerged below the water table instead of capturing the top of the phreatic surface.

Table 5-1. Samples by Media
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Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS LC/MS/MS compliant with QSM Version 5.3 Table B-15	TOC (USEPA Method 9060A)	pH (USEPA Method	Grain Size (ASTM D-422)	Comments
Soil Samples							
AOI-01-SB-0-2	3/21/2022	0-2	X				
RAASF-FD-SB-02	3/22/2022		X				Field Duplicate
AOI-01-SB-6-7	3/22/2022	6-7	X				
AOI-01-SB-11-12	3/22/2022	11-12	X				
AOI01-02-SB-0-2	3/22/2022	0-2	X				
RAASF-FD-SB-03	3/22/2022		X				Field Duplicate
AOI01-02-SB-5-6	3/22/2022	5-6	X				
AOI01-02-SB-10-11	3/22/2022	10-11	X				
AOI01-03-SB-0-2	3/23/2022	0-2	X				
AOI01-03-SB-3-4	3/24/2022	3-4	X				
AOI01-03-SB-3-5	3/23/2022	3-5		X	X	X	
AOI01-03-SB-6-7	3/24/2022	6-7	X				
AOI01-04-SB-0-2	3/24/2022	0-2	X				
AOI01-04-SB-4-5	3/24/2022	4-5	X				
AOI01-04-SB-9-10	3/24/2022	9-10	X				
RAASF-01-SB-0-2	3/21/2022	0-2	X				
RAASF-01-SB-5-6	3/21/2022	5-6	X				
RAASF-01-SB-9-10	3/21/2022	9-10	X				
RAASF-02-SB-0-2	3/21/2022	0-2	X				
RAASF-FD-SB-01	3/21/2022		X				Field Duplicate
RAASF-02-SB-2-3	3/21/2022	2-3	X				
RAASF-03-SB-0-2	3/22/2022	0-2	X				MS/MSD
RAASF-03-SB-6-7	3/22/2022	6-7	X				
RAASF-03-SB-11-12	3/22/2022	11-12	X				
RAASF-04-SB-0-2	3/22/2022	0-2	X				
RAASF-04-SB-3-4	3/22/2022	3-4	X				
RAASF-04-SB-5-6	3/22/2022	5-6	X				
RAASF-05-SB-0-2	3/23/2022	0-2	X				MS/MSD
RAASF-05-SB-5-6	3/23/2022	5-6	X				
RAASF-06-SB-0-2	3/23/2022	0-2	X				
RAASF-FD-SB-04	3/23/2022		X				Field Duplicate
RAASF-06-SB-4-5	3/23/2022	4-5	X				
RAASF-06-SB-8-9	3/23/2022	8-9	X				
RAASF-07-SB-0-2	3/23/2022	0-2	X				
RAASF-07-SB-3-4	3/23/2022	3-4	X				

Sample Identification	Sample Collection Date	Sample Depth (ft bgs)	PFAS LC/MS/MS compliant with QSM Version 5.3 Table B-15	TOC (USEPA Method 9060A)	pH (USEPA Method	Grain Size (ASTM D-422)	Comments
RAASF-07-SB-5-6	3/23/2022	5-6	X				
Groundwater Samples							
AOI01-01-GW	3/22/2022	-	X				
AOI01-02-GW	3/24/2022	-	X				
AOI01-03-GW	3/24/2022	-	X				
AOI01-04-GW	3/25/2022	-	X				
RAASF-01-GW	3/21/2022	-	X				Field Duplicate of RAASF-01-GW
RAASF-FD-GW-01	3/21/2022	-	X				
RAASF-02-GW	3/22/2022	-	X				MS/MSD
RAASF-03-GW	3/22/2022	-	X				
RAASF-04-GW	3/23/2022	-	X				
RAASF-05-GW	3/23/2022	-	X				Field Duplicate of RAASF-05-GW
RAASF-FD-GW-02	3/23/2022	-	X				
RAASF-06-GW	3/24/2022	-	X				
RAASF-07-GW	3/24/2022	-	X				
Blank Samples							
RAASF-FB-01	3/21/2022	-	X				Field Blank
RAASF-EB-01	3/21/2022	-	X				EB
RAASF-EB-02	3/21/2022	-	X				EB
RAASF-FB-02	3/22/2022	-	X				Field Blank
RAASF-EB-03	3/22/2022	-	X				EB
RAASF-EB-04	3/22/2022	-	X				EB
RAASF-EB-05	3/23/2022	-	X				EB
RAASF-EB-06	3/23/2022	-	X				EB
RAASF-FB-03	3/23/2022	-	X				Field Blank
RAASF-FB-04	3/24/2022	-	X				Field Blank
RAASF-EB-07	3/24/2022	-	X				EB

Table 5-2. Soil Boring Depths and Temporary Well Screen Intervals
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AOI	Boring ID	Soil Boring Depth (ft bgs)	Temporary Well Screen Interval (ft bgs)
1	AOI-01	20	15-20
	AOI-02	18	13-18
	AOI-03	13	8-13
	AOI-04	15	10-15
AASF Boundary	RAASF-01	20	13-18
	RAASF-02	10	5-10
	RAASF-03	20	15-20
	RAASF-04	13	8-13
	RAASF-05	13	8-13
	RAASF-06	18	13-18
	RAASF-07	18	13-18

Table 5-3. Groundwater Elevation
Rochester Army Aviation Support Facility #2
Site Inspection Report

Monitoring Well ID	Top of Casing Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
AOI01-01	538.72	8.46	530.26
AOI01-02	541.87	8.54	533.33
AOI01-03	539.55	8.64	530.91
AOI01-04	538.79	14.2	524.59
RAASF-01	533.66	5.93	527.73
RAASF-02	529.72	0.75	528.97
RAASF-03	535.73	4.72	531.01
RAASF-04	541.15	5.45	535.7
RAASF-05	541.68	2.90	538.78
RAASF-06	533.5	8.64	524.86
RAASF-07	541.08	6.80	534.28

Notes:
btoc = Below top of casing
ID = Identification

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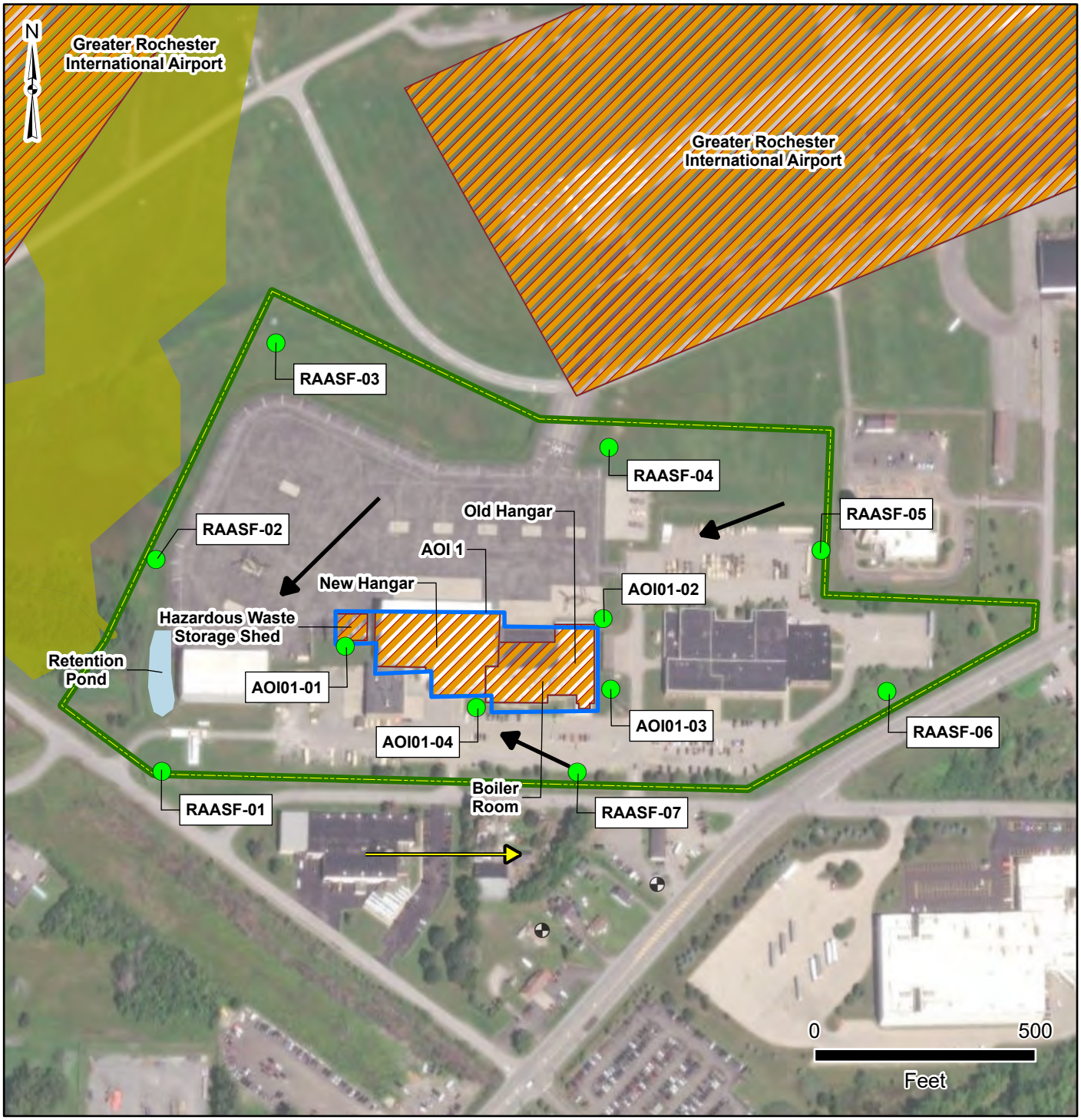
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 5-1
Site Inspection Sample Locations



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Sample Locations
- DPT

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Data Sources:
ESRI 2020
AECOM 2020

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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6. SITE INSPECTION RESULTS

This section presents the analytical results of the SI. The SLs used in this evaluation are presented in **Section 6.1**. A discussion of the results for the AOI and boundary areas is provided in **Sections 6.3** and **6.4**. **Tables 6-2** through **6-5** present PFAS results for the relevant compounds in soil and groundwater. Tables that contain all results are provided in **Appendix F** and the laboratory reports are provided in **Appendix G**.

6.1 SCREENING LEVELS

The DoD has adopted a policy to retain facilities in the CERCLA process based on risk-based SLs for soil and groundwater, as described in a memorandum from the OSD dated XX 6 June July 2022 (Assistant Secretary of Defense, 2022). The ARNG program under which this SI was performed follows this DoD policy. Should the maximum site concentration for sampled media exceed the SLs established in the OSD memorandum, the AOI will proceed to the next phase under CERCLA. The SLs established in the OSD memorandum apply to the five compounds presented on **Table 6-1** below.

Table 6-1. Screening Levels (Soil and Groundwater)

Analyte[2]	Residential 0 to 2 ft bgs (Soil) (µg/kg)[1]	Industrial/Commercial Composite Worker 2 to 15 ft bgs (Soil) (µg/kg)[1]	Tap Water (Groundwater) (ng/L)[1]
PFOA	19	250	6
PFOS	13	160	4
PFBS	1,900	25,000	601
PFHxS	130	1,600	39
PFNA	19	250	6

Notes:
1. Assistant Secretary of Defense, 2022. Risk Based Screening Levels in Groundwater and Soil using United States Environmental Protection Agency's (USEPA's) Regional Screening Level Calculator. SLs for soil are based on incidental ingestion and SLs for ground water are based on direct ingestion. Hazard Quotient (HQ) = 0.1. 6 July 2022.
2. Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

µg/kg = Microgram(s) per kilogram

The data in the subsequent sections are compared against the SLs presented in **Table 6-1**. The SLs for groundwater are based on direct ingestion. The SLs for soil are based on incidental ingestion and are applied to the depth intervals reasonably anticipated to be encountered by the receptors identified at the Facility: the residential scenario is applied to surface soil results (0 to 2 ft bgs) and the industrial/commercial worker scenario is applied to all subsurface soil results (2 to 15 ft bgs).

6.2 SOIL PHYSICOCHEMICAL ANALYSES

To provide basic soil parameter information, soil samples were analyzed for TOC and pH, which are important for evaluating transport through the soil medium. **Appendix F** contains the results of the TOC, pH, and grain size sampling.

The data collected in this investigation will be used in subsequent investigations, where appropriate, to assess fate and transport of PFAS contaminants. According to the Interstate Technology Regulatory Council (ITRC), several important PFAS partitioning mechanisms include hydrophobic and lipophobic effects, electrostatic interactions, and interfacial behaviors. At relevant environmental pH values, certain PFAS are present as organic anions, and are therefore relatively mobile in groundwater (Xiao et al., 2015), but tend to associate with the organic carbon fraction that may be present in soil or sediment (Higgins and Luthy 2006; Guelfo and Higgins 2013). When sufficient organic carbon is present, organic carbon normalized distribution coefficients (K_{oc} values) can help in evaluating transport potential, though other geochemical factors (e.g., pH and presence of polyvalent cations) may also affect PFAS sorption to solid phases (ITRC 2018).

6.3 AOI 1 – OLD HANGAR/NEW HANGAR/HAZARDOUS WASTE STORAGE SHED

This section presents the analytical results for soil and groundwater in comparison to SLs for AOI 1, which includes the Old Hangar, New Hangar, and Hazardous Waste Storage Shed. The soil and groundwater results are summarized on **Tables 6-2** through **6-5**. Soil and groundwater results are presented on **Figures 6-1** through **6-7**.

6.3.1 AOI 1 – Soil Analytical Results

Tables 6-2 through **6-4** summarize the detected compounds in soil. **Figures 6-1** through **6-5** present the ranges of detections in soil.

Soil was sampled at four boring locations associated with the potential release areas within AOI 1. Soil was sampled from three depth intervals at four locations (AOI01-01, AOI01-02, AOI01-03, and AOI01-04). PFOA, PFOS, PFNA, and PFHxS were detected in surface soil at AOI 1 during the SI but did not exceed the applicable residential or industrial/commercial SLs. The maximum concentrations detected for each compound were 0.63 J, 1.4, 0.31 J, and 0.24 J µg/kg, respectively, below their SLs of 19, 13, 19, and 130 µg/kg, respectively. The detections were found in surface soil samples from AOI01-02 (and its duplicate) and AOI01-04. There were no detections of PFOA, PFOS, PFNA, and PFHxS in shallow or deep subsurface soils. PFBS was not detected at any locations.

6.3.2 AOI 1 – Groundwater Analytical Results

Figure 6-6 and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-5** summarizes the groundwater results.

Groundwater samples were collected from four temporary wells associated with the potential release area AOI 1. All five relevant compounds (PFOA, PFOS, PFBS, PFHxS, and PFNA) were

detected in groundwater at AOI 1. Each temporary wells had at least one compound detected. PFOA was the only compound where the detected concentration exceeded the SL. Temporary monitoring well AOI01-03 had a PFOA detection of 8.1 ng/L which exceeded the associated SL of 6 ng/L; PFOA was detected at each of the other AOI 1 temporary wells at concentrations ranging from 0.63 J to 1.3 J ng/L. The remaining four relevant compounds (PFOS, PFBS, PFHxS, and PFNA) were detected in AOI 1 at maximum concentrations of 1.8 J+, 1.1 J, 1.8, and 1.4 ng/L, respectively, below their SLs of 4, 601, 39, and 6 ng/L, respectively.

6.3.3 AOI 1 – Conclusions

Based on the results of the SI, four relevant compounds (PFOA, PFOS, PFHxS, and PFNA) were detected in the AOI 1 potential release area below the soil SLs. All five relevant compounds (PFOA, PFOS, PFHxS, PFNA, and PFBS) were detected in groundwater at AOI 1. There was a single exceedance of the SLs (for PFOA) in groundwater occurring at AOI01-03. Based on the exceedance of the SL, further evaluation at AOI 1 is warranted.

6.4 BOUNDARY SAMPLE LOCATIONS

This section presents the analytical results for soil and groundwater in comparison to SLs for samples collected at the Facility boundary. The detected compounds are summarized in **Tables 6-2** through **6-5**. Soil and groundwater results are presented on **Figures 6-1** through **6-7**.

6.4.1 Boundary Sample Locations – Soil Analytical Results

Tables 6-2 through **6-4** summarize the detected compounds in soil. **Figures 6-1** through **6-5** present the ranges of detections in soil.

Soil boundary sample locations were comprised of seven soil boring locations RAASF-01 through RAASF-07 around the perimeter of the Facility. Soil was sampled from three intervals at locations RAASF-01, RAASF-03, RAASF-04, RAASF-06, and RAASF-07; and from two intervals at RAASF-02 and RAASF-05. PFOA was the only relevant compound detected in surface soil at the boundary locations during the SI; the detected concentration of 0.25 J did not exceed the SL of 19 µg/kg. The detection was found in the surface soil sample from location RAASF-06. There were no detections in the shallow or deep subsurface soil samples.

6.4.2 Boundary Sample Locations – Groundwater Analytical Results

Figure 6-6 and **Figure 6-7** present the ranges of detections in groundwater. **Table 6-5** summarizes the groundwater results.

Groundwater samples were collected from seven temporary wells around the Facility perimeter. All five relevant compounds (PFOA, PFOS, PFBS, PFHxS, and PFNA) were detected in groundwater at the boundary sample locations, with PFOA and PFOS concentrations exceeding the SLs at one location (RAASF-02). RAASF-02 concentrations of PFOA (7.5 ng/L) and PFOS (5.2 ng/L) exceeded the SLs of 6 ng/L and 4 ng/L, respectively. The remaining compounds (PFBS, PFHxS, and PFNA) were detected at the boundary locations at maximum concentrations

of 2.3, 12, and 1.3 J ng/L, respectively, below their SLs of 601, 39, and 6 ng/L. Boundary locations RAASF-03 and RAASF-07 had no detections of relevant compounds.

6.4.3 Boundary Sample Locations – Conclusions

Based on the results of the SI, one relevant compound (PFOA) was detected in soil samples from the boundary at concentrations below the applicable SLs. Additionally, all five of the relevant compounds were detected in groundwater. PFOA and PFOS concentrations exceeded the SLs in groundwater at one boundary well location (RAASF-02). RAASF-02 is located on western side of the Rochester AASF #2, just north of a retention pond, in an area that run-off from the AASF and apron was observed. Based on the exceedances of the SLs for groundwater, further evaluation is warranted.

Table 6-2. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

	Location ID	AOI01-01		AOI01-02		AOI01-02		AOI01-03		AOI01-04		RAASF-01		RAASF-02	
	Sample Name	AOI01-01-SB-0-2		AOI01-02-SB-0-2		RAASF-FD-SB-03		AOI01-03-SB-0-2		AOI01-04-SB-0-2		RAASF-01-SB-0-2		RAASF-02-SB-0-2	
	Parent Sample ID					AOI01-02-SB-0-2									
	Sample Date	3/21/2022		3/22/2022		3/22/2022		3/23/2022		3/24/2022		3/21/2022		3/21/2022	
	Depth (ft bgs)	0-2		0-2		0-2		0-2		0-2		0-2		0-2	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)															
Perfluorobutanesulfonic acid (PFBS)	1900	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	130	ND	U	ND	U	ND	U	ND	U	0.24	J	ND	U	ND	U
Perfluorononanoic acid (PFNA)	19	ND	U	ND	U	0.31	J	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	13	ND	U	ND	U	1	J+	ND	U	1.4		ND	U	ND	U
Perfluorooctanoic acid (PFOA)	19	ND	U	0.36	J	0.63	J	ND	U	0.29	J	ND	U	ND	U

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
Qual = Qualifier.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
1. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-2. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Surface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

	Location ID	RAASF-02		RAASF-03		RAASF-04		RAASF-05		RAASF-06		RAASF-06		RAASF-07	
	Sample Name	RAASF-FD-SB-01		RAASF-03-SB-0-2		RAASF-04-SB-0-2		RAASF-05-SB-0-2		RAASF-06-SB-0-2		RAASF-FD-SB-04		RAASF-07-SB-0-2	
	Parent Sample ID	RAASF-02-SB-0-2										RAASF-06-SB-0-2			
	Sample Date	3/21/2022		3/22/2022		3/22/2022		3/23/2022		3/23/2022		3/23/2022		3/23/2022	
	Depth (ft bgs)	0-2		0-2		0-2		0-2		0-2		0-2		0-2	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)															
Perfluorobutanesulfonic acid (PFBS)	1900	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	130	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	19	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	13	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	19	ND	U	ND	U	ND	U	ND	U	0.25	J	ND	U	ND	U

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
Qual = Qualifier.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
1. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-3. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

Location ID		AOI01-01		AOI01-02		AOI01-03		AOI01-04		RAASF-01		RAASF-02	
Sample Name		AOI01-01-SB-6-7		AOI01-02-SB-5-6		AOI01-03-SB-3-4		AOI01-04-SB-4-5		RAASF-01-SB-5-6		RAASF-02-SB-2-3	
Parent Sample ID													
Sample Date		3/22/2022		3/22/2022		3/24/2022		3/24/2022		3/21/2022		3/21/2022	
Depth (ft bgs)		6-7		5-6		3-4		4-5		5-6		2-3	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)													
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	250	ND	U	ND	U	ND	U	ND	U	ND	U	ND	U

Notes:
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
Qual = Qualifier.
1. The Screening Levels for soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-3. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Shallow Subsurface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

Location ID		RAASF-03		RAASF-04		RAASF-05		RAASF-06		RAASF-07	
Sample Name		RAASF-03-SB-6-7		RAASF-04-SB-3-4		RAASF-05-SB-5-6		RAASF-06-SB-4-5		RAASF-07-SB-3-4	
Parent Sample ID											
Sample Date		3/22/2022		3/22/2022		3/23/2022		3/23/2022		3/23/2022	
Depth (ft bgs)		6-7		3-4		5-6		4-5		3-4	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)											
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	250	ND	U	ND	U	ND	U	ND	U	ND	U

Notes:
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
Qual = Qualifier.
1. The Screening Levels for soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-4. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

	Location ID	AOI01-01		AOI01-01		AOI01-02		AOI01-03		AOI01-04	
	Sample Name	AOI01-01-SB-11-12		RAASF-FD-SB-02		AOI01-02-SB-10-11		AOI01-03-SB-6-7		AOI01-04-SB-9-10	
	Parent Sample ID			AOI01-SB-11-12							
	Sample Date	3/22/2022		3/22/2022		3/22/2022		3/24/2022		3/24/2022	
	Depth (ft bgs)	11-12		11-12		10-11		6-7		9-10	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)											
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	250	ND	U	ND	U	ND	U	ND	U	ND	U

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
Qual = Qualifier.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
1. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-4. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Deep Subsurface Soil
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

Location ID		RAASF-01		RAASF-03		RAASF-04		RAASF-06		RAASF-07	
Sample Name		RAASF-01-SB-9-10		RAASF-03-SB-11-12		RAASF-04-SB-5-6		RAASF-06-SB-8-9		RAASF-07-SB-5-6	
Parent Sample ID											
Sample Date		3/21/2022		3/22/2022		3/22/2022		3/23/2022		3/23/2022	
Depth (ft bgs)		9-10		11-12		5-6		8-9		5-6	
Analyte	**Screening Level[1,2]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15 (µg/kg)											
Perfluorobutanesulfonic acid (PFBS)	25000	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	1600	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorononanoic acid (PFNA)	250	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanesulfonic acid (PFOS)	160	ND	U	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	250	ND	U	ND	U	ND	U	ND	U	ND	U

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
µg/kg = Microgram(s) per kilogram.
ft bgs = Feet below ground surface.
Qual = Qualifier.
ND = Analyte not detected above the LOD (LOD values are presented in Appendix F).
1. The Screening Levels for soil are based on a residential scenario for incidental ingestion of contaminated soil.
2. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-5. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

	Location ID	AOI01-01		AOI01-02		AOI01-03		AOI01-04		RAASF-01		RAASF-01		RAASF-02	
	Sample Name	AOI01-01-GW		AOI01-02-GW		AOI01-03-GW		AOI01-04-GW		RAASF-01-GW		RAASF-FD-GW-01		RAASF-02-GW	
	Parent Sample ID											RAASF-01-GW			
	Sample Date	3/22/2022		3/24/2022		3/24/2022		3/25/2022		3/21/2022		3/21/2022		3/22/2022	
Analyte	**Screening Level[1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15															
Perfluorobutanesulfonic acid (PFBS)	601	ND	U	ND	U	1.10	J	ND	U	0.89	J	0.77	J	2.3	
Perfluorohexanesulfonic acid (PFHxS)	39	ND	U	1.8		1	J	ND	U	ND	U	ND	U	12	
Perfluorononanoic acid (PFNA)	6	ND	U	ND	U	1.40	J	ND	U	0.67	J	0.79	J	1.3	J
Perfluorooctanesulfonic acid (PFOS)	4	ND	U	ND	U	1.80	J+	ND	U	ND	U	ND	U	5.2	
Perfluorooctanoic acid (PFOA)	6	0.63	J	1.3	J	8.1		0.86	J	4.8		5.4		7.5	

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
ng/L = Nanogram(s) per liter.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
1. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Table 6-5. PFOA, PFOS, PFBS, PFNA, and PFHxS Results in Groundwater
Site Inspection Report, Rochester Army Aviation Support Facility #2, New York

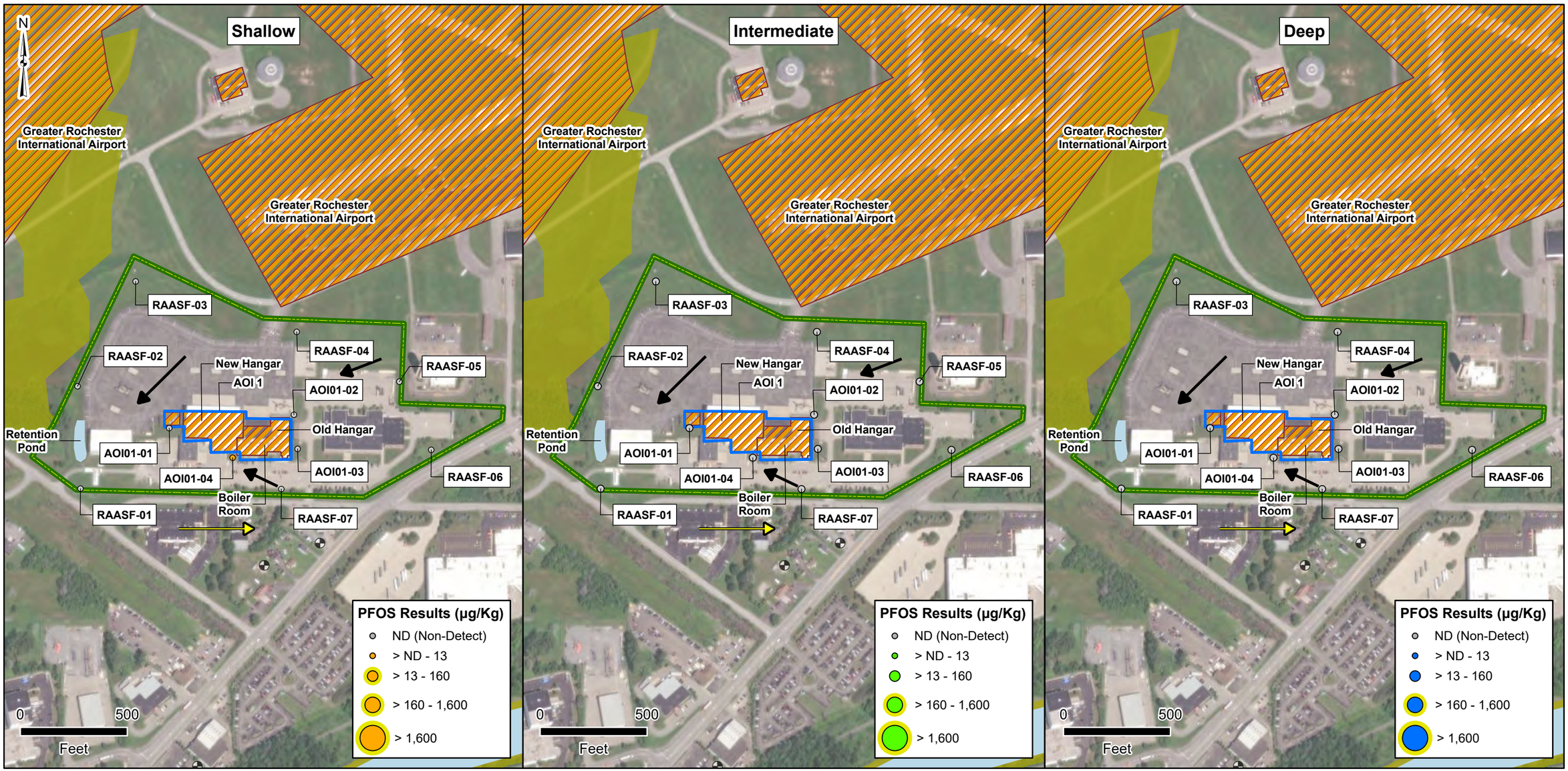
	Location ID	RAASF-03		RAASF-04		RAASF-05		RAASF-05		RAASF-06		RAASF-07	
	Sample Name	RAASF-03-GW		RAASF-04-GW		RAASF-05-GW		RAASF-FD-GW-02		RAASF-06-GW		RAASF-07-GW	
	Parent Sample ID							RAASF-05-GW					
	Sample Date	3/22/2022		3/23/2022		3/23/2022		3/23/2022		3/24/2022		3/24/2022	
Analyte	**Screening Level[1]**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**	**Result**	**Qual**
PFAS by LC/MS/MS compliant with QSM Version 5.3 Table B-15													
Perfluorobutanesulfonic acid (PFBS)	601	ND	U	0.82	J	0.51	J	0.47	J	ND	U	ND	U
Perfluorohexanesulfonic acid (PFHxS)	39	ND	U	3.8		ND	U	ND	U	1.3	J	ND	U
Perfluorononanoic acid (PFNA)	6	ND	U	ND	U	ND	U	ND	U	0.48	J	ND	U
Perfluorooctanesulfonic acid (PFOS)	4	ND	U	2.9	J+	ND	U	ND	U	ND	U	ND	U
Perfluorooctanoic acid (PFOA)	6	ND	U	1	J	ND	U	ND	U	1.9		ND	U

Notes:
J = Estimated concentration.
J+ = Estimated concentration, biased high.
U = The analyte was not detected at a level greater than or equal to the adjusted detection limit.
ng/L = Nanogram(s) per liter.
ND = Analyte not detected above the LOD.
Qual = Qualifier.
1. Assistant Secretary of Defense. 2022. Risk-Based Screening Levels in Groundwater and Soil using EPA's Regional Screening Level Calculator. Hazard Quotient (HQ)=0.1. July 2022.

Values exceeding the Screening Level are shaded gray.

Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 6-1
AOI 1
PFOS Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFOS = Perfluorooctanesulfonic acid
1. Exceedances of the OSD SL are depicted with a yellow halo.
2. Depth intervals shown represent respective sampling position within a given soil boring location.
3. The Screening Levels for shallow soil are based on a residential scenario for incidental ingestion of contaminated soil.
4. The Screening Levels for intermediate and deep soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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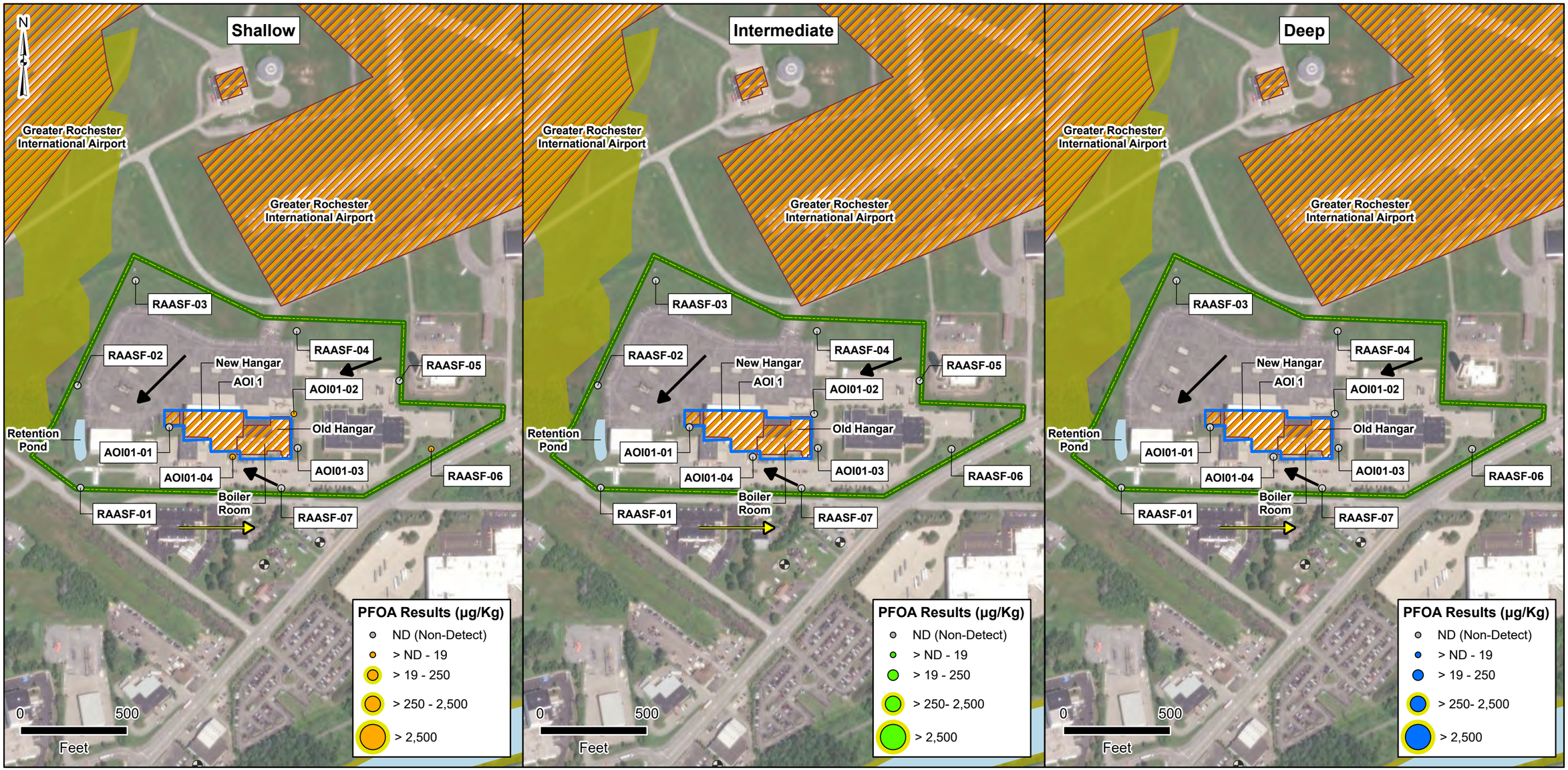
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 6-2
AOI 1
PFOA Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFOA = Perfluorooctanoic acid
1. Exceedances of the OSD SL are depicted with a yellow halo.
2. Depth intervals shown represent respective sampling position within a given soil boring location.
3. The Screening Levels for shallow soil are based on a residential scenario for incidental ingestion of contaminated soil.
4. The Screening Levels for intermediate and deep soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
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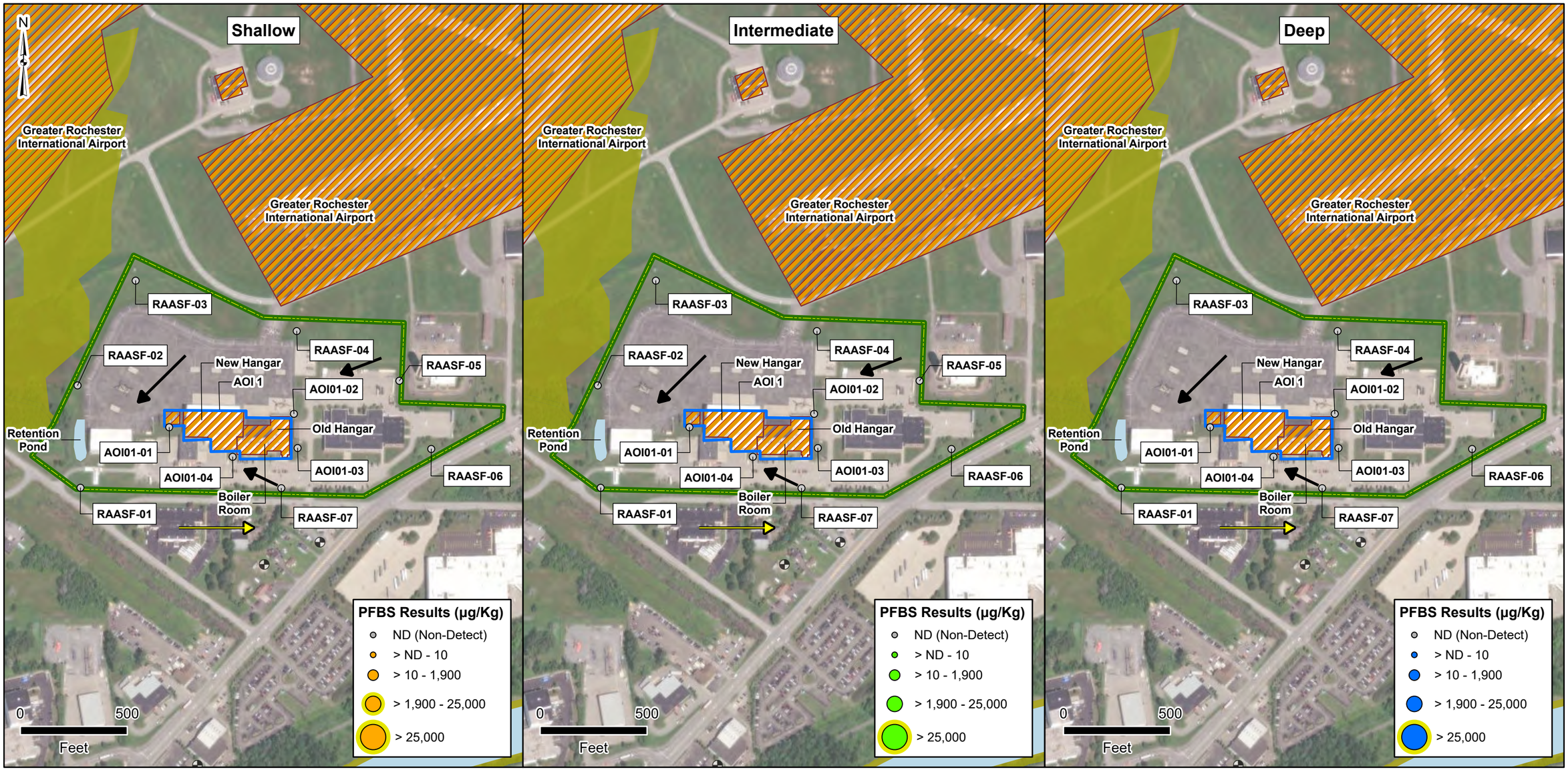
Rochester AASF, New York

Figure 6-3
AOI 1
PFBS Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFBS = Perfluorobutanesulfonic acid
1. Exceedances of the OSD SL are depicted with a yellow halo.
2. Depth intervals shown represent respective sampling position within a given soil boring location.
3. The Screening Levels for shallow soil are based on a residential scenario for incidental ingestion of contaminated soil.
4. The Screening Levels for intermediate and deep soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
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Projection:.....WGS 84 UTM 18N

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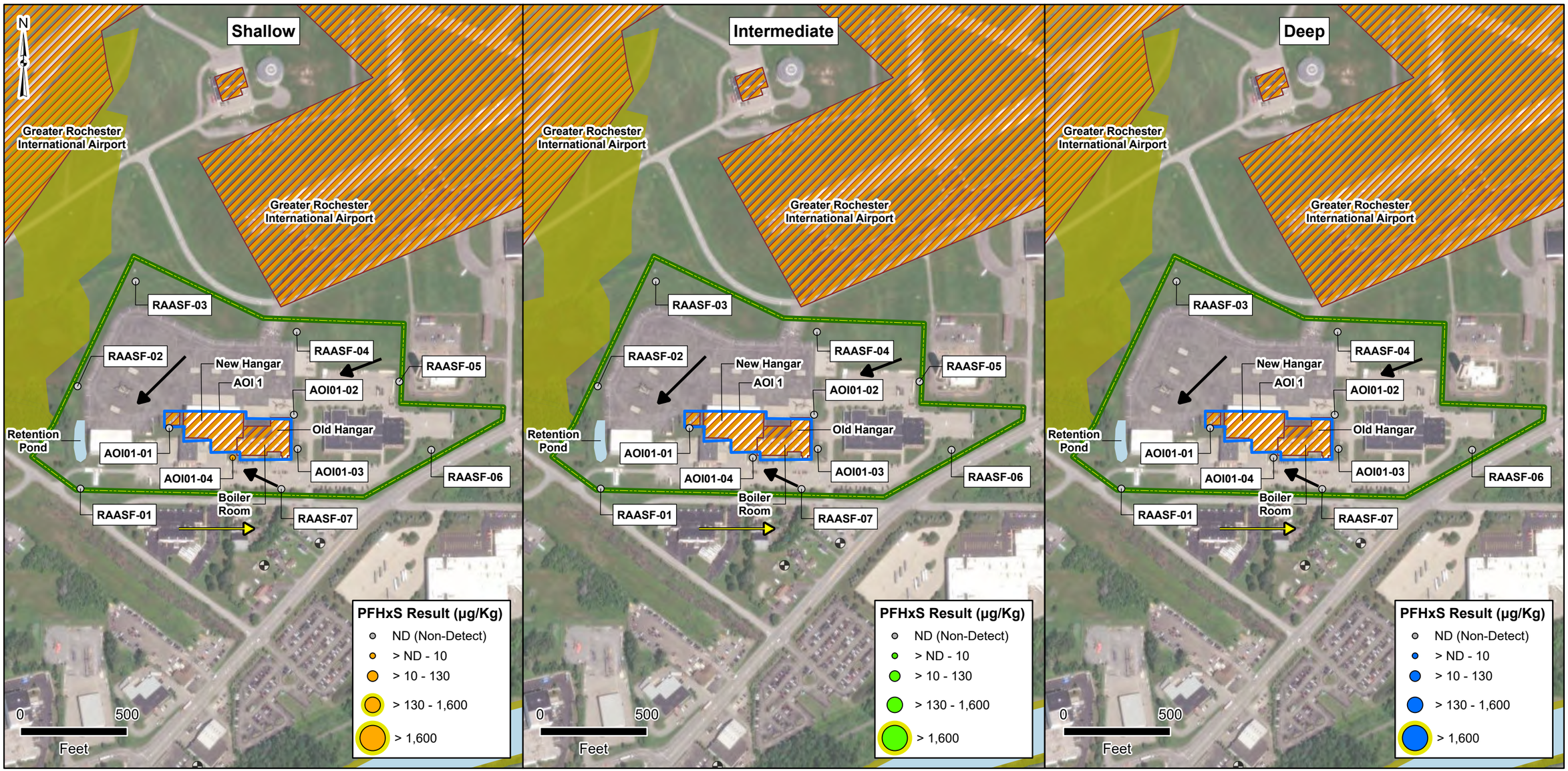
Figure 6-4
AOI 1
PFHxS Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFHxS = Perfluorohexanesulfonic acid
1. Exceedances of the OSD SL are depicted with a yellow halo.
2. Depth intervals shown represent respective sampling position within a given soil boring location.
3. The Screening Levels for shallow soil are based on a residential scenario for incidental ingestion of contaminated soil.
4. The Screening Levels for intermediate and deep soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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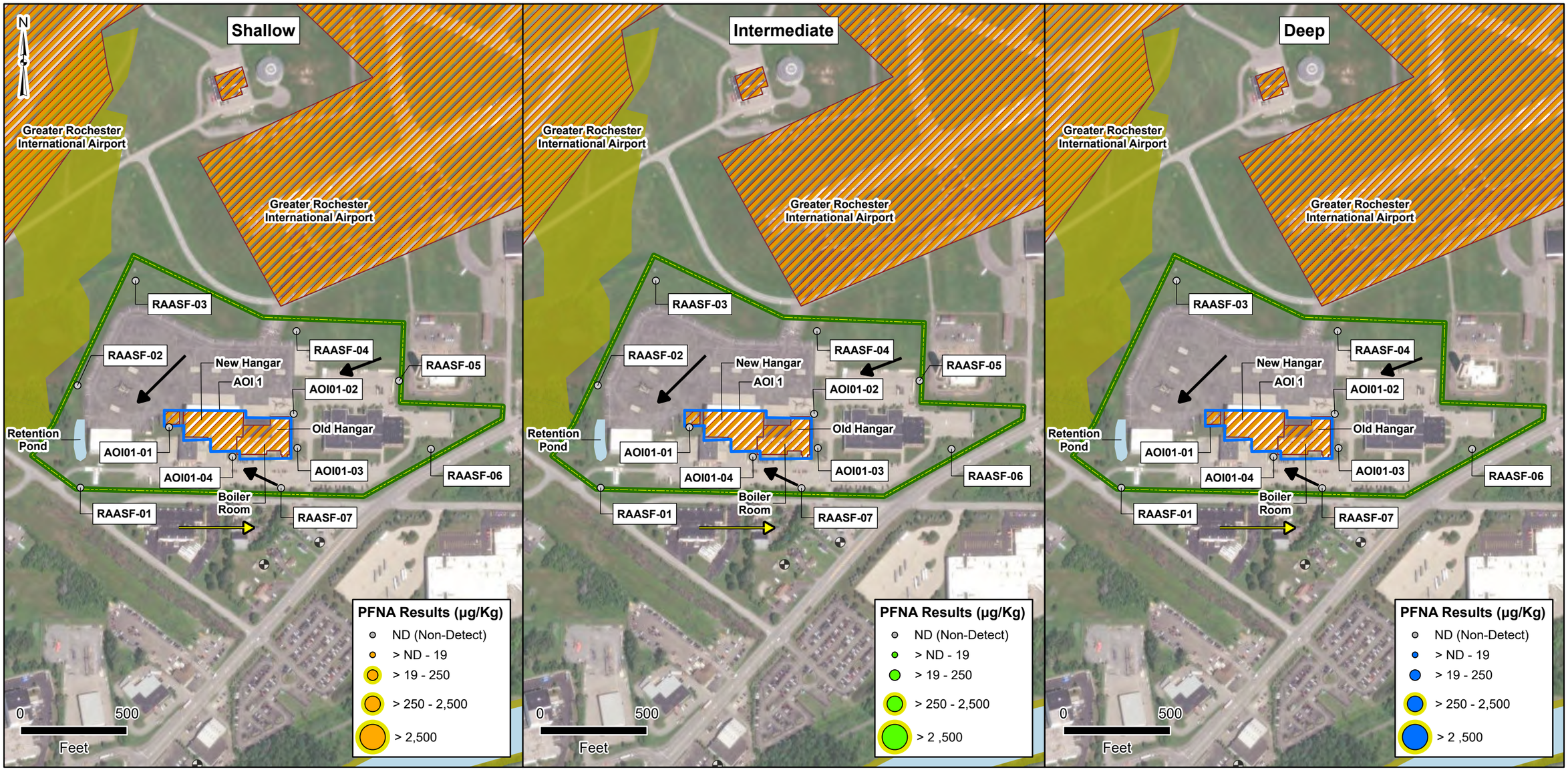
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 6-5
AOI 1
PFNA Detections in Soil



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFNA = Perfluorononanoic acid
1. Exceedances of the OSD SL are depicted with a yellow halo.
2. Depth intervals shown represent respective sampling position within a given soil boring location.
3. The Screening Levels for shallow soil are based on a residential scenario for incidental ingestion of contaminated soil.
4. The Screening Levels for intermediate and deep soil are based on an industrial/commercial worker scenario for incidental ingestion of contaminated soil.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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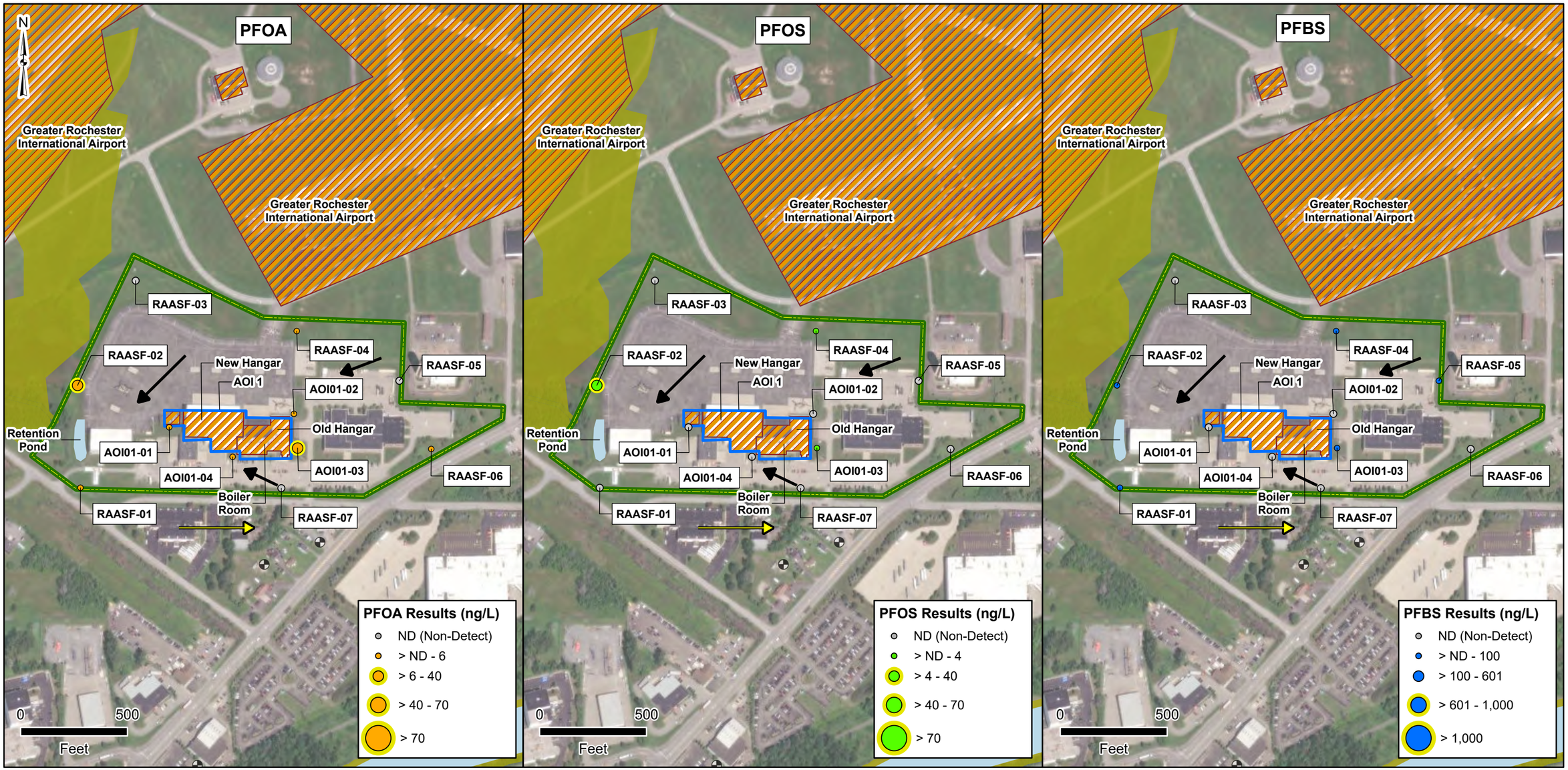
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 6-6
AOI 1
PFOA, PFOS and PFBS Detections in Groundwater



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFOA = Perfluorooctanesulfonic acid
PFOS = Perfluorooctanoic acid
PFBS = Perfluorobutanesulfonic acid
Exceedances of the OSD SL are depicted with a yellow halo.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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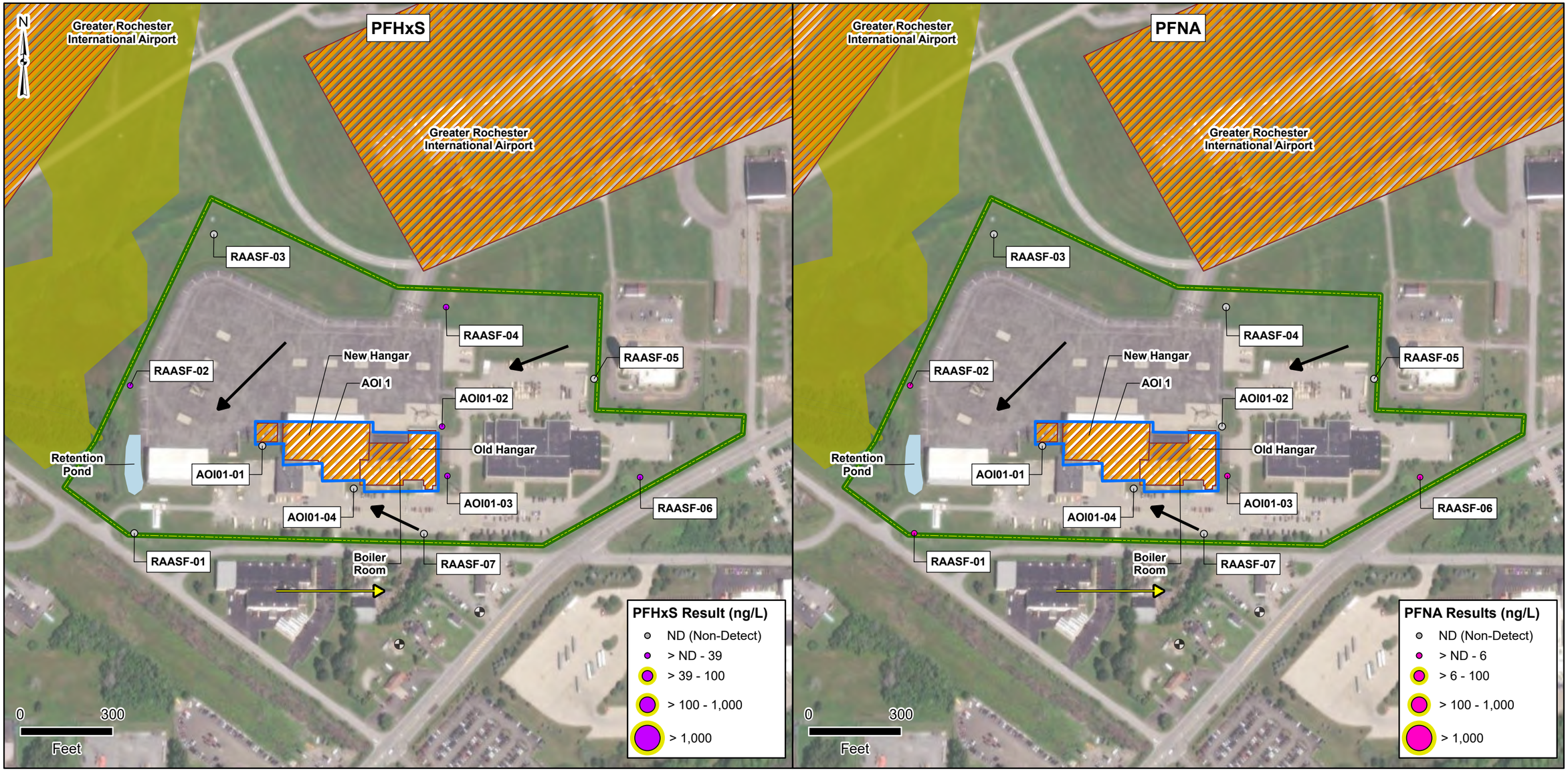
Army National Guard Site Inspections
Site Inspection Report
Rochester AASF, New York

Figure 6-7
PFHxS and PFNA Detections in Groundwater



Facility Data
- Facility Boundary
- Area of Interest
- Potential PFAS Release

Well Type
- USGS Inactive Monitoring Well

Hydrology/Hydrogeology
- Groundwater Flow Direction
- Regional Groundwater Flow Direction
- Waterbody
- Wetlands

Notes:
PFHxS = Perfluorohexanesulfonic acid
PFNA = Perfluorononanoic acid
Exceedances of the OSD SL are depicted with a yellow halo.

Data Sources:
ESRI 2022
AECOM 2019

Date:.....September 2023
Prepared By:.....EA
Prepared For:.....USACE
Projection:.....WGS 84 UTM 18N

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7. EXPOSURE PATHWAYS

The conceptual site model (CSM) for the AOI, revised based on the SI findings, is presented on **Figure 7-1**. Please note that while the CSM discussion assists in determining if a receptor may be impacted, the decision to move from SI to RI or interim action is determined based upon exceedances of the SLs for the relevant compounds and whether the release is more than likely attributable to the DoD. A CSM presents the current understanding of the site conditions with respect to known and suspected sources, potential transport mechanisms and migration pathways, and potentially exposed human receptors. A human exposure pathway is considered potentially complete when the following conditions are present.

1. Contaminant source
2. Environmental fate and transport
3. Exposure point
4. Exposure route
5. Potentially exposed populations.

If any of these elements are missing, the pathway is incomplete. The CSM figures use an empty circle symbol to represent an incomplete exposure pathway. Areas with an incomplete pathway generally warrant no further action. However, the pathway is considered potentially complete if the relevant compounds are detected, in which case the CSM figure uses a half-filled circle symbol to represent a potentially complete exposure pathway. Additionally, a completely filled circle symbol is used to indicate when a potentially complete exposure pathway has detections of relevant compounds above the SLs. Areas with an identified potentially complete pathway that have detections of the relevant compounds above the SLs may warrant further investigation. Although the CSMs indicate whether potentially complete exposure pathways may exist, the recommendation for future study in a RI or no action at this time is based on the comparison of the SI analytical results for the relevant compounds to the SLs.

In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is an insignificant pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological study. The receptors evaluated are consistent with those listed in USEPA guidance for risk screening (USEPA 2001). Receptors at the Facility include site workers (e.g., staff and visiting soldiers), construction workers, off-Facility recreational users, and residents. The CSM for AOI 1, revised based on the SI findings, is presented on **Figure 7-1**.

7.1 SOIL EXPOSURE PATHWAY

The SI results for soil were used to determine whether a potentially complete pathway exists between the source and potential receptors at each AOI based on the aforementioned criteria.

7.1.1 AOI 1 – Old Hangar/New Hangar/Hazardous Waste Storage Shed

AOI 1 encompasses the AFFF release at the Old Hangar and the potential AFFF releases at the New Hangar and the Hazardous Waste Storage Shed. The area surrounding the AOI is

predominantly paved with a few grassy areas between paved areas. AFFF releases could have occurred directly onto surface soil but may also have infiltrated subsurface soil via cracks in pavement or joints between areas that are paved with different materials. PFOA, PFOS, PFNA, and PFHxS were detected in surface soil at AOI 1 at concentrations below the SLs. Additionally, one relevant compound (PFOA) was detected in a soil sample collected from a location (RAASF-06) along the eastern boundary at concentrations below the applicable SLs. Site workers, construction workers, trespassers, and recreational users could contact constituents in surface soil via incidental ingestion and inhalation of dust. Therefore, the surface soil exposure pathway for site workers, construction workers, trespassers, and recreational users is potentially complete. There were no detections of the relevant compounds in subsurface soil at AOI 1. Therefore, the exposure pathways for subsurface soil is incomplete for the construction worker. The CSM is presented in **Figure 7-1**.

7.2 GROUNDWATER EXPOSURE PATHWAY

The SI results for groundwater were used to determine whether a potentially complete pathway exists between the source and potential receptors based on the aforementioned criteria.

7.2.1 AOI 1 – Old Hangar/New Hangar/Hazardous Waste Storage Shed

PFOA was detected in groundwater at the AOI at a concentration which exceeded the associated SL. Each of the other four relevant compounds were detected in groundwater at AOI 1 at concentrations below their respective SLs. Additionally, all five relevant compounds were detected in groundwater at most of the boundary locations. PFOA and PFOS concentrations exceeded the SLs in groundwater at one boundary well location (RAASF-02) less than 500 feet west of the AOI.

The Facility receives water from the Monroe County Water Authority, and there were no identified private drinking water wells located immediately downgradient and west of the Facility. However, due to the potential for unidentified residential wells downgradient of the Facility, the ingestion exposure pathway for groundwater is potentially complete for off-Facility residents that are located downgradient of AOI 1. Six potable water wells were identified within 4 miles of the Facility (New York State 2016). Of these wells, four are located east of the Genesee River, one is located approximately 2 miles southwest of the Facility, and one is located approximately 2 miles northwest of the Facility.

Additionally, the depth to groundwater is shallow, so trenching activities could result in construction worker exposure via accidental ingestion, therefore this pathway is considered complete.

7.3 SURFACE WATER AND SEDIMENT EXPOSURE PATHWAY

Off-site surface water and sediment were not sampled as part of this SI, as the scope of sampling was limited to the presence or absence of the relevant compounds in soil and groundwater within the Facility boundary. Although no surface water features flow through the AOI, the Facility is within close proximity to adjacent wetlands and the potential exists for

shallow groundwater to discharge to the nearby wetlands. The wetlands appear to be connected to a tributary which flows to the Genesee River which in turn flows into Lake Ontario, the largest water body supply for drinking water in the county. Additionally, both the Genesee River and Lake Ontario are popular for recreational use, including fishing, swimming, and boating. Based on the groundwater concentrations which exceeded SLs at AOI 1 and at the Facility boundary, the ingestion exposure pathway for surface water and sediment is considered potentially complete for recreational users of the Genesee River and Lake Ontario. Human consumption of fish potentially affected by PFAS from the river and lake is also possible. The CSM is presented in **Figure 7-1**.

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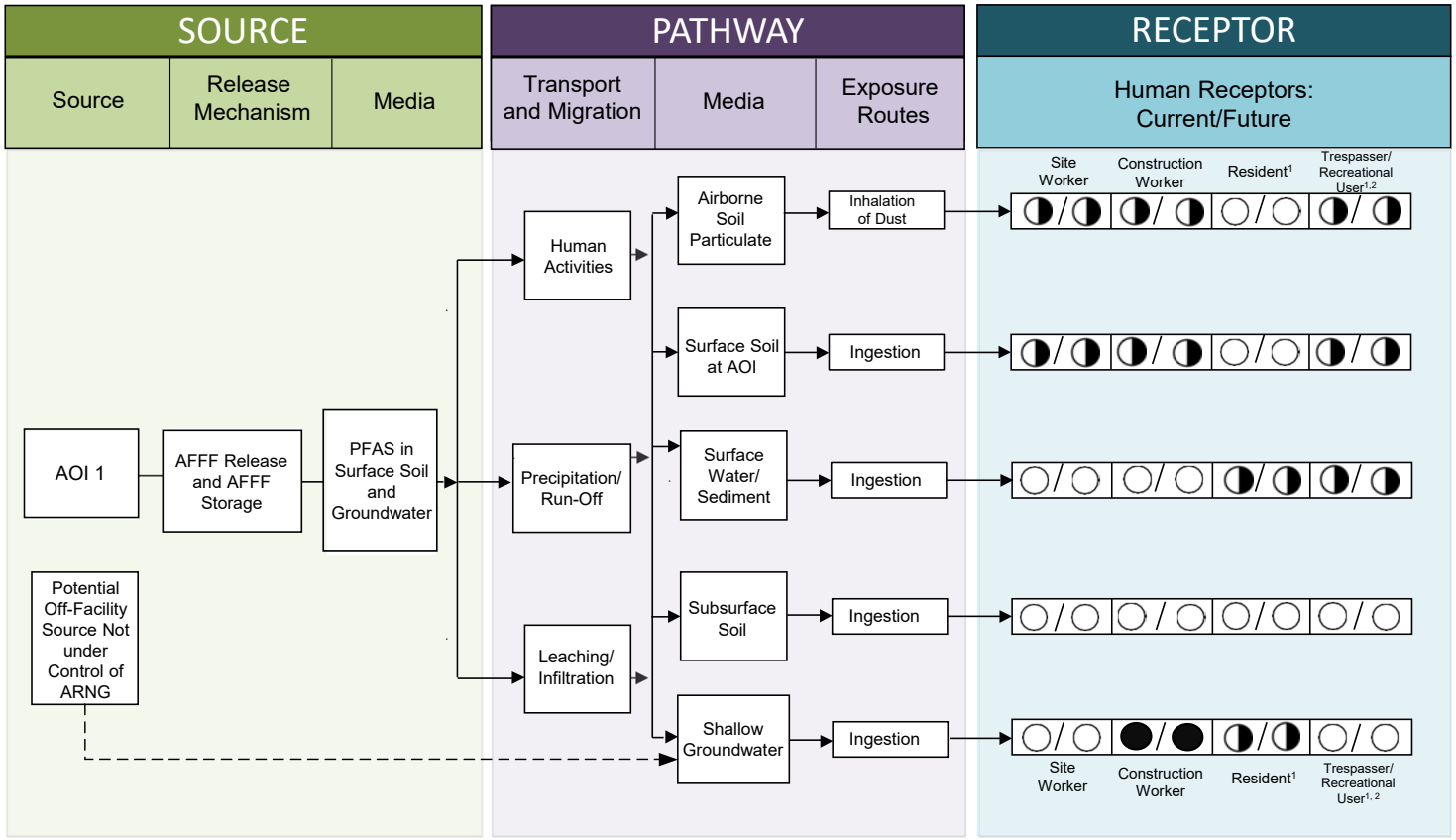

LEGEND

- Flow-Chart Stops
- Flow-Chart Continues
- Partial / Possible Flow
- Incomplete Pathway
- Potentially Complete Pathway
- Potentially Complete Pathway with Exceedance of Screening Level

Notes:

1. The resident and recreational users refer to off-site receptors.
2. Human consumption of fish potentially affected by PFAS from the downgradient river is possible.

Figure 7-1
Conceptual Site Model
Rochester AASF #2

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8. SUMMARY AND OUTCOME

This section summarizes SI activities and findings. The most significant findings are summarized in this section and are reproduced directly or abstracted from information contained in this report. The outcome provides general and comparative interpretations of the findings relative to the SLs.

8.1 SITE INVESTIGATION ACTIVITIES

The SI field activities at the Facility were conducted from 17 to 25 March 2022. The SI field activities included soil and groundwater sampling. Field activities were conducted in accordance with the UFP-QAPP Addendum (EA 2021a), except as previously noted in **Section 5.10**.

To fulfill the project DQOs set forth in the approved SI UFP-QAPP Addendum (EA 2021a), samples were collected and analyzed for a subset of 24 compounds by LC/MS/MS compliant with QSM 5.3 Table B-15 as follows:

- Thirty-two (32) soil samples from 11 locations (soil borings locations)
- Eleven (11) grab groundwater samples from 11 temporary well locations
- Seventeen (17) various quality assurance/quality control samples.

An SI is conducted when the PA determines an AOI exists based on probable use, storage, and/or disposal of PFAS-containing materials. The SI includes multi-media sampling at the AOI to determine whether or not a release has occurred. The SI may conclude further investigation is warranted, a removal action is required to address immediate threats, or no further action is required. Additionally, the CSM was refined to assess whether a potentially complete pathway exists between the source and potential receptors for potential exposure at the AOI, which is described in **Section 7**.

8.2 OUTCOME

Based on the results of this SI, further evaluation under CERCLA is warranted in an RI for AOI 1. Based on the CSMs developed and revised in light of the SI findings, there is potential for exposure to drinking water receptors from AOI 1 from sources on the Facility resulting from historical DoD activities. Sample analytical concentrations collected during this SI were compared against the project SLs in soil and groundwater, as described in **Table 6-1**. A summary of the results of the SI data relative to SLs is as follows:

- AOI 1:
    - PFOA, PFOS, PFHxS, and PFNA were detected in surface soil at AOI 1 at concentrations below the SLs. PFBS was not detected.

— All of the five relevant compounds were detected in groundwater from the seven temporary wells in AOI 1. PFOA exceeded the SL of 6 ng/L at one temporary well location with a concentration of 8.1 ng/L. Based on the results of the SI, further evaluation of AOI 1 is warranted in the RI.

- The boundary:

— PFOA was the only relevant compound detected in soil at RAASF-06, which is located approximately 500 feet east of AOI 1. The only detection was in surface soil at RAASF-06 at a concentration below the SL. PFOS, PFBS, PFHxS, and PFNA were not detected at RAASF-06 and no relevant compounds were detected at any other boundary locations.

— All five relevant compounds were detected in groundwater at the boundary temporary well locations. PFOA and PFOS concentrations exceeded the SLs in groundwater at one boundary well location (RAASF-02). RAASF-02 is located on western side of the Rochester AASF #2, just north of a retention pond, in an area that run-off from the AASF and apron was observed. PFBS, PFHxS, and PFNA were detected in groundwater samples from other boundary locations at concentrations below groundwater SLs.

It should be noted that groundwater flow direction was calculated using survey data (top of casing and ground surface) and depth to water measurements taken from 8 temporary wells[3] that were installed during the investigation. Based on the limited number of data points, the localized groundwater flow direction (to the west) determined during this investigation is considered estimated. Of the six PFAS compounds presented in the 6 July 2022 OSD memorandum, HFPO-DA (commonly referred to as GenX) was not included as an analyte at the time of this SI. Based on the CSM developed during the PA and revised based on SI findings, the presence of HFPO-DA is not anticipated at the facility because HFPO-DA is generally not a component of MIL-SPEC AFFF and based on its history including distribution limitations that restricted use of GenX, it is generally not a component of other products the military used. In addition, it is unlikely that GenX would be an individual chemical of concern in the absence of other PFAS.

Table 8-1 summarizes the SI results for soil and groundwater used to determine if an AOI should be considered for further investigation under CERCLA and undergo an RI.

[3] Due to incongruent data, the depth to water measurements from RAASF-06 and AOI01-04 were not used in this calculation.

Table 8-1. Summary of Site Inspection Findings and Recommendations

AOI	Potential Release Area	Soil AOI	Groundwater AOI	Groundwater Facility Boundary	Future Action
1	Rochester AASF #2 Hangar Release and Hazardous Waste Storage	◐	●	●	Proceed to RI

Legend:
● = Detected; exceedance of SLs
◐ = Detected; no exceedance of SLs
○ = Not detected

9. REFERENCES

AECOM Technical Services, Inc. (AECOM). 2020. *Final Preliminary Assessment Report, Rochester Army Aviation Support Facility #2, New York,* July 2020.

City of Rochester. 2022. *City of Rochester, NY: Waterways.* https://www.cityofrochester.gov/categories/topics/waterways/. Accessed 12 May.

Assistant Secretary of Defense. 2022. *Investigation Per- and Polyfluoroalkyl Substances within The Department of Defense Cleanup Program*. United States Department of Defense. 6 July.

Department of the Army. 2016. *EM-200-1-2, Environmental Quality, Technical Project Planning Process*. 29 February.

DA. 2018. Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances. 4 September.

DoD. 2019a. *Department of Defense (DoD), Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3*. May.

———. 2019b. *General Data Validation Guidelines*. November.

———. 2020. *Data Validation Guidelines Module 3: Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15*. May.

EA Engineering, Science, and Technology, PBC (EA). *Final Programmatic Uniform Federal Policy Quality Assurance Project Plan, Site Inspections for Per- and Polyfluoroalkyl Substances Impacted Sites, ARNG Installations, Nationwide*. December 2020 (EA 2020a).

———. 2021a. *Final Site Inspection Uniform Federal Policy-Quality Assurance Project Plan Addendum, Rochester Army Aviation Support Facility #2, New York,* October 2021.

———.2020b. *Programmatic Accident Prevention Plan, Revision 1*, November 2020.

———.2021b. *Final Accident Prevention Plan Site Safety and Health Plan, Rochester Army Aviation Support Facility #2, New York, Revision 1*, October 2021.

Fairchild, H. L. 1896. Kame Areas in Western New York South of Irondequoit and Sodus Bays. Journal of Geology, Vol 4, pg 129-159.

Guelfo, J.L. and C.P. Higgins. 2013. *Subsurface transport potential of perfluoroalkyl acids and aqueous film-forming foam (AFFF)-impacted sites*. Environmental Science and Technology 47(9):4164-71.

Higgins, C.P., and R.G. Luthy. 2006. *Sorption of perfluorinated surfactants on sediments*. Environmental Science and Technology 40 (23): 7251-7256.

Isachsen Y.W., Landing E., Lauber J.M., Rickard L.V., and Rochers W.B. 2000. Geology of New York: A Simplified Account. New York State Geological Survey.

Interstate Technology Regulatory Council (ITRC). 2018. *Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances*. March.

National Association of Counties. 2017. County Explorer. https://ce.naco.org/?find=true. Accessed 12 May.

National Oceanic and Atmospheric Administration. 2022. *U.S. Climate Normals Quick Access for Rochester New York.* https://www.ncei.noaa.gov/access/us-climate-normals/. Accessed 12 May.

Natural Resources Conservation Service. 2022. *Web Soil Survey.* https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed 16 May 2022.

New York State. 2016. GIS Dataset Details: Water Wells. Accessed 29 June 2020 at https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1203. December.

New York State Museum and Science Service. 1970. *Geologic Map of New York – Finger Lakes Sheet.* http://www.nysm.nysed.gov/common/nysm/files/finger_lakes_bedrock_sheet.jpg. March.

NYSDEC. 2022. Aquifers in New York State. https://www.dec.ny.gov/lands/36119.html. Accessed 12 May.

U.S. Department of Agriculture. 2009. Natural Resources Conservation Service: New York Rapid Watershed Assessment Profile – Lower Genesee Watershed. May.

U.S. Environmental Protection Agency (USEPA). 1980. *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*. 11 December.

———. 1994. *National Oil and Hazardous Substances Pollution Contingency Plan (Final Rule).* 40 Code of Federal Regulations Part 300; 59 Federal Register 47384. September.

———. 2001. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation* Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments). December.

———. 2017. UCMR 3 (2013-2015) Occurrence Data by State. Occurrence Data for the Unregulated Contaminant Monitoring Rule.

———. 2022. *Map of Sole Source Aquifer Locations. Interactive web map.* https://www.epa.gov/dwssa/map-sole-source-aquifer-locations. Accessed 12 May.

U.S. Fish and Wildlife Service. 2021. *Endangered Species.* http://ecos.fws.gov/ipac/. Accessed 28 October.

U.S. Geological Service (USGS). 1982. Geohydrology of the preglacial Genesee Valley in Monroe County, New York. Open- File Report 82-552. Accessed 16 May 2022.

———. 1985. Geohydrology of the Irondequoit Creek Basin near Rochester, New York. Water-Resources Investigations Report 84-4259. Accessed 12 May 2022.

———. 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York. Water-
Resources Investigations Report 88-4122. Accessed 16 May 2022.

Xiao, F., M. F. Simcik, T.R. Halbach, and J.S Gulliver. 2015, *Perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in soils and groundwater of a U.S. metropolitan area: Migration and implications for human exposure*. Water Research 72:64-74.