

FINAL Preliminary Assessment Report Chesterfield Limited Army Aviation Support Facility (AASF), Virginia Virginia Army National Guard

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

July 2020

Prepared for:



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

UNCLASSIFIED

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Acronyms and Abbreviations

°F	degrees Fahrenheit
AASF	Army Aviation Support Facility
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
amsl	above mean sea level
AOI	Area of Interest
ARFF	Aircraft Rescue Firefighting
ARNG	Army National Guard
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
EDR™	Environmental Data Resources, Inc.™
EMS	Emergency Medical Services
FAA	Federal Aviation Administration
ft	feet
FTA	fire training area
HA	Health Advisory
NGWA	National Ground Water Association
NOAA	National Oceanic and Atmospheric Administration
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
SI	Site Inspection
SWPPP	Stormwater Pollution Prevention Plan
UCMR3	Third Unregulated Contaminant Monitoring Rule
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VA	Virginia
VAARNG	Virginia Army National Guard
VSI	visual site inspection

Executive Summary

The Army National Guard (ARNG) is performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) Impacted Sites at ARNG Facilities Nationwide*. A PA for per- and polyfluoroalkyl substances (PFAS)-containing materials was completed for Chesterfield Limited Army Aviation Support Facility (AASF) in Virginia (VA) to assess potential PFAS release areas and exposure pathways to receptors. Chesterfield Limited AASF is constructed on a parcel of land owned by the county of Chesterfield, Virginia and has been leased to the Virginia Army National Guard (VAARNG) since 2015. The performance of this PA included the following tasks:

- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)TM report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 4 February 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed the Chesterfield County Airport Operations Manager and the Chesterfield Fire & Emergency Medical Services (EMS) Battalion Chief during the site visit;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

One AOI related to potential PFAS release was identified Chesterfield Limited AASF based on PA data (**Figure ES-1**) and is summarized in **Table ES-1** below:

Table ES-1: AOIs at Chesterfield Limited AASF

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Tri-Max TM Storage Area	VAARNG	Unknown

The Chesterfield County Fire Station #15 was identified as an off-facility potential PFAS source. The fire station conducts weekly spray pattern testing of AFFF equipment in the field adjacent to and behind the fire station. Additionally, large quantities of AFFF were found housed in the fire station and also stored in a P-19 Aircraft Rescue Firefighting (ARFF) vehicle and foam response trailer. The Chesterfield County Fire Station #15 adjacent source is in the inferred downgradient groundwater flow path from Chesterfield AASF (**Figure ES-1**). It is unlikely that releases at the county fire station would affect Chesterfield AASF.

Based on potential PFAS releases at the AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Chesterfield AASF, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the third Unregulated Contaminant Monitoring Rule (UCMR3) data, it was indicated that there were no detections above United States (US) Environmental Protection Agency (USEPA)'s lifetime Health Advisories in public water systems within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.



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NOTES Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA				
REVISED	4/30/2020	GIS BY	MS	4/30/2020
SCALE	1:15,600	CHK BY	ST	4/30/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/30/2020



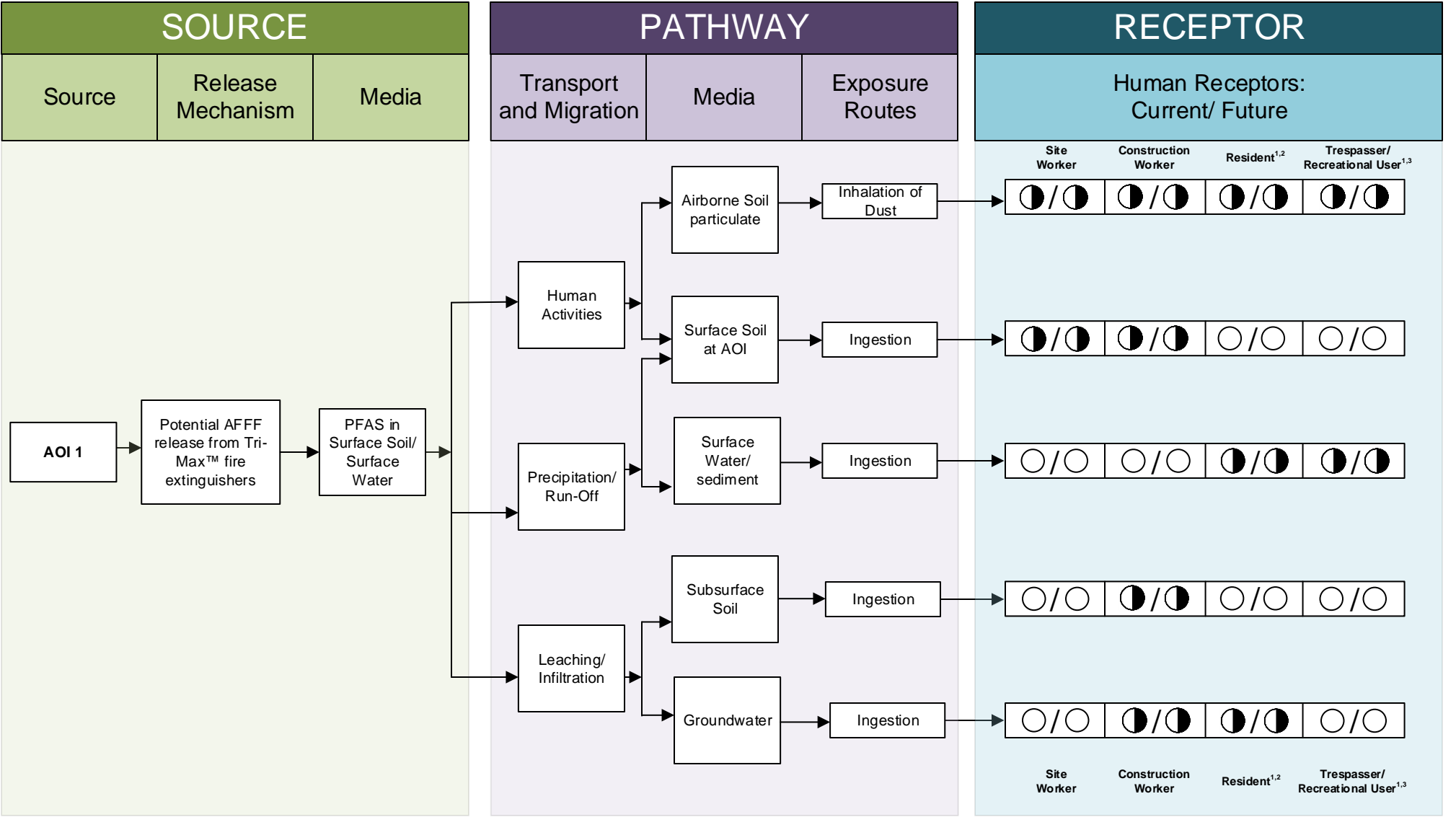
Summary of Findings

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1

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LEGEND

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

NOTES

- The resident and recreational users refer to off-site receptors.
- Inhalation of dust for off-site receptors is likely insignificant.
- Human consumption of fish potentially affected by PFAS is possible.

Figure ES-2
Preliminary Conceptual Site Model
Chesterfield Limited AASF, VA

1. Introduction

1.1 Authority and Purpose

The Army National Guard (ARNG)-G9 is the lead agency in performing *Preliminary Assessments (PAs) and Site Inspections (SIs) for Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) at Impacted Sites at ARNG Facilities Nationwide*. This work is supported by the United States (US) Army Corps of Engineers (USACE) Baltimore District and their contractor AECOM Technical Services, Inc. (AECOM) under Contract Number W912DR-12-D-0014, Task Order W912DR17F0192, issued 11 August 2017.

The ARNG is assessing potential effects on human health related to processes at facilities that used per- and poly-fluoroalkyl substances (PFAS), primarily in the form of aqueous film forming foam (AFFF) released as part of firefighting activities, although other PFAS sources are possible. In addition, the ARNG is assessing businesses or operations adjacent to the ARNG facility (not under the control of ARNG) that could potentially be responsible for a PFAS release.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. PFAS formulations contain highly diverse mixtures of compounds. Thus, the fate of PFAS compounds in the environment varies. The regulatory framework at both federal and state levels continues to evolve. The US Environmental Protection Agency (USEPA) issued Drinking Water Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS in drinking water. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined.

This report presents the findings of a PA for PFAS-containing materials at Chesterfield Limited Army Aviation Support Facility (AASF) in VA, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations [CFR] Part 300), and Army requirements and guidance.

This PA documents the known fire training areas (FTAs) at Chesterfield Limited AASF. The term PFAS will be used throughout this report to encompass all PFAS chemicals being evaluated, including PFOS and PFOA, which are key components of AFFF.

1.2 Preliminary Assessment Methods

The performance of this PA included the following tasks:

- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)TM report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit on 4 February 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed the Chesterfield County Airport Operations Manager and the Chesterfield Fire & Emergency Medical Services (EMS) Battalion Chief during the site visit;
- Identified Area(s) of Interest (AOIs) and developed a preliminary conceptual site model (CSM) to summarize potential source-pathway-receptor linkages of potential PFAS in soil, groundwater, surface water, and sediment for each AOI.

1.3 Report Organization

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

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

1.4 Facility Location and Description

Chesterfield Limited AASF is located within the Chesterfield County Airport (designated by the Federal Aviation Administration [FAA] as FCI) in Chesterfield, VA, near the interchange of Route 10 and Route 288 (**Figure 1-1**). Chesterfield Limited AASF consists of 19,500 square feet (ft) of hangar space (Buildings 7431 and 7417), 2,218 square ft of office space (Building 7501), and associated parking areas. The property is leased by VAARNG from the Chesterfield County Airport, which is owned and operated by Chesterfield County, VA. Access to the site is provided through Airfield Drive. The facility serves as an aviation detachment for the 2-224th Aviation Battalion (EEE, 2018).

1.5 Facility Environmental Setting

The topography of the site generally resides at a surface elevation of approximately 199 ft above mean sea level (amsl) and slopes slightly to the southeast, according to maps derived from a United States Geological Survey (USGS) 7.5' Digital Elevation Model. Adjacent properties to the airport include an industrial park to the west, VA 10 to the south, undeveloped woodland to the east, and a residential area to the north. Chesterfield Limited AASF resides within the eastern Piedmont Physiographic Province of Virginia (EEE, 2018).

1.5.1 Soil

As indicated in the 2019 EDR™ report (**Appendix A**), there are three major soil components found at the Chesterfield Limited AASF property: Coalfax Variant, Bourne, and Aquults. The properties of each soil component are listed in **Table 1-1** below.

Table 1-1. Soil Component Properties

Soil Component Name	Soil Surface Texture	Hydrologic Group	Soil Drainage Class	Hydric Status	Corrosion Potential
Coalfax Variant	Fine sandy loam	Class C	Somewhat poorly drained	Partially Hydric	High
Bourne	Fine sandy loam	Class C	Moderately well drained	Not Hydric	High
Aquults	Fine sandy loam	Class D	Poorly drained	All Hydric	High

1.5.2 Geology

The Chesterfield Limited AASF is located in the eastern Piedmont Physiographic Province of Virginia. The site is located near the fall line, which separates the Piedmont and the Coastal Plain Physiographic provinces, and is the approximate boundary between erosion from the highlands to the west, and deposition in the lowlands to the east (Virginia Department of Mines, Minerals and Energy, n.d.). The uppermost geologic unit at Chesterfield Limited AASF is the Tertiary-age unconsolidated sand and gravel (**Figure 1-2**). These deposits are thin outliers from the Coastal Plain and they directly overlie the weathered Mississippian-age granite bedrock. These commonly oxidized yellow-orange to yellow-brown deposits represent a fluvial to marginal-marine depositional environment and may be genetically related to the facies of the Choptank Formation (EEE, 2018).

1.5.3 Hydrogeology

The shallow water table aquifer (Yorktown aquifer) comprises fine-grained quartz sand interbedded with silt and clay laminae. The Yorktown aquifer is underlain by three confined artesian aquifers. The 2019 EDR™ report (**Appendix A**) indicated that no drinking water supply wells are present within a one-mile radius of the facility, and depth to groundwater is inferred to occur between 1 and 15 ft below ground surface (bgs). The shallow water table aquifer is unconfined; therefore, groundwater flows under the influence of gravity, with flow patterns resembling a subdued reflection of local topography. It is assumed that groundwater discharges to local streams in the area within the James River Basin. The general shallow groundwater flow direction across the entire installation likely follows the topography and flows westerly towards Reedy Creek or southerly towards Swift Creek.

An EDR™ report conducted a well search for a 1-mile radius surrounding the facility (**Appendix A**). Using additional online resources, such as state and local Geographic Information System databases, wells were researched to a 4-mile radius of the facility. Groundwater is not used for drinking water at the Chesterfield County Airport. Public water services are provided to airport facilities by Chesterfield County (EEE, 2018), which sources its water from Lake Chesdin, located approximately 12 miles south of the facility (Chesterfield County, 2019). Multiple groundwater wells are located within a 4-mile radius of the facility and are classified as domestic, public/municipal/government, and unknown. Based on the third Unregulated Contaminant Monitoring Rule (UCMR3) data, it was indicated that there were

no detections above HAs in public water systems within 20 miles of the facility. The HA is 70 parts per trillion for PFOS and PFOA, individually or combined. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today. Groundwater features are presented on **Figure 1-2**.

1.5.4 Hydrology

There are no immediate wetlands in the vicinity of the Chesterfield Limited AASF, although the surrounding airport property includes approximately 65 acres of wetlands (EEE, 2018). According to the Chesterfield County Airport Stormwater Pollution Prevention Plan (SWPPP), revised on 12 January 2015, stormwater runoff from the airport generally flows southeast towards Reedy Creek, although surface water in the northern property may also discharge to Licking Creek or through wetlands into the Cosby Lake. Overland sheet flow is conveyed to one of seven outfall areas. Chesterfield Limited AASF is located within the Outfall #2 drainage area, which consists of a 48-inch reinforced concrete pipe located at the southeastern end of the runway. Outfall #2 receives runoff from the runway, parking lots, apron, and hangar buildings, and directly discharges into Reedy Creek. All surface water from the property eventually discharges into the James River about 7 miles to the east (Chesterfield County, 2015). Surface water features are presented on **Figure 1-3**.

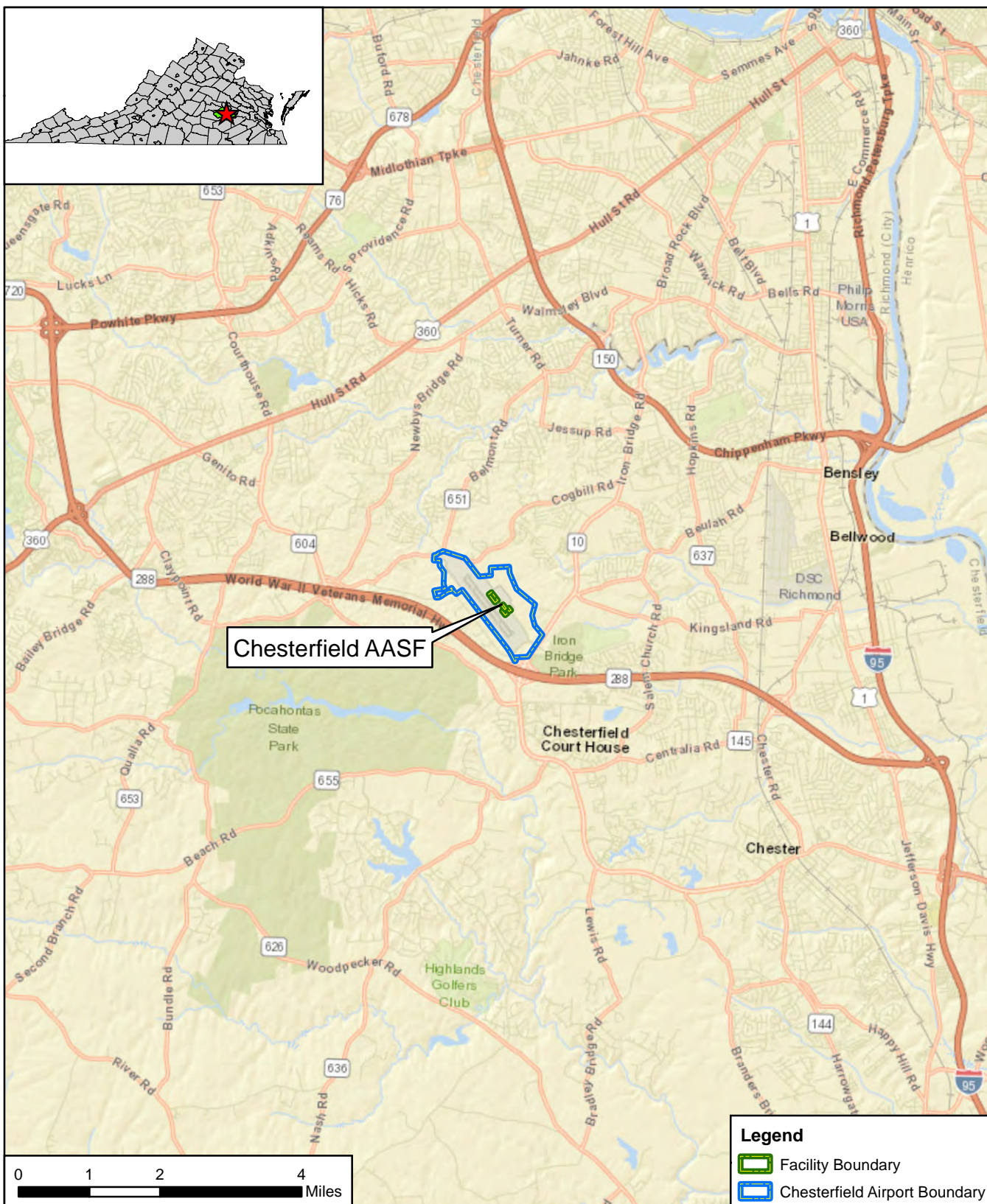
1.5.5 Climate


The climate of Chesterfield, VA is characterized as humid sub-tropical. The hot season lasts approximately 3.6 months between May and September and experiences normal maximum and minimum temperatures of 88 degrees Fahrenheit (°F) and 67 °F, respectively. The cold season lasts approximately 3 months between December and March and experiences normal maximum and minimum temperatures of 50 °F and 30 °F, respectively (National Oceanic and Atmospheric Administration [NOAA], 2019).

Although precipitation is fairly well distributed throughout the year, Chesterfield experiences some seasonal variation in monthly rainfall. On average, the most precipitation occurs in the month of August, with an average total accumulation of 4.7 inches, and the least precipitation occurs in the month of February, with an average total accumulation of 2.8 inches (NOAA, 2019).

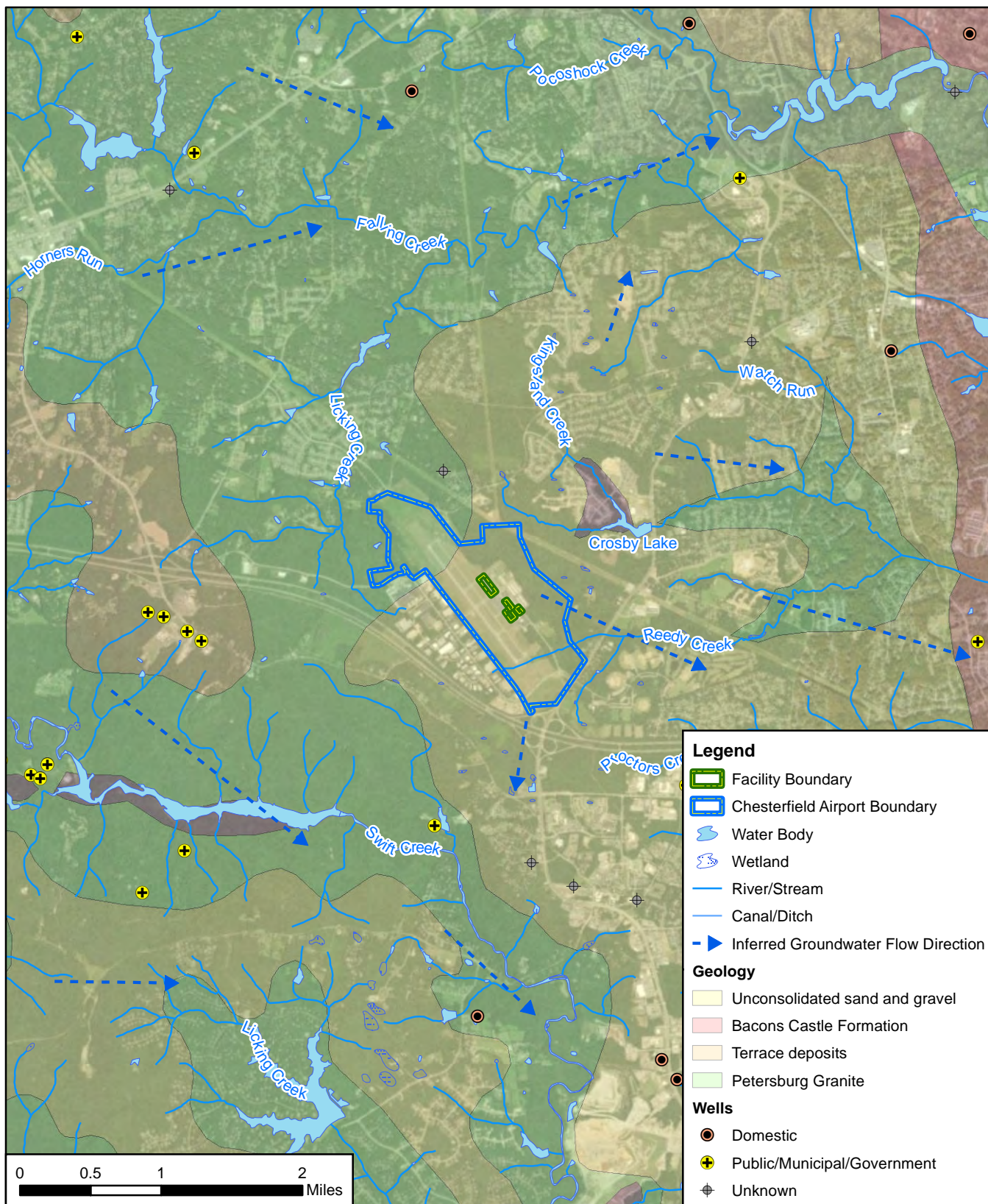
1.5.6 Current and Future Land Use

Prior to the 1970s, the current location of the Chesterfield County Airport was largely undeveloped. Construction of the airport began in 1972 and included the acquisition of 556 acres of land for runways, hangar facilities, terminal buildings, and parking areas. Chesterfield Limited AASF includes three buildings and two aircraft parking areas that are used for office and hangar purposes and serve as an aviation detachment for the 2-224th Aviation Battalion. The current lease of the Chesterfield Limited AASF property began in 2013, and VAARNG has plans to renew the lease. Future land use is not expected to change (EEE, 2018).

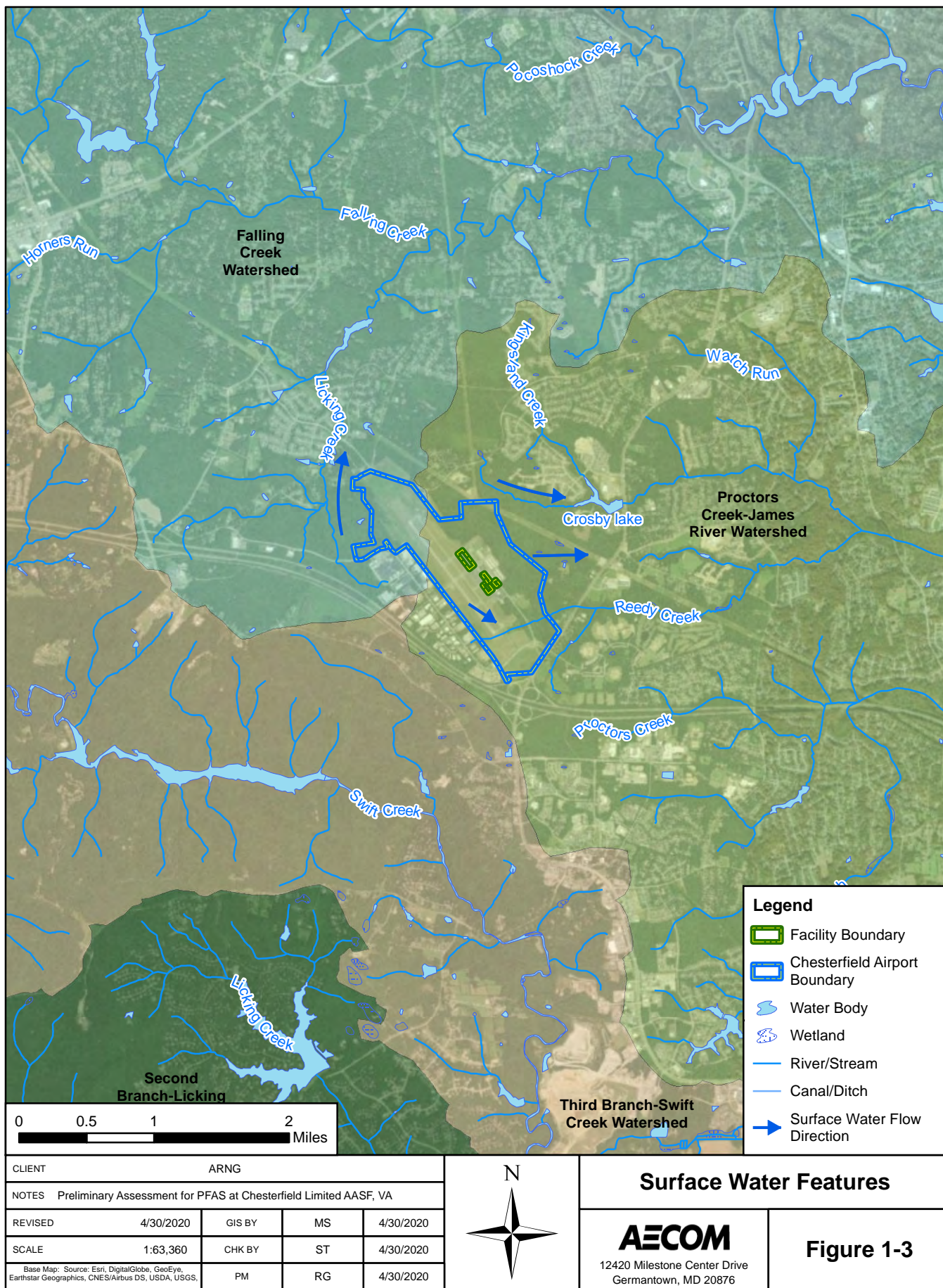


CLIENT ARNG					<div><div><div></div><div>N</div></div><div></div></div>	Facility Location	
NOTES Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA							
REVISED	4/30/2020	GIS BY	MS	4/30/2020		<div><div><div></div><div>AECOM</div></div><div>12420 Milestone Center Drive Germantown, MD 20876</div></div>	Figure 1-1
SCALE	1:126,720	CHK BY	ST	4/30/2020			
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	4/30/2020			

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<p>Groundwater Features</p> <p>AECOM</p> <p>12420 Milestone Center Drive Germantown, MD 20876</p>		<p>Figure 1-2</p>



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2. Fire Training Areas

FTAs were investigated during the PA for potential releases of AFFF during training activities. No FTAs were identified within the current AASF facility during the PA through interviews or EDR™ reports. The personnel interviewed had institutional knowledge spanning the entire period of interest (2013-present).

3. Non-Fire Training Areas

In addition to FTAs, the PA evaluated areas where PFAS-containing materials may have been broadly used, stored, or disposed. This may include buildings with fire suppression systems, paint booths, AFFF storage areas, and areas of compliance demonstrations. Information on these features obtained during the PA are included in **Appendices A** and **B**. Two non-FTAs where AFFF was stored and/or potentially released were identified during the PA. A description of each non-FTA is presented below, and the non-FTAs are shown on **Figure 3-1**.

3.1 Building 7431

Building 7431 is a one-story building located at 7431 Airfield Drive, North Chesterfield, VA 23237. The building is approximately 9,500 square ft with about 1,000 square ft used for office space. The remaining portion is a hangar for housing helicopters and storing maintenance chemicals and materials. Building 7431 was constructed in 1979, and office space renovations were completed in 2010. The previous tenant was A.T. Massey Corporation (EEE, 2018). VAARNG acquired the property from the county of Chesterfield, VA in May 2013.



During the VSI, no evidence of AFFF or fire extinguishers having been stored in the hangar was found. According to an interview with the Chesterfield County Airport Operations Manager, AFFF has not been stored historically or currently at Building 7431. A mobile Tri-Max™ fire extinguisher was observed to be staged outside the southern corner of the hangar. The contents of the Tri-Max™ fire extinguisher were unknown; however, the Operations Manager stated that the Tri-Max™ had never been used or tested to his knowledge, which spans back to 2001 and covers the entire period of interest (2013-present).

3.2 Building 7417

Building 7417 is located at 7417 Airfield Drive, North Chesterfield, VA 23237. The construction of Building 7417 was completed in 2005, and VAARNG acquired the property from the Chesterfield County, VA in May 2013. The building footprint is approximately 10,000 square ft. The interior is used as a large hangar space that has a clear-span frame and a concrete slab floor. The hangar houses several aircraft and stores maintenance chemicals and materials.

Building 7417 does not contain a fire suppression system; however, a sensor wire does trigger a fire alarm when a fire occurs. The building is equipped with ABC fire extinguishers. According to an interview with the Chesterfield County Airport Operations Manager, AFFF has not been stored historically nor is it stored currently at Building 7417.



CLIENT ARNG						Non-Fire Training Areas	
NOTES Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA						 12420 Milestone Center Drive Germantown, MD 20876	Figure 3-1
REVISED	4/30/2020	GIS BY	MS	4/30/2020			
SCALE	1:4,200	CHK BY	BN	4/30/2020			
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/30/2020			

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4. Emergency Response Areas

Emergency responses to crashes sometimes require flame suppression, which may result in the release of PFAS to the environment in the form of AFFF. No emergency response areas were identified within the current AASF facility during the PA through interviews or EDR™ reports. The Chesterfield County Airport Operations Manager stated with first-hand knowledge that no crashes or emergencies resulting in AFFF use had occurred during his tenure (18 years), but it is unknown whether any crashes occurred before 2001. All emergency services for the current AASF are provided by the Chesterfield County Fire Station #15.

5. Adjacent Sources

Two potential off-facility sources of PFAS adjacent to the current AASF, not under the control of the VAARNG, were identified during the PA. A description of each adjacent source is presented below, and the adjacent sources are shown on **Figure 5-1**.

5.1 Chesterfield County Fire Station #15

Chesterfield County Fire Station #15 is located at 7300 Airfield Drive, North Chesterfield, VA 23237, in the adjoining property southeast of Chesterfield Limited AASF. The fire station resides on approximately 0.75 acres and also includes a helipad and backyard field. The fire station provides emergency services to the Chesterfield Limited AASF.

An interview with the Battalion Chief for Chesterfield Fire & EMS revealed that minor amounts of AFFF were released through weekly spray pattern testing of equipment in the field adjacent to and behind the fire station from 1989 until 2017, when there were some equipment issues. While weekly spray pattern testing currently occurs in the same location with water, residual PFAS may have been released from the previous testing of equipment with AFFF. It is unknown what may have occurred before the Battalion Chief's tenure starting in 2002.

The AFFF products used by the station are National Foam Universal Plus 3x6 AR-AFFF, National Foam Universal Goal 1x3 AR-AFFF, and Ansul AFFF, varying in concentration from 1% to 6% and stored in 5-gallon buckets and two totes of 275- and 330-gallon capacity. A foam response trailer is currently stationed at Fire Station #15. Two P-19 Aircraft Rescue Firefighting (ARFF) vehicles are also associated with the fire station. An old fire engine is reported to have leaked product at an unknown off-site location. No fire training activities have been or are currently conducted by the Chesterfield Fire & EMS on AASF property. The Chesterfield County Fire Station #15 is considered an off-facility source area.

5.2 2013 Wildland Fire

In 2013, a large brush fire occurred between Route 288 and Courthouse Road, adjacent to the southern boundary of the Chesterfield County Airport. The brush fire impacted approximately 75 acres. First responders reportedly used only water to extinguish the fire, and Chesterfield Fire & EMS staff confirmed that no AFFF was used in the emergency response.



CLIENT		ARNG		
NOTES		Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA		
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Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/30/2020



Adjacent Sources

AECOM

12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

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6. Preliminary Conceptual Site Model

Based on the PA findings, one non-FTA was identified where PFAS may have been incidentally spilled or discharged to the ground surface. As such, the AOI may be a potential PFAS source area. The AOI and preliminary CSM are shown on **Figure 6-1** and **Figure 6-2**, respectively, and summarized below.

Although the use of AFFF could not be confirmed, the following AOI was identified as a potential PFAS source area:

- AOI 1 – Tri-Max™ Storage Area

The following section describes the CSM components and the specific preliminary CSM developed for AOI 1. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

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 (National Ground Water Association, 2018). Receptors for Chesterfield AASF include site workers, construction workers, recreational users, trespassers, and off-facility residents. The preliminary CSM for AOI 1 indicates which specific receptors could potentially be exposed to PFAS.

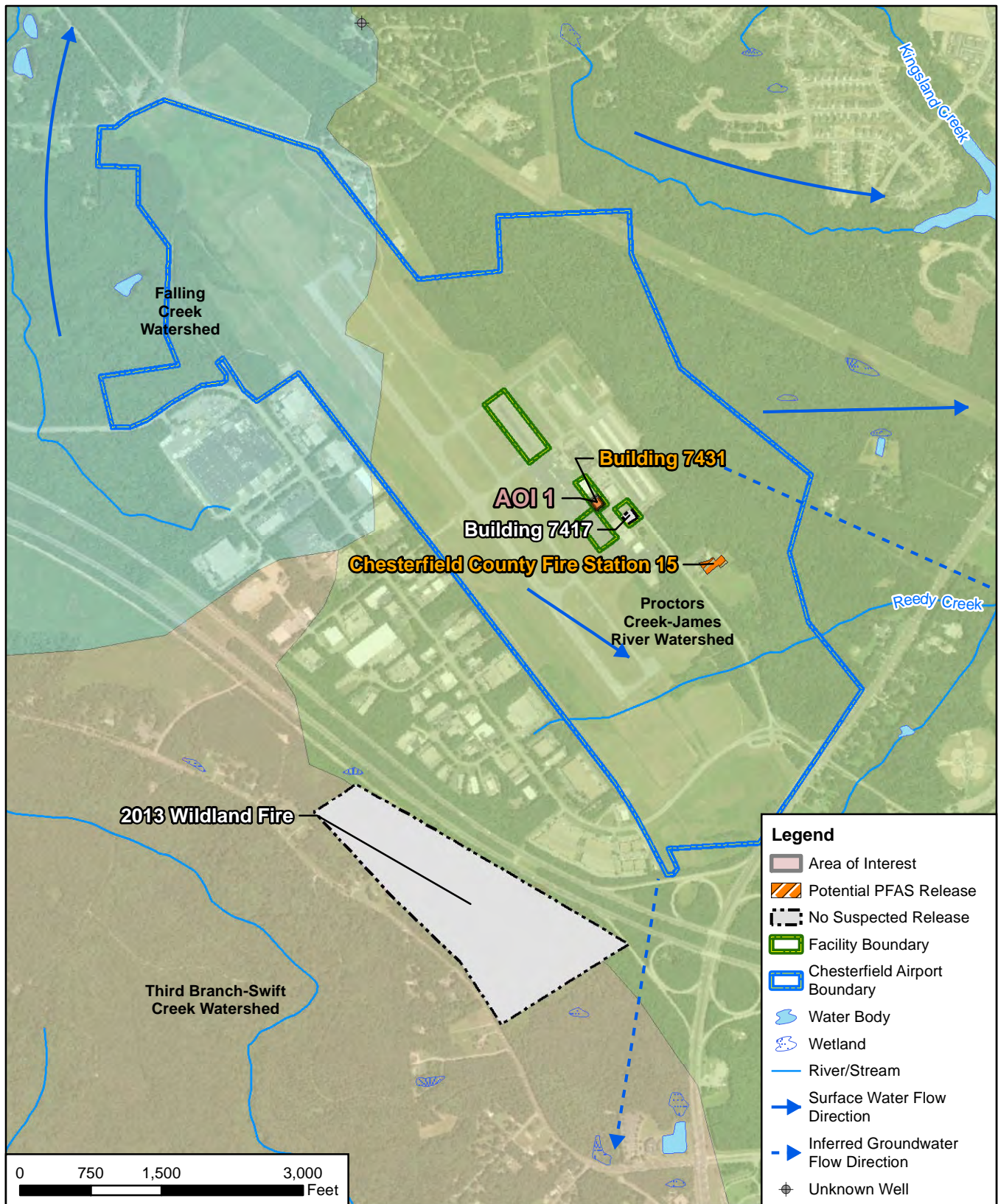
6.1 AOI 1: Tri-Max™ Storage Area


AOI 1 includes Building 7431 where a Tri-Max™ fire extinguisher filled with unknown contents was observed outside the southern corner of the building during the site visit.

Any AFFF releases from the Tri-Max™ fire extinguisher may have occurred on paved or grassy surfaces outside Building 7431. Ground-disturbing activities in these grassy areas as well as beneath the pavement may result in potential exposure to PFAS in surface soils via ingestion and inhalation of dust particles for site workers and construction workers. The facility is within a one-mile radius of residential areas, so nearby off-facility residents and trespassers may also be exposed to airborne soil particles resulting from ground disturbing activities. AFFF releases to the paved surfaces could have infiltrated the subsurface via cracks in the pavement or joints between areas that are paved with different materials. Ground-disturbing activities may result in potential exposure to PFAS in subsurface soils and shallow groundwater via ingestion for construction workers.

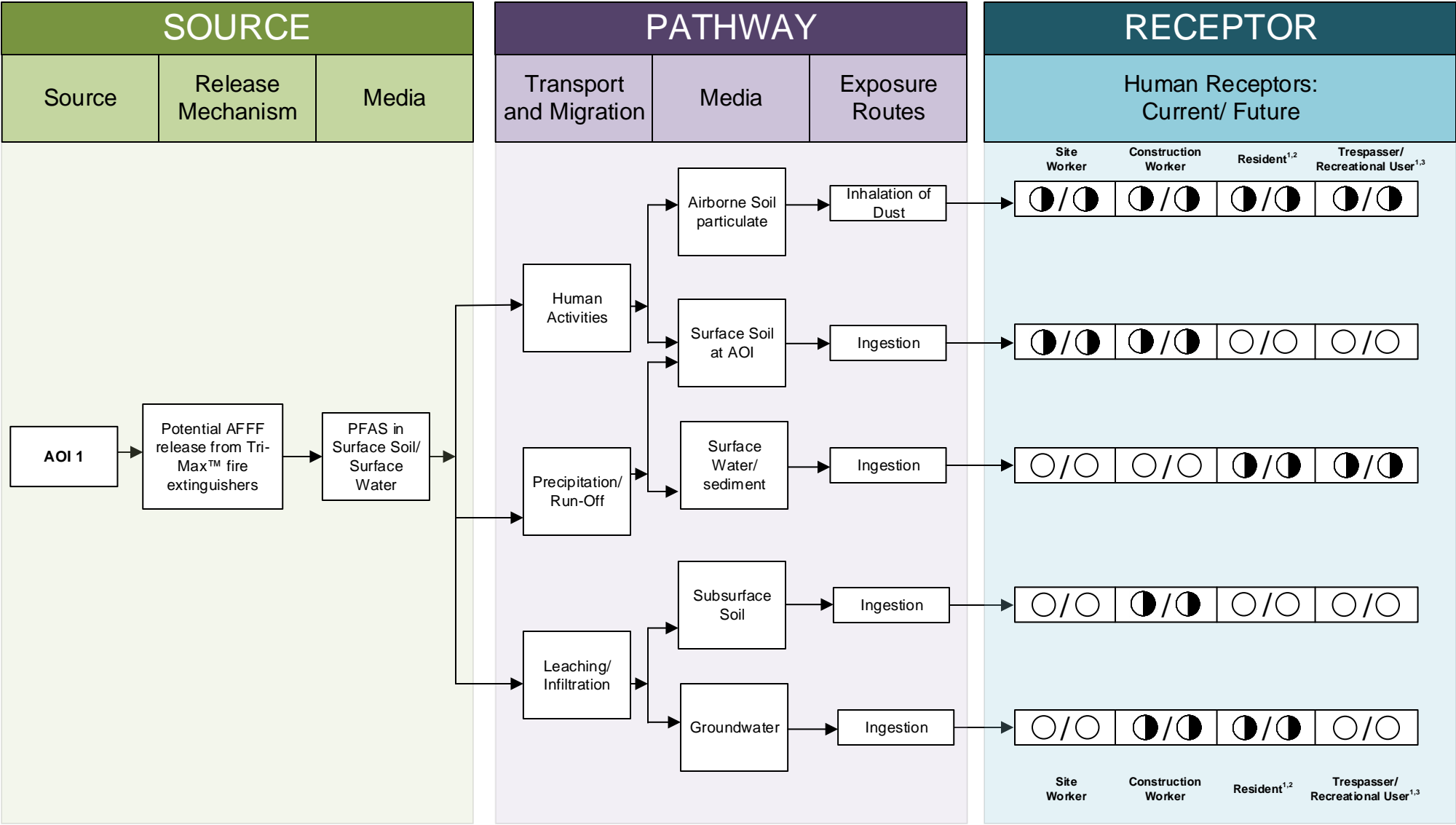
Potential AFFF releases may be carried by run-off into Reedy Creek, a tributary of James River. Off-facility receptors such as residents and recreational users may be exposed to PFAS via ingestion of surface water and sediment in James River and its tributaries or via the ingestion of fish affected by PFAS.

PFAS are water soluble and can migrate readily from soil to groundwater via leaching. No groundwater wells exist at the facility, and the facility is on municipal water provided by Chesterfield County. Chesterfield County sources its water from Lake Chesdin, located approximately 12 miles away (Chesterfield County, 2019). Due to the distance of the water source, site workers are unlikely to be exposed to potentially impacted groundwater. Due to the existence of multiple domestic and public groundwater wells in the surrounding area of the facility, residents may be potentially exposed to groundwater via ingestion.



CLIENT ARNG					<div>N</div> 	Area of Interest	
NOTES Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA						<div>AECOM</div> <div>12420 Milestone Center Drive Germantown, MD 20876</div>	Figure 6-1
REVISED	4/30/2020	GIS BY	MS	4/30/2020			
SCALE	1:18,000	CHK BY	ST	4/30/2020			
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/30/2020			

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LEGEND

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

NOTES

- 1. The resident and recreational users refer to off-site receptors.
- 2. Inhalation of dust for off-site receptors is likely insignificant.
- 3. Human consumption of fish potentially affected by PFAS is possible.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 Tri-Max™ Storage Area

7. Conclusions

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

7.1 Findings

One AOI related to potential PFAS release was identified Chesterfield Limited AASF based on PA data (**Figure 7-1**) and is summarized in **Table 7-1** below:

Table 7-1: AOIs at Chesterfield Limited AASF

Area of Interest	Name	Used by	Potential Release Dates
AOI 1	Tri-Max™ Storage Area	VAARNG	Unknown

The Chesterfield County Fire Station #15 was identified as an off-facility potential PFAS source and lies in the inferred downgradient groundwater flow path. The fire station conducts weekly spray pattern testing of AFFF equipment in the field adjacent to and behind the fire station. Additionally, large quantities of AFFF were found housed in the fire station and also stored in a P-19 ARFF vehicle and foam response trailer. The Chesterfield County Fire Station #15 adjacent source is shown on **Figure 7-1**. While PFAS have likely been released to the environment, Chesterfield AASF is unlikely to be affected because it appears to be upgradient of the fire station, and surface water runoff is likely to the southeast towards Reedy Creek.

7.2 Uncertainties

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

The conclusions of this PA are based on all available information, including: previous environmental reports, EDRs™, observations made during the VSI, and interviews. Interviews of personnel with direct knowledge of a facility generally provided the most useful insights regarding a facility's historical and current PFAS-containing materials. Sometimes the provided information was vague. Gathered information has a degree of uncertainty due to the absence of written documentation, the limited number of personnel with direct knowledge, the time passed since PFAS were first used (1969 to present), and a reliance on personal recollection. Inaccuracies may arise in potential PFAS release locations, dates of release, volume of releases, and the concentration of AFFF used. There is also a possibility the PA has missed a source of PFAS, as the science of how PFAS may enter the environment continually evolves.

In order to minimize the level of uncertainty, readily available data regarding the use and storage of PFAS were reviewed, current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected.

Table 7-1 summarizes the uncertainties associated with the PA:

Table 7-1. Uncertainties within the PA

Location	Source of Uncertainty
AOI 1: Tri-Max™ Storage Area	VAARNG personnel were unaware of the presence of the Tri-Max™ fire extinguisher stationed outside

Location	Source of Uncertainty
	Building 7431 and could not confirm the contents of the extinguisher.
General	During the interview process, no VAARNG personnel were available to be interviewed, although the Chesterfield County Airport Operations Manager had institutional knowledge covering the entire period of interest (2013-present). The usage of Building 7431 by the prior tenants, A.T. Massey Corporation, is unknown, as no representative could be reached for an interview.
Chesterfield County Fire Station #15 (Adjacent Source)	It is unknown how much AFFF is released during the weekly equipment testing. The Battalion Chief stated that there were no FTAs using foam at the fire station. However, it is unknown what occurred before his tenure starting in 2002.
Potential Emergency Response Locations	The Chesterfield County Airport Operations Manager stated with first-hand knowledge that no crashes or emergencies resulting in AFFF use had occurred during his tenure (18 years), but it is unknown whether any crashes occurred before 2001.

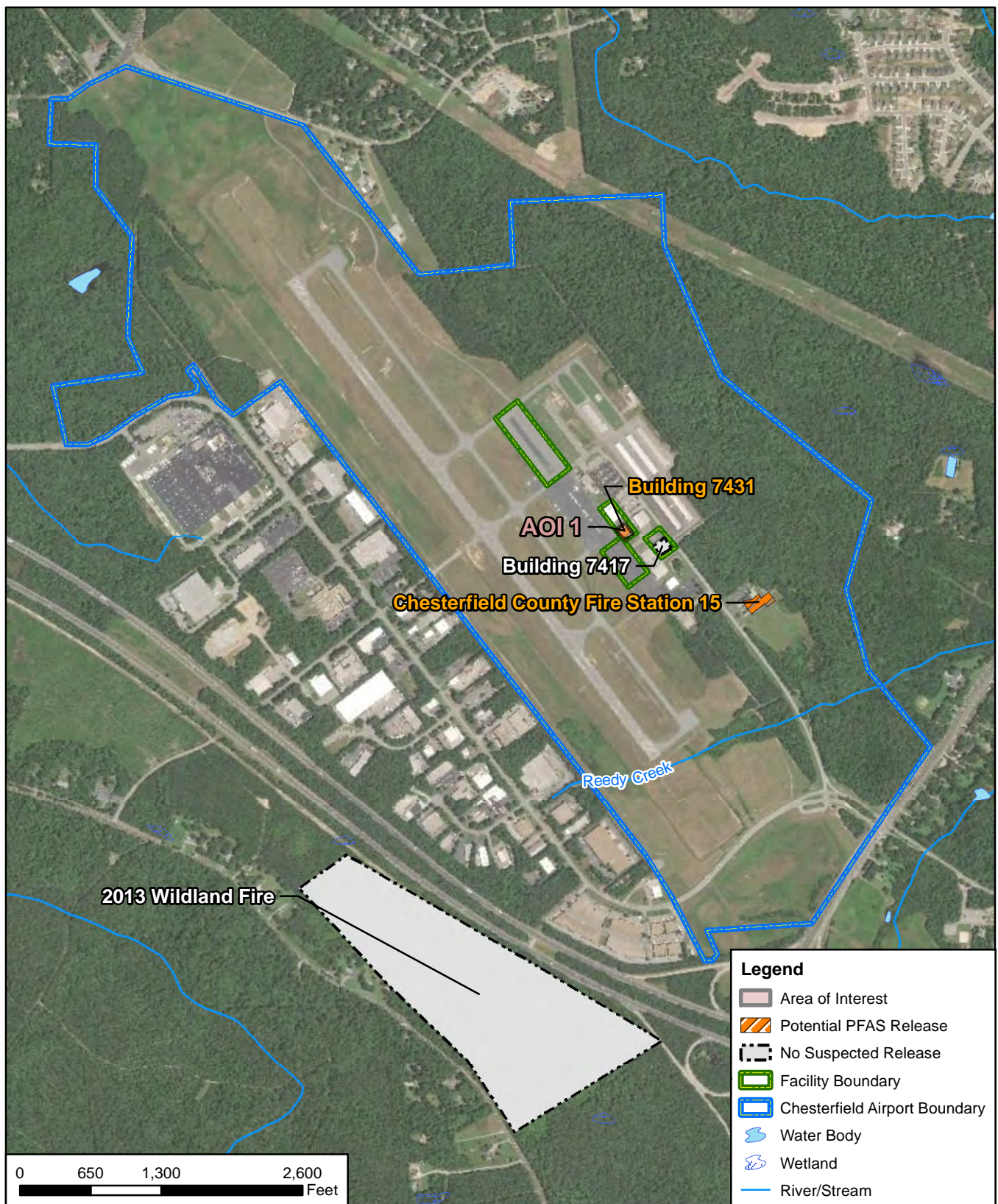
7.3 Potential Future Actions


Interviews with current VAARNG facility staff whose first-hand knowledge at Chesterfield AASF span 2013 - present indicate that ARNG activities may have resulted in a potential PFAS release at the AOI identified during the PA. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in soil, groundwater, surface water, and sediment at the AOI. **Table 7-3** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

Table 7-3: PA Findings Summary

Area of Interest	AOI Location	Rationale	Potential Future Action
AOI 1: Tri-Max™ Storage Area	37°24'21.4" N; 77°31'14.0" W	Storage of Tri-Max™ fire extinguisher	Proceed to an SI, focus on soil, groundwater, surface water, sediment

ARNG will evaluate the need for an SI at Chesterfield AASF based on the potential receptors, the potential migration of PFAS contamination off the facility, and the availability of resources.



CLIENT		ARNG			<div>N</div> 	Summary of Findings	
NOTES Preliminary Assessment for PFAS at Chesterfield Limited AASF, VA						<div>AECOM</div> <div>12420 Milestone Center Drive Germantown, MD 20876</div>	Figure 7-1
REVISED	4/30/2020	GIS BY	MS	4/30/2020			
SCALE	1:15,600	CHK BY	ST	4/30/2020			
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	4/30/2020			

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8. References

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- Chesterfield County, Department of General Services, Environmental Division (Chesterfield County). 2015. *Stormwater Pollution Prevention Plan for Chesterfield County Airport*. January.
- National Ground Water Association, 2018. *Groundwater and PFAS: State of Knowledge and Practice*. January.
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- Virginia Department of Mines, Minerals and Energy. n.d. *Division of Geology and Mineral Resources*. <https://www.dmme.virginia.gov/webmaps/DGMR/> (Accessed April 2019).

Appendix A

Data Resources

Data resources will be provided separately on CD. Data resources for Chesterfield Limited AASF include:

Stormwater Pollution Prevention Plan

- 2015 Stormwater Pollution Prevention Plan for Chesterfield County Airport

Environmental Data Resources, Inc.TM Geospatial Report

- 2019 Environmental Data Resources, Inc.TM. Geospatial Report for Chesterfield Limited AASF, VA

Miscellaneous Data Resources

- 2013 Chesterfield Limited AASF Deed of Lease No. L04474
- 2013 Environmental Condition of Property Report, Phase I Environmental Site Assessment for the Proposed VAARNG Aviation Detachment, Office/Hangar Space, Chesterfield County Airport
- 2018 Environmental Condition of Property Report, Phase I Environmental Site Assessment for the Lease Renewal of the VAARNG Aviation Detachment Office/Hangar Space, Chesterfield County Airport

Appendix B

Preliminary Assessment Documentation

Appendix B.1

Interview Records

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

Interviewee: _____ Title: Battalion Chief Phone Number: _____ Email: _____	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N _____
<p>1. Roles or activities with the Facility/years working at the Facility.</p> <p>Battalion Chief for Chesterfield Fire & EMS assigned to operations. Currently assigned as the central area operations chief and the Hazardous Incident Teams program manager as well as a committee member of the Central Virginia Foam Task Force. Been employed with Chesterfield since 2002.</p>	
<p>2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.</p> <p>Maintenance (e.g., ramp washing) – Weekly testing of equipment with limited flows. Fire Training Areas – field adjacent to fire station Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) - None Fire Protection at Fueling Stations – ABC Extinguishers Non-Technical/Recreational/ Pest Management</p>	
<p>3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?</p> <p>No buildings at the facility have AFFF equipped suppression systems.</p>	
<p>4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?</p> <p>No</p>	
<p>5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?</p> <p>AFFF is procured through the use of county contracts and approved vendors. There is no inventory system to track the storage however a county procurement system that track purchases.</p>	
<p>6. What type of AFFF has been/is being used (3%, 6%, Mil Spec Mil-F-24385, High Expansion)? Manufacturer (3M, Dupont, Ansul, National Foam, Angus, Chemguard, Buckeye, Fire Service Plus)?</p> <p>National Foam, Universal Plus 3x6 AR-AFFF National Foam, Universal Goal 1x3 AR-AFFF Ansul AFFF</p>	
<p>7. Is AFFF formulated on base? If so, where is the solution mixed, contained, transferred, etc.?</p> <p>No</p>	

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

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

Stored at fire station 15 and the RMD warehouse in the Chesterfield County Complex. We currently have five gallon buckets and 275 and 330 gallon totes. They are all a concentrate and vary from 1%-6%.

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

The concentrate is loaded onto the equipment via bucket or pump directly into the on board tank. There is no specified area to load the apparatus.

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

Past: Fire Engine and P-19 ARFF stored and housed at fire station 15

Current: Foam response trailer stored at fire station 15

Future: P-19 ARFF housed at fire station 15

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

Yes, the old Engine leaked product but none on site, this occurred at an off-site location.

Spray patterns on equipment is tested weekly and done in the field adjacent to and behind the fire station.

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

To our knowledge there were no fire training academies held on site that utilized foam products.

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

Propane

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

Not applicable

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

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

There are no formal mutual aid agreements for fire responses to the airport, this is managed through Chesterfield County Fire & EMS. If mutual aid were needed it would come from the regional foam task force or Richmond International Airport.

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

Not applicable

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

<p>Interviewer: [REDACTED] Title: [REDACTED] Phone Number: [REDACTED] Email: [REDACTED]</p>	<p>Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N _____</p>
<p>1. Roles or activities with the Facility/years working at the Facility. [REDACTED] : 2001-2019 not-ARNG affiliated; works at airport use the title of the rather than name</p>	
<p>2. What can you tell us about the history of AFFF at the Facility? Was it used for any of the following activities, circle all that apply and indicate years of active use, if known? Identify these locations on a facility map.</p> <p>Maintenance (e.g., ramp washing) Fire Training Areas Firefighting (Active Fire) Crash Fire Suppression Systems (Hangers/Dining Facilities) Fire Protection at Fueling Stations Non-Technical/Recreational/ Pest Management</p>	
<p>3. Are any current buildings constructed with AFFF dispensing systems or fire suppression systems? What are the AFFF/suppression system test requirements? What is the frequency of testing at the AFFF/suppression systems?</p> <p>-No AFFF suppression, no sprinklers at either Bldg 7431 - smaller Bldg. 7417 - houses blackhawks</p>	
<p>4. Are fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?</p> <p>-Never used foam to my knowledge -Construction in 1960s -Starting use in 1973</p>	
<p>5. How is AFFF procured? Do you have an inventory/procurement system that tracks use?</p> <p>- Never used AFFF at airport - FD stores AFFF - weekly training with water, monthly training - ~5 years ago the hangars were acquired by VAARNG - 7417 constructed in 2005</p>	

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

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

Ansul 3 & 6% 275 or 325 tote
National Foam 5-gallon buckets

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

- formulated here onsite
- never used at the airport
- emergency record request to make

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

- 1988 model truck (P-19); purchase record
↳ training/maintenance records requested

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

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

2 trucks

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

no regular leaks

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

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

Just the backyard training area

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

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

Chesapeake county responsibility
Chesterfield

Richmond FD provides support

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

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

no

PA Interview Questionnaire – Fire Station

Facility: _____
Interviewer: _____
Date/Time: _____

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

18. Are there specific emergency response incident reports (i.e., aircraft or vehicle crash sites and fires)? If so, may we please copy these reports? Who (entity) was the responder?

19. Do you have records of fuel spill logs? Was it common practice to wash away fuel spills with AFFF? Is/was AFFF used as a precaution in response to fuel releases or emergency runway landings to prevent fires?

- County provides disposal and supplies AFFF
- Large fire off-facility in 2013

20. Was AFFF used for forest fires or fire management on-post/off-post? If so, please describe what happened and who was involved?

no

21. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

Appendix B.2

Visual Site Inspection Checklists

Visual Site Inspection Checklist

Names(s) of people performing VSI: _____

Recorded by: _____

ARNG Contact: _____

Date and Time: February 4, 2019

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

Source/Release Information

Site Name / Area Name / Unique ID: Building 7417 (VAARNG Hangar)

Site / Area Acreage: approximately 0.33 acres storing AFFF Storage

Historic Site Use (Brief Description): Hangar storage

Current Site Use (Brief Description): Hangar storage

Physical barriers or access restrictions: Chesterfield Airport perimeter fence

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

Y / N

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

No AFFF used or stored at the hangar

2. Has usage been documented?

Y / N

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

NA

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

3a. Indicate what businesses are located near the site

Wide variety of industrial/office/church/gymnastics facilities west of Chesterfield runway

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

Y / N

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

Yes, the Chesterfield Limited AASF is located at the Chesterfield County Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system?

Y / N

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

No, a sensor wire triggers an alarm when fires occur, but no suppression system exists. ABC extinguisher present in the hangar.

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

NA

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

NA

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

NA

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

Y / N

1a. If so, note observation and location:

Site drainage channels are unknown (SWPPP requested), but a wetland exists approximately 0.1 mile to the east and south

2. Is there channelized flow within the site/area?

Y / N

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

No drainage ditches were observed, but SWPPP will clarify

3. Are monitoring or drinking water wells located near the site?

Y / N

3a. If so, please note the location:

Unknown, information requested

4. Are surface water intakes located near the site?

Y / N

4a. If so, please note the location:

See previous response regarding wetland

5. Can wind dispersion information be obtained?

Y / N

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

No

6. Does an adjacent non-ARNG PFAS source exist?

Y / N

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

Chesterfield County Fire Station 15 exists approximately 0.15 miles southwest. AFFF storage and maintenance with AFFF releases occurs there.

6b. Will off-site reconnaissance be conducted?

Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area?

Y / N

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

Building 7417 was constructed in 2005

2. Is the site/area vegetated?

Y / N

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

The storage area is paved, but wooded area exists to the east. Grass exists in patches around the hangar.

3. Does the site or area exhibit evidence of erosion?

Y / N

3a. If yes, describe the location and extent of the erosion:

No observed erosion

4. Does the site/area exhibit any areas of ponding or standing water?

Y / N

4a. If yes, describe the location and extent of the ponding:

No standing water observed, but NWI shows wetlands nearby

Receptor Information

1. Is access to the site restricted?

Y / N

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

Perimeter fence restricts access to the hangar area

2. Who can access the site?

**Site Workers / Construction Workers / Trespassers / Residential / Recreational
Users / Ecological**

2a. Circle all that apply, note any not covered above:

Chesterfield Airport staff, VAARNG staff

3. Are residential areas located near the site?

Y / N

3a. If so, please note the location/distance:

Residences and recreational field exist approximately 0.5 miles southeast of the site

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

Y / N

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

Nana Daycare is approximately 1 mile northeast of the Hangar; OB
Gates Elementary School is approximately 1.3 miles southeast

5. Are any wetlands located near the site?

Y / N

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

Yes, see previous response regarding wetlands

Visual Site Inspection Checklist

Names(s) of people performing VSI: _____

Recorded by: _____

ARNG Contact: _____

Date and Time: February 4, 2019

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

Source/Release Information

Site Name / Area Name / Unique ID: Building 7431 (VAARNG Hangar)

Site / Area Acreage: approximately 0.33 acres storing AFFF Storage

Historic Site Use (Brief Description): Hangar storage

Current Site Use (Brief Description): Hangar storage

Physical barriers or access restrictions: Chesterfield Airport perimeter fence

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

Y / N

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

No AFFF used at the hangar, but a Tri-Max mobile extinguisher is staged outside on the southern corner of the hangar

2. Has usage been documented?

Y / N

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

NA

3. What types of businesses are located near the site?

Industrial / Commercial / Plating / Waterproofing / Residential

3a. Indicate what businesses are located near the site

Wide variety of industrial/office/church/gymnastics facilities west of Chesterfield runway

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

Y / N

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

Yes, the Chesterfield Limited AASF is located at the Chesterfield County Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system?

Y / N

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

No, ABC extinguisher present in the hangar. Tri-Max extinguisher staged outside hangar

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

NA, no testing of Tri-Max testing. Never known to have been used.

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

NA

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

NA

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

Y / N

1a. If so, note observation and location:

Site drainage channels are unknown (SWPPP requested), but a wetland exists approximately 0.1 mile to the east and south

2. Is there channelized flow within the site/area?

Y / N

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

No drainage ditches were observed, but SWPPP will clarify

3. Are monitoring or drinking water wells located near the site?

Y / N

3a. If so, please note the location:

Unknown, information requested

4. Are surface water intakes located near the site?

Y / N

4a. If so, please note the location:

See previous response regarding wetland

5. Can wind dispersion information be obtained?

Y / N

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

No

6. Does an adjacent non-ARNG PFAS source exist?

Y / N

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

Chesterfield County Fire Station 15 exists approximately 0.15 miles southwest. AFFF storage and maintenance with AFFF releases occurs there.

6b. Will off-site reconnaissance be conducted?

Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area?

Y / N

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

Building 7431 was acquired by VAARNG approximately 5 years ago

2. Is the site/area vegetated?

Y / N

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

The storage area is paved, but wooded area exists to the east. Grass exists in patches around the hangar.

3. Does the site or area exhibit evidence of erosion?

Y / N

3a. If yes, describe the location and extent of the erosion:

No observed erosion

4. Does the site/area exhibit any areas of ponding or standing water?

Y / N

4a. If yes, describe the location and extent of the ponding:

No standing water observed, but NWI shows wetlands nearby

Receptor Information

1. Is access to the site restricted?

Y / N

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

Perimeter fence restricts access to the hangar area

2. Who can access the site?

**Site Workers / Construction Workers / Trespassers / Residential / Recreational
Users / Ecological**

2a. Circle all that apply, note any not covered above:

Chesterfield Airport staff, VAARNG staff

3. Are residential areas located near the site?

Y / N

3a. If so, please note the location/distance:

Residences and recreational field exist approximately 0.5 miles southeast of the site

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

Y / N

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

Nana Daycare is approximately 1 mile northeast of the Hangar; OB Gates Elementary School is approximately 1.3 miles southeast

5. Are any wetlands located near the site?

Y / N

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

Yes, see previous response regarding wetlands

Visual Site Inspection Checklist

Names(s) of people performing VSI: _____

Recorded by: _____

ARNG Contact: _____

Date and Time: February 4, 2019

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

Source/Release Information

Site Name / Area Name / Unique ID:

Chesterfield County Fire Station 15

Site / Area Acreage:

approximately 0.75 acres including helipad, and backyard area

Historic Site Use (Brief Description):

Fire Station 15

Current Site Use (Brief Description):

Fire Station 15

Physical barriers or access restrictions:

Access is not restricted

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

Y / N

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

Yes, National and Ansul AFFF is stored at the Fire Station and weekly spray pattern testing has resulted in AFFF releases to the field adjacent to the fire station

2. Has usage been documented?

Y / N

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

Records are not available for equipment testing

3. What types of businesses are located near the site?

Industrial / Commercial / Plating / Waterproofing / Residential

3a. Indicate what businesses are located near the site

Wide variety of industrial/office/church/gymnastics facilities west of Chesterfield runway

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

Y / N

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

Yes, the Chesterfield Limited AASF is located approximately 0.2 miles east of the Chesterfield County Airport

Visual Survey Inspection Log

Other Significant Site Features:

1. Does the facility have a fire suppression system?

Y / N

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

No, fire suppression system is present at the Fire Station

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

Weekly spray pattern testing of AFFF equipment occurs at the Fire Station

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

Unknown whether AFFF is ever returned/disposed of/replaced

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

SWPPP requested

Transport / Pathway Information

Migration Potential:

1. Does site/area drainage flow off installation?

Y / N

1a. If so, note observation and location:

Site drainage channels are unknown (SWPPP requested), but wetlands exists approximately 0.1 mile to the north, east, south, and west

2. Is there channelized flow within the site/area?

Y / N

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

No drainage ditches were observed, but SWPPP will clarify

3. Are monitoring or drinking water wells located near the site?

Y / N

3a. If so, please note the location:

Unknown, information requested

4. Are surface water intakes located near the site?

Y / N

4a. If so, please note the location:

See previous response regarding wetland

5. Can wind dispersion information be obtained?

Y / N

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

No

6. Does an adjacent non-ARNG PFAS source exist?

Y / N

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

This Fire Station is an adjacent source. Other adjacent sources may include non-VAARNG airport hangars (potential for AFFF storage/use), industrial area west of runway (includes Pohlig Packaging and custom metal fabricators

6b. Will off-site reconnaissance be conducted?

Y / N

Visual Survey Inspection Log

Significant Topographical Features:

1. Has the infrastructure changed at the site/area?

Y / N

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

Fire Station 15 construction era unknown, information requested

2. Is the site/area vegetated?

Y / N

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

Wooded areas exist north, east, south, and west of Fire Station.

3. Does the site or area exhibit evidence of erosion?

Y / N

3a. If yes, describe the location and extent of the erosion:

No observed erosion

4. Does the site/area exhibit any areas of ponding or standing water?

Y / N

4a. If yes, describe the location and extent of the ponding:

No standing water observed, but NWI shows wetlands nearby

Receptor Information

1. Is access to the site restricted?

Y / N

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

Access to the Fire Station is not restricted

2. Who can access the site?

**Site Workers / Construction Workers / Trespassers / Residential / Recreational
Users / Ecological**

2a. Circle all that apply, note any not covered above:

Anyone, although only FD staff regularly visit the station

3. Are residential areas located near the site?

Y / N

3a. If so, please note the location/distance:

Residences and recreational field exist approximately 0.5 miles southeast of the site

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

Y / N

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

Nana Daycare is approximately 1 mile northeast of the site; OB Gates Elementary School is approximately 1.3 miles southeast

5. Are any wetlands located near the site?

Y / N

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

Yes, see previous response regarding wetlands

Appendix B.3

Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Chesterfield Limited AASF, VA

Why has this location been identified as a site?

This is an ARNG AASF located adjacent to a public airport. The facility is primarily used for aircraft parking and office space.

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

numerous aviation industries are located at the airport, a Chesterfield County Fire Station is adjacent to the facility

Training Events

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

If so, how often? N/A

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

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

Surface Water:

Surface water flow direction? typically southeast towards Reedy Creek

Average rainfall? 2.4 - 3.7 inches total accumulation per month

Any flooding during rainy season? NO

Direct or indirect pathway to ditches? direct pathway to ditches

Direct or indirect pathway to larger bodies of water? indirect pathway through overland flow to Licking Creek or

Does surface water pond any place on site? NO

Cosby Lake

Any impoundment areas or retention ponds? NO

Any NPDES location points near the site? there are 7 permitted outfalls at the airport

How does surface water drain on and around the flight line? drains south to Reedy Creek or Lick Creek which then flows north/east

Preliminary Assessment – Conceptual Site Model Information

Groundwater:

Groundwater flow direction? primarily west towards Reedy Creek

Depth to groundwater? estimated between 1-15 ft bgs

Uses (agricultural, drinking water, irrigation)? none known

Any groundwater treatment systems? no

Any groundwater monitoring well locations near the site? not within 1 mile, but there is a public well within 2 miles

Is groundwater used for drinking water? no, they use public drinking water services

Are there drinking water supply wells on installation? no

Do they serve off-post populations? N/A

Are there off-post drinking water wells downgradient there are public and domestic wells downgradient at ~2-5 miles away from installation

Waste Water Treatment Plant:

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

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

Do we understand the fate of sludge waste? N/A

Is surface water from potential contaminated sites treated? N/A

Equipment Rinse Water

1. Is firefighting equipment washed? Where does the rinse water go?

At the Chesterfield County Fire Station, nozzle testing occurs in the backyard. Most likely would flow to Reedy Creek

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles?

see answer above. They do nozzle testing on a weekly basis.

3. Other?

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker YES

Construction Worker YES

Recreational User YES, Cosby Lake is used for recreational fishing

Residential YES (potential off-facility user of Cosby Lake for recreation)

Child YES (potential off-facility user of Cosby Lake for recreation)

Ecological YES (eco receptors in wetland or Cosby Lake, Reedy Creek)

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

aviation industry tenants of Chesterfield ~~County~~ County Airport

Documentation

Ask for Engineering drawings (if applicable).

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

changes would be documented in updated SWPPP; none known


Appendix C

Photographic Log



Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Chesterfield AASF	North Chesterfield, Virginia
<p>Photograph No. 1</p> <p>Date 2/4/2019 Time 14:29</p> <p>Description: AFFF response trailer stored at the off-facility Chesterfield County Fire and EMS Fire Station Number 15</p> <p>Orientation: Southeast</p>		
<p>Photograph No. 2</p> <p>Date 2/4/2019 Time 14:29</p> <p>Description: AFFF response trailer stored at the off-facility Chesterfield County Fire and EMS Fire Station Number 15</p> <p>Orientation: Southeast</p>		

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Chesterfield AASF	North Chesterfield, Virginia
<p>Photograph No. 3</p> <p>Date 2/4/2019 Time 14:29</p> <p>Description: Ansulte 3% AFFF stored at the off-facility Chesterfield County Fire and EMS Fire Station Number 15</p> <p>Orientation: Southeast</p>	 <p>A photograph showing a stack of white plastic drums. The drums are labeled 'Ansulte 3%' in red and black text. A sign on the side of the drums reads 'EMPTY RINSED'. The drums are stacked in a way that shows multiple units. The background is slightly out of focus, showing some outdoor equipment.</p>	
<p>Photograph No. 4</p> <p>Date 2/4/2019 Time 14:33</p> <p>Description: Parking lot and field adjacent to Chesterfield County Fire and EMS Fire Station Number 15 where maintenance activities resulted in the release of AFFF</p> <p>Orientation: Northeast</p>	 <p>A wide-angle photograph of a parking lot and a grassy field. The parking lot is paved and has a few white lines. The field is dry and brown. In the background, there is a dense line of trees, mostly evergreens, under a clear blue sky. A small white vehicle is visible in the distance near the trees.</p>	

Appendix C - Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Chesterfield AASF	North Chesterfield, Virginia
<p>Photograph No. 5</p> <p>Date 2/4/2019 Time 14:35</p> <p>Description: Parking lot and field adjacent to Chesterfield County Fire and EMS Fire Station Number 15 where maintenance activities resulted in the release of AFFF</p> <p>Orientation: North</p>		
<p>Photograph No. 6</p> <p>Date 2/4/2019 Time 14:49</p> <p>Description: Tri-Max 30 AFFF mobile fire extinguisher stored outside VAARNG hangar 7431</p> <p>Orientation: Northeast</p>		

Appendix C - Photographic Log

**Army National Guard, Preliminary
Assessment for PFAS**

Chesterfield AASF

North Chesterfield, Virginia

Photograph No. 7

Date 2/4/2019

Time 14:54

Description:

VAARNG hangar 7417
ceiling; no fire suppression
system present

Orientation:

West

