# FINAL
# Preliminary Assessment Report
# Rapid City Army Aviation Support Facility, South Dakota

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

August 2020

Prepared for:

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

UNCLASSIFIED

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# Acronyms and Abbreviations

| | |
|---|---|
| AASF | Army Aviation Support Facility |
| AECOM | AECOM Technical Services, Inc. |
| AFB | Air Force Base |
| AFFF | aqueous film forming foam |
| AOI | Area of Interest |
| ARNG | Army National Guard |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| EDR™ | Environmental Data Resources, Inc.™ |
| DLA | Defense Logistics Agency |
| °F | degrees Fahrenheit |
| FTA | fire training area |
| PA | Preliminary Assessment |
| PFAS | per- and poly-fluoroalkyl substances |
| PFOA | perfluorooctanoic acid |
| PFOS | perfluorooctanesulfonic acid |
| SDARNG | South Dakota Army National Guard |
| SI | Site Inspection |
| US | United States |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| UST | underground storage tank |

# 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 South Dakota Army Aviation Support Facility (AASF; also referred to as the "facility") in Rapid City, South Dakota, to assess potential PFAS release areas and exposure pathways to receptors. The AASF is constructed on approximately 33.7 acres of land owned by the City of Rapid City and has been leased to the State of South Dakota Department of Military and Veterans Affairs since 1957 for a term of 99 years.

The performance of this PA included the following tasks:

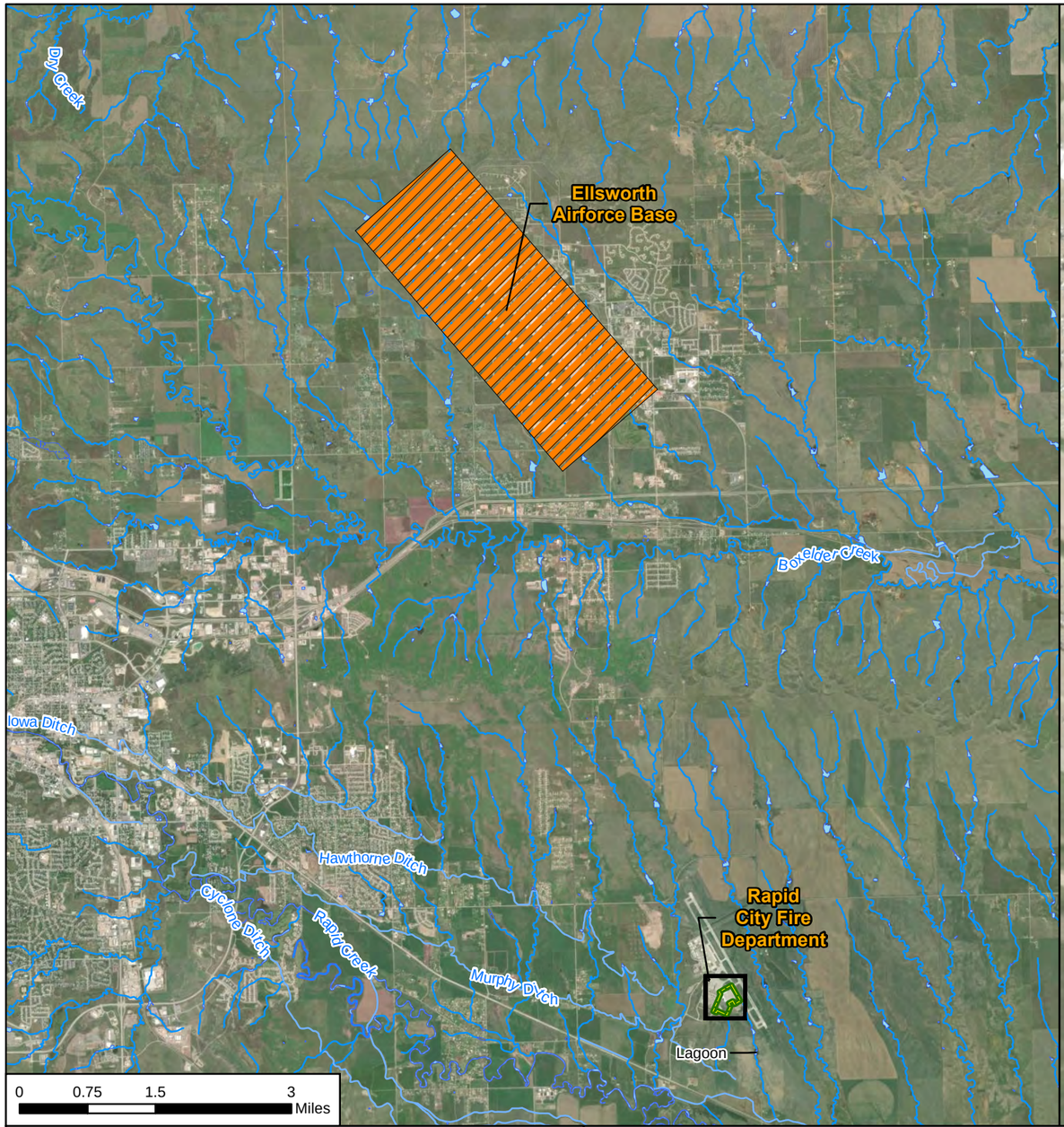
- Reviewed available administrative record documents and Environmental Data Resources, Inc. (EDR)™ report packages to obtain information relevant to potential PFAS releases, such as: drinking water well locations, historical aerial photographs, Sanborn maps, and environmental compliance actions in the area surrounding the facility;
- Conducted a site visit 10 September 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current and retired SDARNG personnel, SDARNG environmental managers, and operations staff;
- Completed visual site inspections at known or suspected potential PFAS release locations and documented with photographs;

One Area of Interest (AOI) related to potential PFAS releases was identified at the AASF during the PA. The AOI is shown on **Figure ES-1** and described **Table ES-1** below:

**Table ES-1: AOI at Rapid City Army Aviation Support Facility**

| Area of Interest | Name | Used by | Potential Release Date |
|---|---|---|---|
| AOI 1 | Overflow Area | SDARNG | 1999 |

Based on potential PFAS releases at AOI 1, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for AOI 1, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the US Environmental Protection Agency (USEPA) Unregulated Contaminant Monitoring Rule 3 (UCMR3) data, it was indicated that no PFAS were detected in a public water system above the USEPA lifetime Health Advisory 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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| REVISED | 7/7/2020 | GIS BY | MS | 7/7/2020 |
| SCALE | 1:95,040 | CHK BY | JW | 7/7/2020 |
| Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community | | PM | RG | 7/7/2020 |

Area of Interest
Potential PFAS Release
No Suspected Release
Facility Boundary
Water Body
Wetland
River/Stream
Canal/Ditch

N

## Summary of Findings

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**Figure ES-1**

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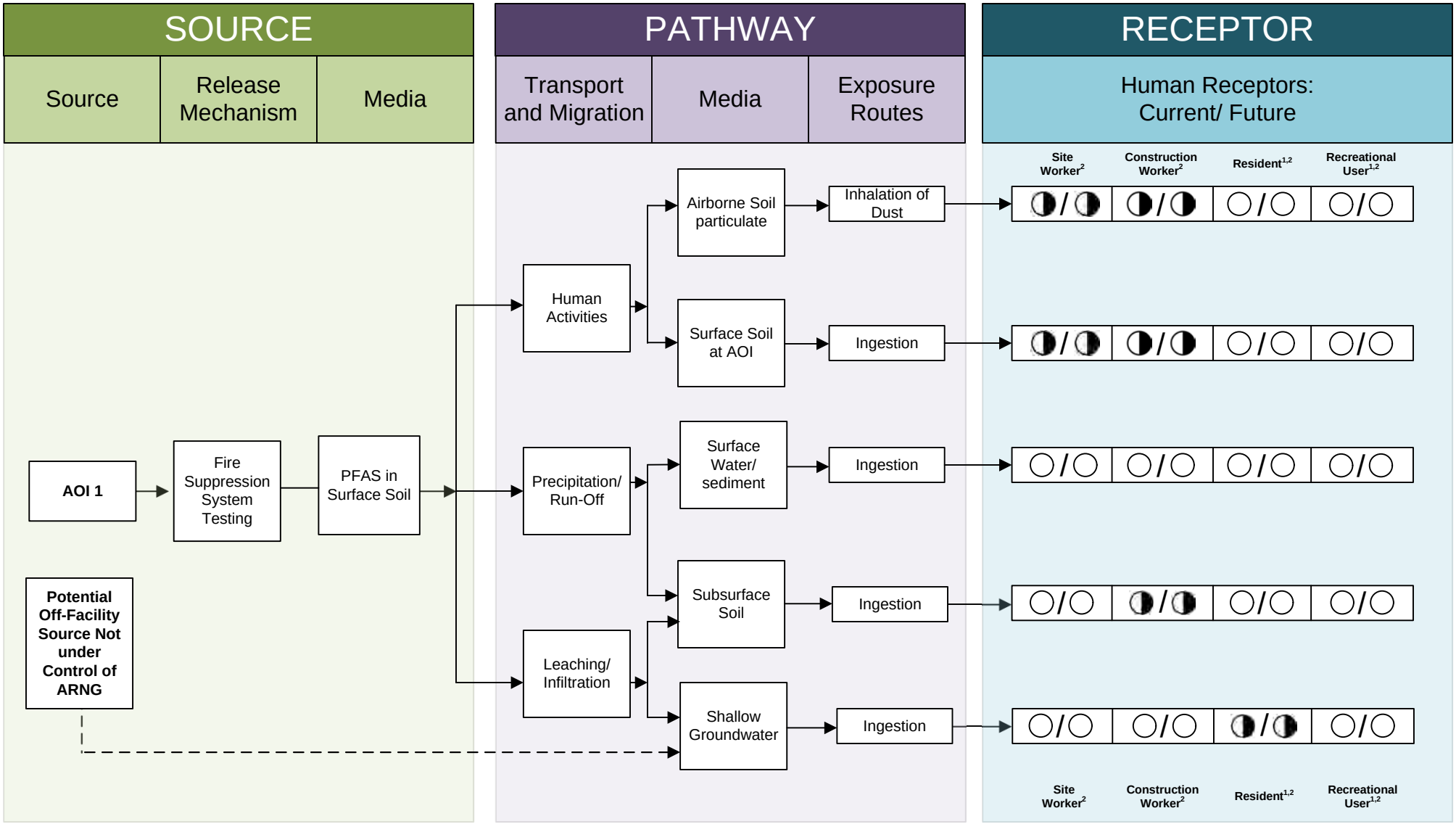



**LEGEND**

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

Notes:
1. The resident and recreational user receptors refer to an off-facility resident and off-facility recreational user, respectively.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure ES-2
Preliminary Conceptual Site Model
Rapid City AASF, South Dakota

# 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 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 the South Dakota Army Aviation Support Facility (AASF; also referred to as the “facility”) in Rapid City, South Dakota, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300), and Army requirements and guidance.

This PA documents potential locations where PFAS containing materials are stored and have the potential to be released into the environment at or adjacent to the 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)™ 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 10 September 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current and retired South Dakota ARNG (SDARNG) personnel, SDARNG environmental managers, and operations staff;

- Completed a visual site inspection at known or suspected potential PFAS release locations and documented with photographs;

## 1.3 Report Organization

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

- **Section 1** – **Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA
- **Section 2** – **Fire Training Areas:** describes the fire training areas (FTAs) at the facility identified during the site visit
- **Section 3** – **Non-Fire Training Areas:** describes other locations of potential PFAS releases at the facility identified during the site visit
- **Section 4** – **Emergency Response Areas:** describes areas of potential 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 Areas of Interest (AOIs) and the facility
- **Section 7** –**Conclusions:** summarizes the data findings and presents the conclusions of the PA
- **Section 8** – **References:** provides the references used to develop this document
- **Appendix A** – Data Resources
- **Appendix B** – Preliminary Assessment Documentation
- **Appendix C** – Photographic Log

## 1.4 Facility Location and Description

The AASF is in Pennington County, approximately 10 miles southeast of Rapid City, South Dakota and approximately 8 miles south of Ellsworth Air Force Base (AFB) (**Figure 1-1**). The AASF is adjacent to Rapid City Regional Airport. The facility is accessible from FAA Road from the north and Guard Road from the south.

The AASF is constructed on approximately 38 acres of land owned by the City of Rapid City and has been leased to the State of South Dakota Department of Military and Veterans Affairs since 1957 for a term of 99 years (**Appendix A**). AASF includes several hangars, storage buildings, and administrative offices.

## 1.5 Facility Environmental Setting

The AASF lies within the Black Hills region, which is characterized as an isolated eroded mountain region; ancient rock removal by stream erosion produces this mountain setting. From a distance, the rounded hilltops, well-forested slopes, and deep valleys present a dark appearance, giving them their name. Rapid Creek is the main stream channel near the facility.

### 1.5.1 Geology

The AASF lies within the eastern side of the Black Hills on an elliptically shaped dome created by the tectonic movement during the Laramide Orogeny. During the movement, the tectonic plates uplifted crystalline rocks along with exposing the overlying Mesozoic and Paleozoic rock. Beneath the complex lays Precambrian-age crystalline basement rocks that are overlain by Cambrian through Lower Cretaceous deposits of dolomite, limestone, and sandstone. Within the Upper Cretaceous lies deposits of aged marine shales intertwined with beds of limestone and sandstone. This aged marine shale has a range from the surface of the AASF down to 1,000 feet below the surface. This shale is known as Pierre Shale and forms the bedrock of the complex.

Pierre Shale located on the complex can be found as a light gray to dark gray, fragmented, organic-rich shale. The material is also noncalcic and can be easily changed by weathering, which will result in a color change into an orange or brown material. Within the shale, bentonite beds can be found, and ironstone layers consist of roughly 1 foot thick. On the weathered parts of the Pierre Shale selenite crystals and ironstone nodules can be found. Pierre Shale can be found up to depths of 40 feet, but at places of weathering, the depths will be shorter (Aerostar, 2019).

### 1.5.2 Hydrogeology

The AASF is in the Black Hills area, which is an important recharge area for aquifers within the northern Great Plains. The AASF is within the Williston Basin, which flows into the Madison and Minnelusa aquifers. These aquifers are a part of the Paleozoic group, which occurs in areas that have high altitude and in uplifts like the Laramide Orogeny in the Black Hills. The Madison aquifer, also known as the Mississippian aquifer, has a siltstone, sandstone, limestone, and dolomite base. The water found in this location is typically in outcrop areas and flows to the recharge areas to the northeast. The discharge location occurs as a result of upward leakage to the lower Cretaceous aquifer located in central South Dakota. The Minnelusa aquifer has a limestone and sandstone base, and the aquifer moves from areas of recharge to the northeast much like the Madison aquifer does. A portion of the water will discharge upward by leakage into the lower Cretaceous aquifer. Sandstone composes the lower Cretaceous aquifer and is confined by shale except in areas where uplift can be found. Over one-half of the water found in these areas is moderately saline and can be described as briny in many parts. The salination of this water occurs from upward leakage of mineralized water from the Paleozoic aquifers (US Geological Survey, 2002).

No potable water wells are located within the boundary of the AASF; however, monitoring wells, and numerous domestic and stock wells are located within 1 to 2 miles of the facility (**Figure 1-2**). Depth to groundwater near the facility is approximately 20 feet below ground surface. Drinking water for the AASF is supplied by the Rapid City Water Division, which uses the Jackson Springs Gallery and the Girl Scouts Gallery as infiltration galleries along the Rapid Creek alluvium. Water is also drawn from the Minnelusa and Madison aquifers through eight wells. Surface water collects in the Rapid Creek, which collects water from the Deerfield and Pactola Reservoirs. This surface water supplies water for treatment to the Mountain View and Jackson Springs treatment plants then used for municipal use (Rapid City Water Division, 2018).

Based on the USEPA Unregulated Contaminant Monitoring Rule 3 data, it was indicated that no PFAS were detected in a public water system above the USEPA Health Advisory level within 20 miles of the facility. PFAS analyses performed in 2016 had method detection limits that were higher than currently achievable. Thus, it is possible that low concentrations of PFAS were not detected during the UCMR3 but might be detected if analyzed today.

### 1.5.3 Hydrology

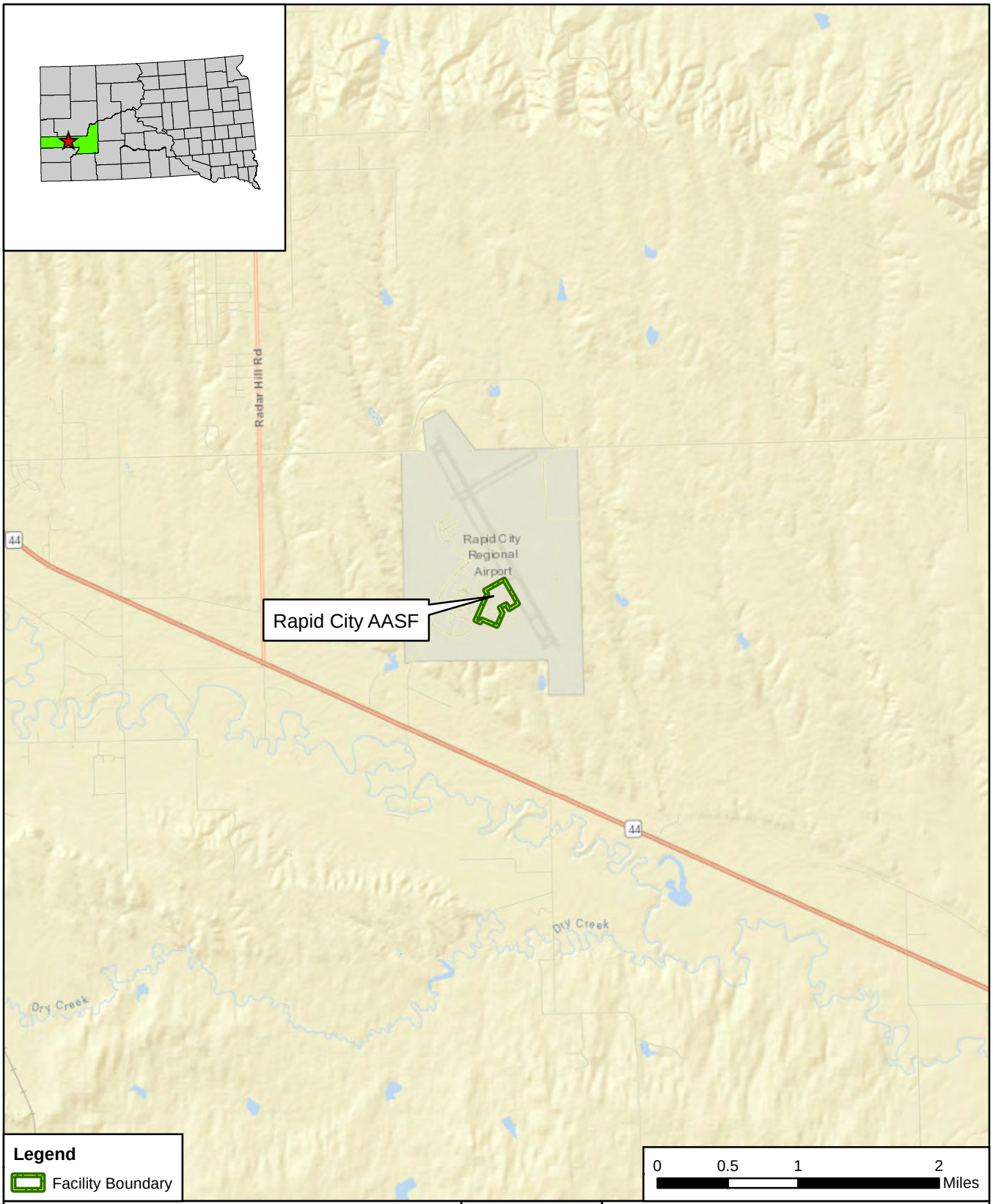
An Environmental Data Resources, Inc. (EDR)™ report conducted a well search for a 1-mile radius surrounding the facility (**Appendix A**). Using additional online resources, such as state and local GIS databases, wells were researched to a 4-mile radius of the facility. The AASF has a streamflow that is influenced depending on the climate at the time and the geologic conditions. The base flow in Rapid City comes from the higher altitudes surrounding the city and occurs from events of high precipitation. Many of the surrounding streams have headwater springs that originate from the Paleozoic carbonate rocks. These streams generally flow eastward over the Precambrian rocks of the crystalline core and typically lose flow as the Paleozoic rock dissipates out of the Black Hills (US Geological Survey, 2002). Surface water at the facility flows south to southeast to unnamed tributaries of Rapid Creek (**Figure 1-3**).

### 1.5.4 Climate

The climate at the AASF consists of four clearly separated seasons, with warm and clear summers and dry, freezing, cloudy, windy winters. Temperatures vary from average highs of 59.1 degrees Fahrenheit (°F) to average lows of 33.5 °F. The average annual temperature is 46.3 °F. Average precipitation is 18.32 inches of rain (World Climate, 2019).

### 1.5.5 Current and Future Land Use

The AASF is a controlled access facility with public roads and is adjacent to Rapid City Municipal Airport. The facility consists of an administration building and office areas. Exterior features are vehicle parking areas and roads. Infrastructure improvements, land acquisitions, land use controls, and reasonably anticipated future land use is not expected to change from the current land use.

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| NOTES | Preliminary Assessment for PFAS at Rapid City AASF, SD | | | |
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| SCALE | 1:63,360 | CHK BY | JW | 2/19/2020 |
| Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, | | PM | RG | 2/19/2020 |

**Facility Location**

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**Figure 1-1**

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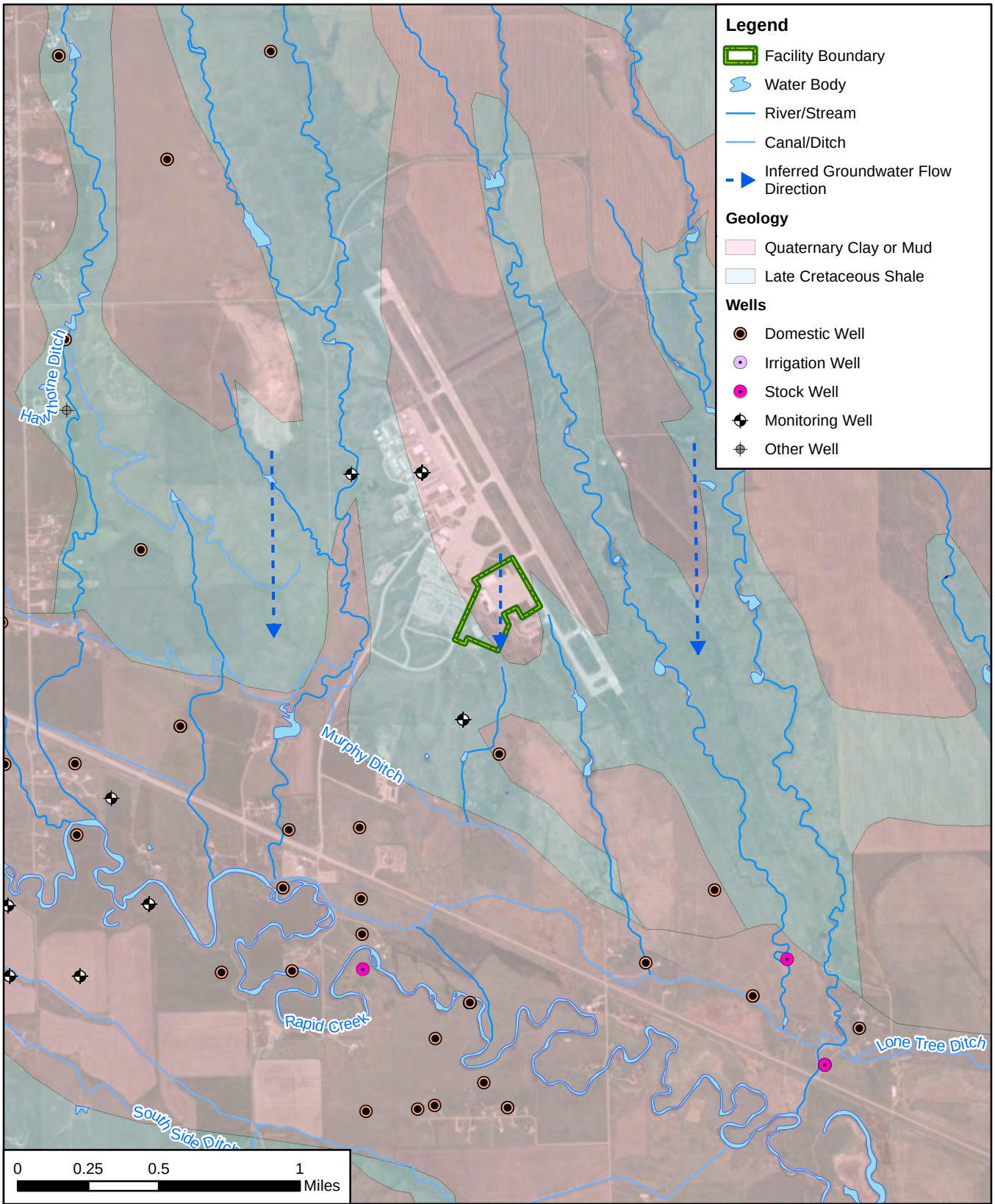


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# Groundwater Features

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**Figure 1-2**

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| SCALE | 1:18,000 | CHK BY | JW | 2/19/2020 |
| Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, | | PM | RG | 2/19/2020 |

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# Surface Water Features

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**Figure 1-3**

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# 2. Fire Training Areas

No FTAs were identified within the facility during the PA through interviews or document review. Fire training exercises for the SDARNG were conducted at Ellsworth AFB.

# 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**. Three non-FTAs were identified within the AASF facility during the PA through interviews or document review. A description of the non-FTAs is presented below and shown on **Figure 3-1**. Interview records and photographs are included in **Appendix B** and **Appendix C**, respectively.

## 3.1 Main Hangar

The Main Hangar was constructed in 1999 by the SDARNG. The geographic coordinates of the hangar are 44°2'13.20"N; 103°3'29.23"W. The hangar fire suppression system consists of two 1,100-gallon tanks filled with 3 percent AFFF concentrate. The AFFF tanks that supply the fire suppression system are housed in a separate room, adjacent to the hangar. When the fire suppression system is engaged, an automatic switch is activated that routes the AFFF foam/water mixture from the trench drains to a 3,000-gallon concrete bypass underground storage tank (UST). When the fire suppression system is not engaged, liquid in the trench drains is routed to an oil/water separator, which discharges to a lagoon on the south side of the runway. The bypass UST is located on the southwest side of the hangar.

The fire suppression system was installed and initially tested in December of 1999 by a contractor. A firehose was connected to the test header port just inside the hangar, and a foam/water mixture was allowed to flow through the firehose to a large plastic container where the mixture was analyzed. During this test, the large plastic container over-flowed and the foam/water mixture spilled onto the concrete. The contractor addressed the spill immediately; however, a small amount of the mixture flowed into the grassy area south of the Main Hangar. The plastic container held approximately 500 gallons of the foam/water mixture, which was taken off site for disposal by the contactor.

Since 2002, the fire suppression system has been tested annually, to ensure the fire suppression system is functional. The contractor uses a hose to bypass the hangar and empties approximately 500-gallons of the AFFF foam/water mixture directly into the bypass UST. When the bypass UST becomes full, a contractor removes the AFFF foam/water mixture. The AFFF foam/water mixture is applied to the Municipal Solid Waste Compost at the Rapid City Landfill to prevent fires. Based on records, approximately 1,500 gallons of the AFFF foam/water mixture was disposed five times, with the first occurring on January 6, 2006. The remaining disposals occurred at approximate three-year intervals. In 2019, the AFFF foam/water mixture was disposed of through a Defense Logistics Agency (DLA) contract. The AFFF foam/water mixture is no longer taken to the Rapid City Landfill. There are no reported leaks or releases from bypass the UST since installation; however, the bypass UST does not have a leak detection system.

There are six mobile Halon fire extinguishers that have been located on the aircraft ramp since 1987. Prior to 2005, non-AFFF fire extinguishers were used on the flight line and ramp areas.

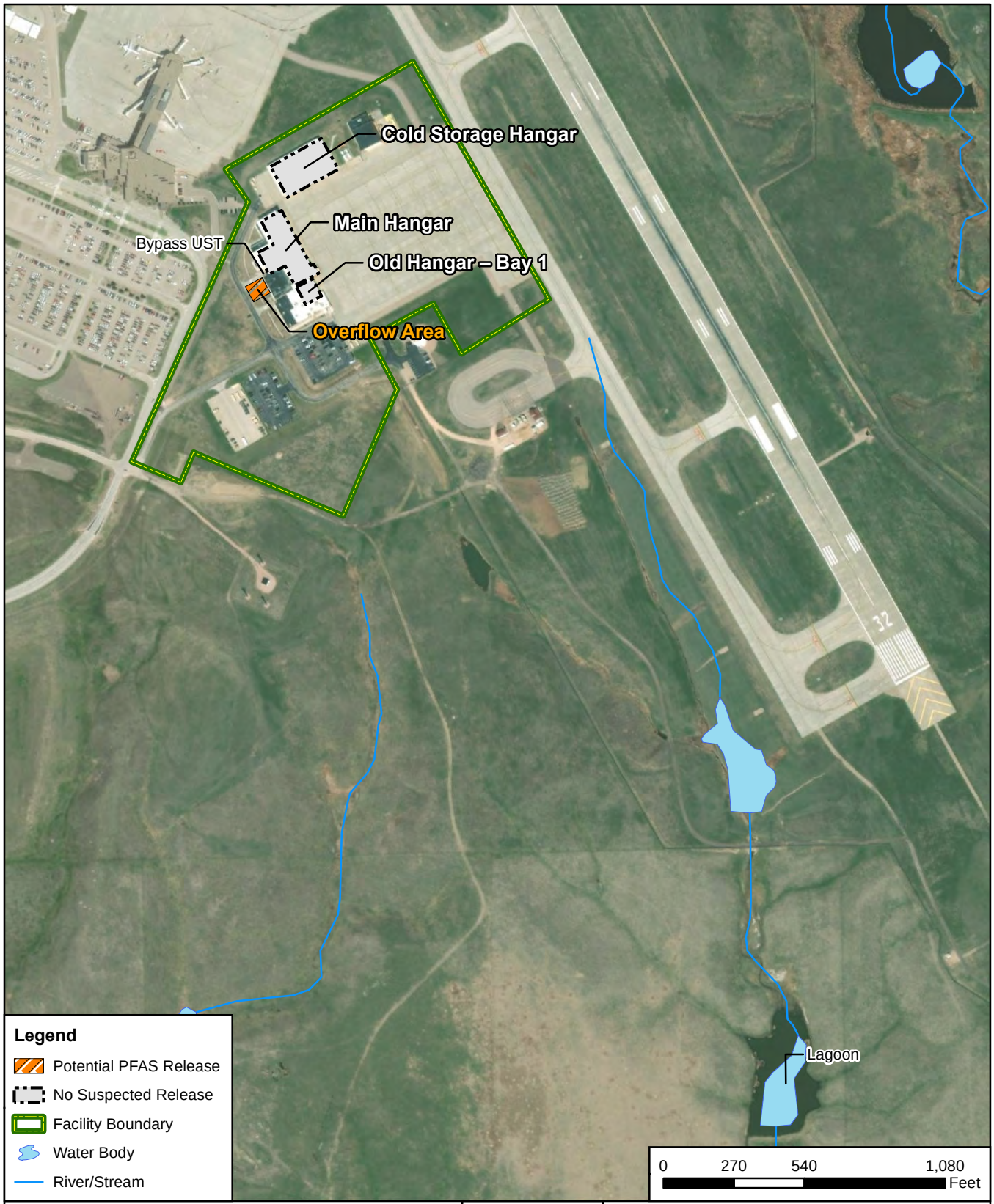
In Spring of 2016, a portion of the concrete and grassy areas southwest of the Main Hangar were excavated to make the drainage ditch deeper to allow for better storm water drainage. According to personnel, some of the soil that was removed from the area was used as fill soil, when the new Readiness Center at the facility began construction in 2019.

## 3.2 Old Hangar – Bay 1

There was no fire suppression system in the Old Hangar – Bay 1, which is adjacent to the armory building. The geographic coordinates of the Old Hangar – Bay 1 are 44° 2'13.07"N; 103° 3'29.33"W.

## 3.3 Cold Storage Hangar

There was no fire suppression system in the Cold Storage Hangar. The geographic coordinates of the cold storage hangar are 44° 2'17.84"N; 103° 3'29.26"W. Additional Halon fire extinguishers are stored in the Cold Storage Hangar when not in use on the flight line.

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# Non-Fire Training Areas

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**Figure 3-1**

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# 4. Emergency Response Areas

No emergency response areas were identified within AASF during the PA through interviews or document review. Rapid City Fire Department provides fire emergency services for the AASF.

# 5. Adjacent Sources

Three off-site PFAS sources adjacent to the AASF were identified during the PA through interviews and document review (**Appendix A** and **Appendix B**). **Figure 5-1** presents the location of potential AASF adjacent source areas.

## 5.1 Rapid City Fire Department

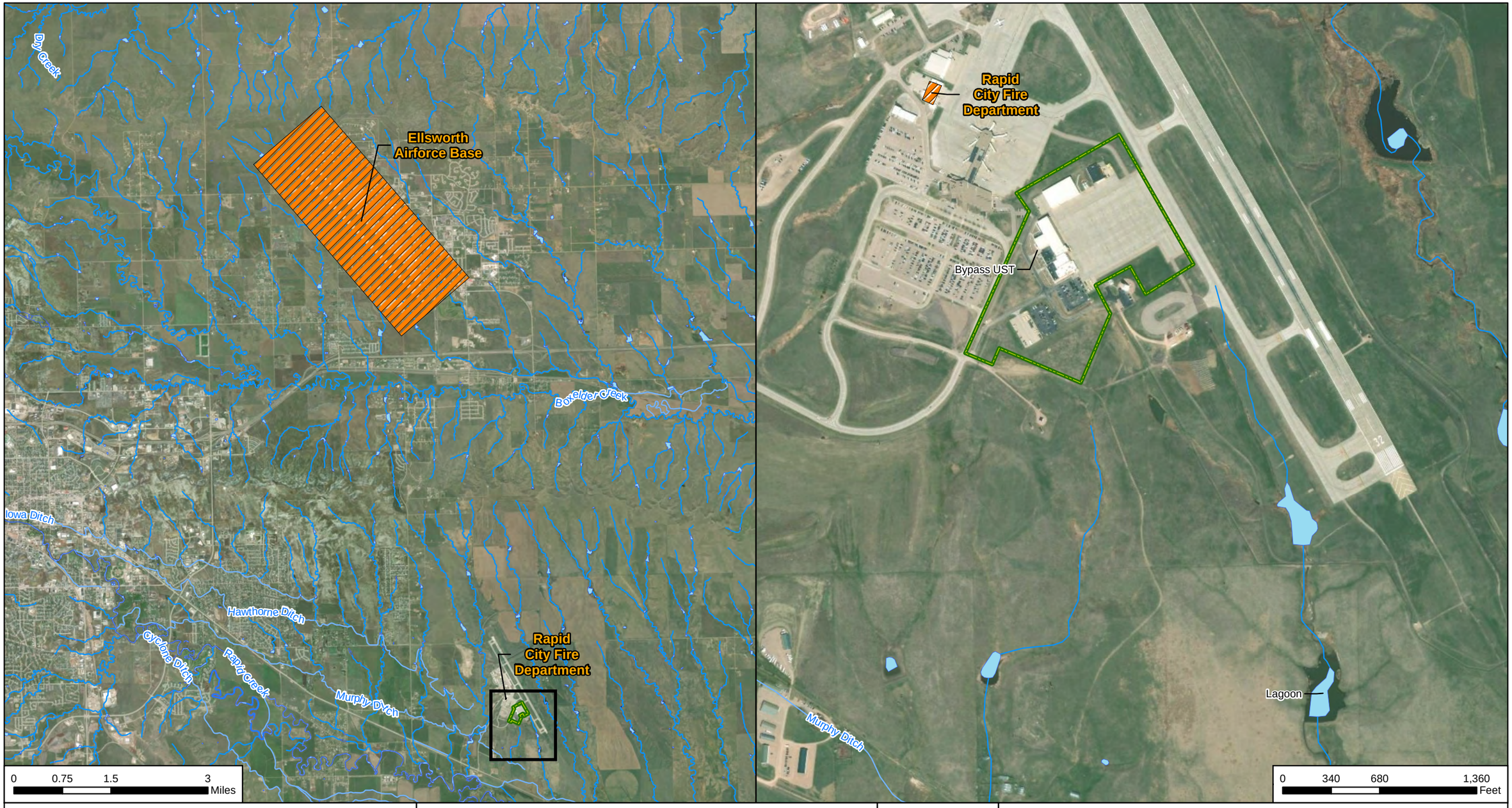
The Rapid City Fire Department provides emergency response for the AASF. This department is an active fire station containing emergency response vehicles and equipment. The Rapid City Fire Department is located north and upgradient of AASF, and it is unknown if AFFF is used during emergency response actions or training.

## 5.2 Ellsworth AFB

Ellsworth AFB is approximately eight miles north of the AASF. In 2018, a Site Inspection was completed at Ellsworth AFB and twelve areas of concern were identified for potential PFAS contamination. The medium impacted by PFAS at Ellsworth AFB included surface soil, groundwater, surface water, and sediment. The results of the SI indicated PFOA and PFOS concentrations above the USEPA HAs in groundwater for nine of twelve areas investigated. Additionally, PFOA and PFOS were also detected in surface water and surface soil at four of twelve areas investigated.

## 5.3 Landfills

Landfills are not usually a primary release area of PFAS; however, interviewees indicated that the AFFF foam/water mixture from the bypass UST generated during fire suppression system testing was solely applied to Municipal Solid Waste Compost at the Rapid City Landfill by a contractor. The application of the AFFF foam/water mixture was intended to prevent compost fires. Based on records, approximately 1,500 gallons of the AFFF foam/water mixture was disposed five times, with the first occurring on January 6, 2006. The remaining disposals occurred at approximate three-year intervals. In 2019, the AFFF foam/water mixture was disposed of through a DLA contract and incinerated. The Rapid City Landfill is approximately 7 miles to the west of the AASF.

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- Potential PFAS Release
- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch

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# Adjacent Sources

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**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 to the ground surface: AOI 1 Overflow Area. As such, this area is determined to be an AOI and may be a potential PFAS source area. The AOI location is shown in **Figure 6-1**.

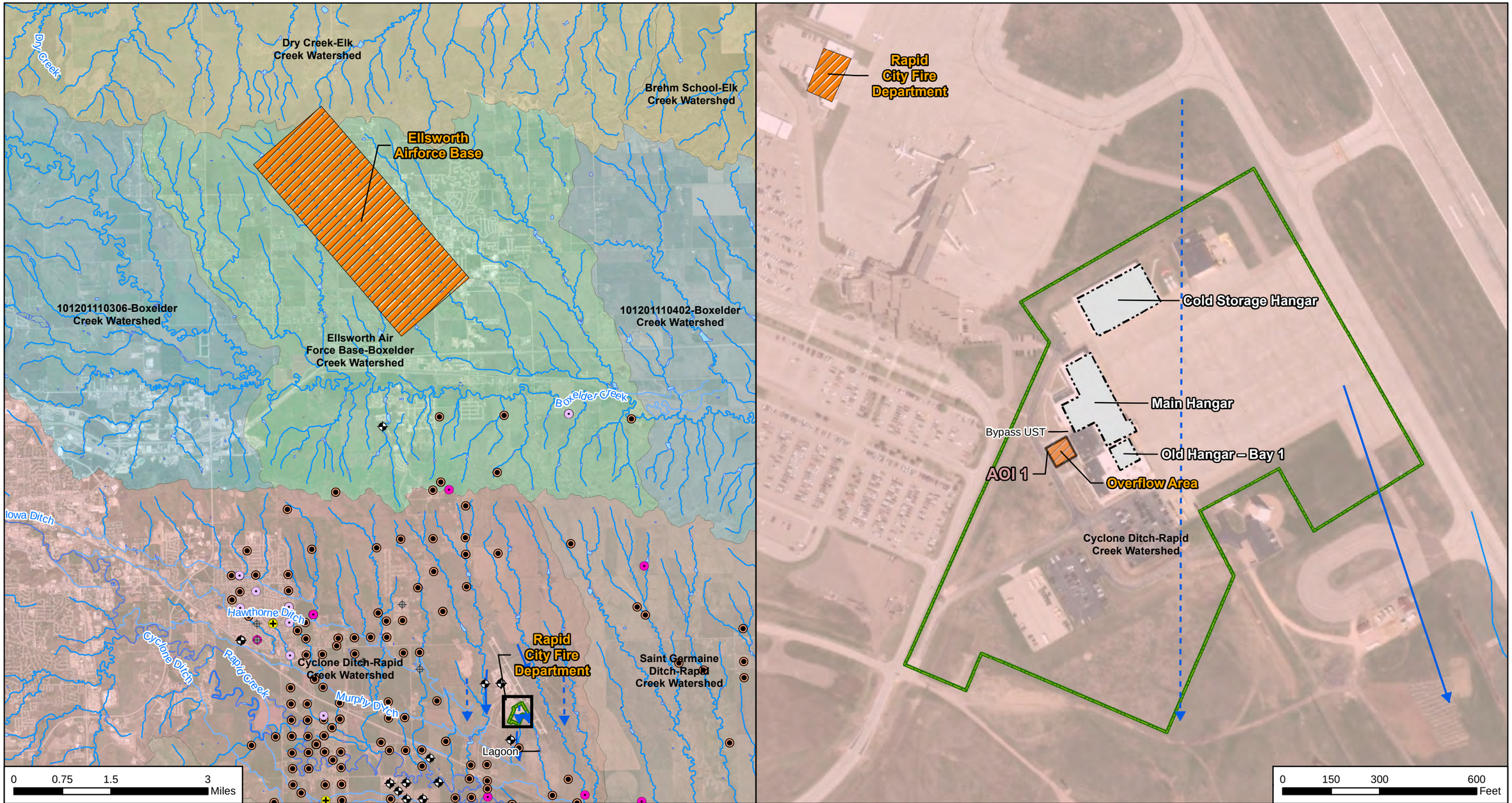
The following section describes the CSM components and the specific preliminary CSM developed for AOI 1. The CSM identifies the three components necessary for a potentially complete exposure pathway: (1) source, (2) pathway, (3) receptor. If any of these elements are missing, the pathway is considered incomplete. The preliminary CSM for AOI 1 is shown in **Figure 6-2**.

## 6.1 AOI 1 Overflow Area

During the first fire suppression system test in December of 1999, a large plastic container over-flowed spilling foam/water onto the concrete and a small amount of the mixture flowed into the grassy area south of the Main Hangar.

AFFF releases at AOI 1 occurred on concrete and grassy surfaces. Ground-disturbing activities to surface soil at AOI 1 could result in site worker and construction worker exposure to potential PFAS contamination; therefore, the exposure pathways for inhalation of soil particles and ingestion of soil are potentially complete for these receptors. PFAS releases to surface soil at AOI 1 may have infiltrated subsurface soil; therefore, the exposure pathways for ingestion of soil is potentially complete for construction workers.

Additionally, there are several domestic wells located downgradient within 4-miles of the AASF; therefore, the ingestion exposure pathway for groundwater is considered potentially complete for off-facility residents. No surface water features flow through AOI 1; therefore, surface water and sediment exposure pathways are incomplete. The preliminary CSM for AOI 1 is shown on **Figure 6-2**.

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| PROJECT | Preliminary Assessment for PFAS at Rapid City AASF, SD | | | |
| REVISED | 7/7/2020 | GIS BY | MS | 7/7/2020 |
| SCALE | 1:95,040 | CHK BY | JW | 7/7/2020 |
| Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community | | PM | RG | 7/7/2020 |

- Area of Interest
- Potential PFAS Release
- No Suspected Release
- Facility Boundary
- Water Body
- Wetland
- River/Stream
- Canal/Ditch
- Surface Water Flow Direction
- Inferred Groundwater Flow Direction
- Domestic Well
- Irrigation Well
- Stock Well
- Municipal Well
- Monitoring Well
- Other Well

N

# Area of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 6-1**

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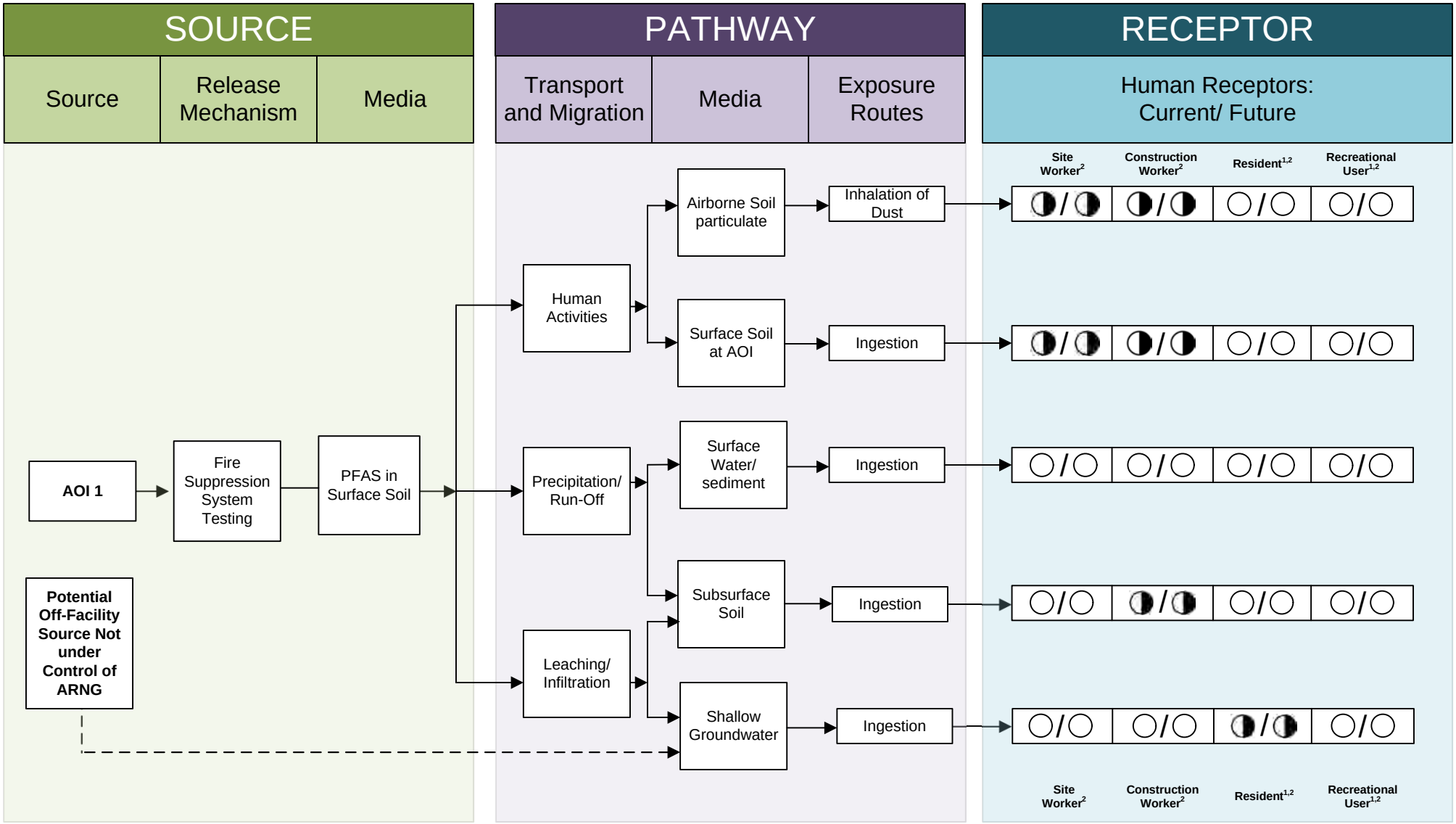



**LEGEND**

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

Notes:
1. The resident and recreational user receptors refer to an off-facility resident and off-facility recreational user, respectively.
2. Dermal contact exposure pathway is incomplete for PFAS.

Figure 6-2
Preliminary Conceptual Site Model
AOI 1 Overflow 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 the AASF. The PA findings are based on the information presented in **Appendix A** and **Appendix B**.

## 7.1 Findings

One AOI related to a potential PFAS release was identified (**Table 7-1**) at the AASF during the PA (**Figure 7-1**).

**Table 7-1: AOI at Rapid City Army Aviation Support Facility**

| Area of Interest | Name | Used by | Potential Release Dates |
|---|---|---|---|
| AOI 1 | Overflow Area | SDARNG | 1999 |

Based on potential PFAS releases at AOI 1, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for AOI 1 is shown on **Figure 6-2**, which presents the potential receptors and media impacted. One off-facility source located approximately 8 miles north of the AASF was identified as a potential PFAS source during the PA (**Figure 7-1**). The US Air Force is currently completing investigations at Ellsworth AFB. Groundwater surrounding the AASF is inferred to flow to the south toward Rapid Creek.

The following areas, which were discussed in **Section 3**, were determined to have no suspected PFAS releases (**Table 7-2**).

**Table 7-2: No Suspected Release Areas**

| No Suspected Release Area | Used by | Rationale for No Suspected Release Determination |
|---|---|---|
| Old Hangar – Bay 1 | SDARNG | The hangar has never had a fire suppression system, or AFFF fire extinguishers. |
| Cold Storage Hangar | SDARNG | The hangar has never had a fire suppression system, or AFFF fire extinguishers. |
| Main Hangar | SDARNG | During annual fire suppression system testing this hose is directly connected to the bypass UST and no AFFF has been dispensed into the Main Hangar. |

## 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 or conflicted with other sources. Gathered information has a degree of uncertainty due

to the absence of written documentation, the limited number of personnel with direct knowledge due to staffing changes, the time passed since PFAS 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, retired and current personnel were interviewed, multiple persons were interviewed for the same potential source area, and potential source areas were visually inspected. **Table 7-3** summarizes the uncertainties associated with the PA.

**Table 7-3: Uncertainties**

| Area of Interest | Source of Uncertainty |
|---|---|
| AASF | Potential off-facility PFAS release areas exist adjacent to the AASF. Because these areas include property upgradient of the facility, it is unknown whether or not the off-facility sources affect the AASF. |
| AOI 1 | The integrity of the bypass UST is unknown. |
| AOI 1 | The foam/water mixture generated from the initial fire suppression system test was disposed of by the contractor. It is unknown where the contractor disposed of the mixture. |

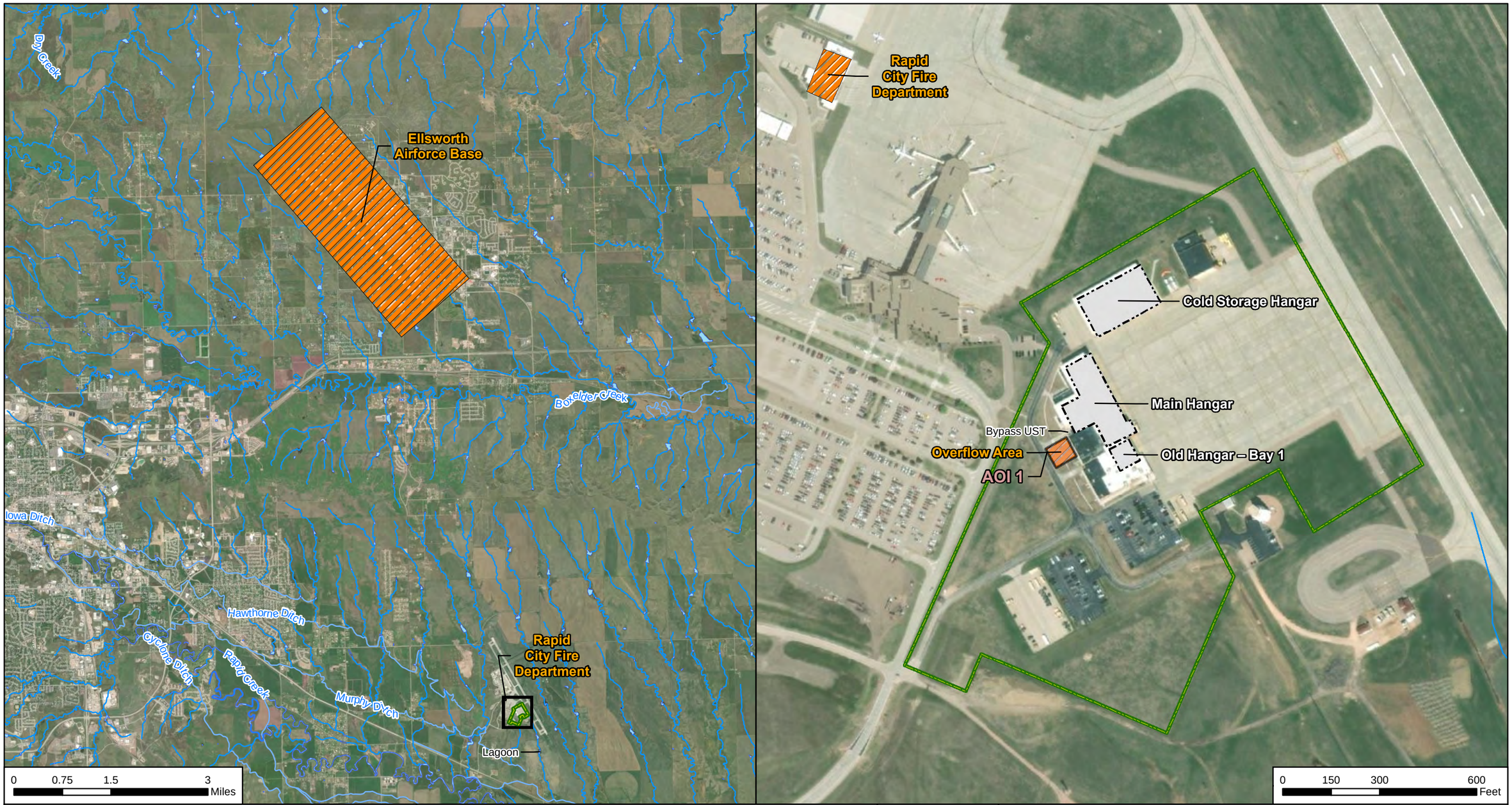
## 7.3 Potential Future Actions

Interviews and records (covering 1982 to present) indicate that ARNG activities may have resulted in a potential PFAS release at the one 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 media at or near the facility. **Table 7-4** summarizes the rationale used to determine if the AOI should be considered for further investigation under the CERCLA process and undergo an SI.

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

**Table 7-4: PA Findings Summary**

| Area of Interest | AOI Location | Rationale | Potential Future Action |
|---|---|---|---|
| AOI 1 Overflow Area | 44° 2'13.33"N; 103° 3'31.44"W | One-time fire suppression system test that resulted in a small amount of AFFF overflowing onto the concrete and grassy area to the south of the Main Hangar. | Proceed to SI, focus on soil and groundwater. |




| | | | | |
|---|---|---|---|---|
| CLIENT | ARNG | | | |
| PROJECT | Preliminary Assessment for PFAS at Rapid City AASF, SD | | | |
| REVISED | 7/7/2020 | GIS BY | MS | 7/7/2020 |
| SCALE | 1:95,040 | CHK BY | JW | 7/7/2020 |
| Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community | | PM | RG | 7/7/2020 |

Area of Interest
Potential PFAS Release
No Suspected Release
Facility Boundary
Water Body
Wetland
River/Stream
Canal/Ditch

N

## Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

**Figure 7-1**

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# 8. References

Aerostar SES LLC (Aerostar). 2019. *Final Site Inspections Report of Aqueous Film Forming Form Areas at Ellsworth Air Force Base, Meade and Pennington Counties, South Dakota.* November.

Rapid City Water Division. 2018. *Annual Water Quality Report.* November.

United States Environmental Protection Agency (USEPA). 1991. *Guidance for Performing Preliminary Assessments under CERCLA.* September.

United States Geological Survey. 2002. *Hydrology of the Black Hills Area, South Dakota.* November.

World Climate. 2019. Available at http://www.worldclimate.com/climate/us/south-dakota/rapid-city (Accessed November 12, 2019).

# Appendix A
# Data Resources

Data Resources will be provided separately on CD. Data Resources for Rapid City AASF.

## Rapid City AASF Leases, Licenses, and Permits

- 2001 Lease Information

## Rapid City AASF Documentation

- 2015 Final Preliminary Assessment Report For Perfluorinated Compounds at Ellsworth Air Force Base South Dakota
- 2019 Final Site Inspection Report of Aqueous Film Forming Foam Areas at Ellsworth Air Force Base Meade and Pennington Counties, South Dakota

## EDR Report

- 2019 Rapid City AASF EDR™ Report

# Appendix B
# Preliminary Assessment Documentation

# Appendix B.1
# Interview Records

# Preliminary Assessment Interview Questionnaire

**Date of Interview:** 19 Dec. 2017

**Installation Name:** Army Aviation Support Facility

**Interviewer**

Name:

Affiliation:

**Interviewee**

Name of interviewee: [redacted]

Current affiliation: Building Maintenance Worker

Role or activity with the installation (or other entity Years working with installation (or other entity):

Assist in performing testing and maintenance on all facility equipment and systems.

March 2005 - Present

How would you like to be contacted for any follow up questions?

Telephone number: [redacted]

Email: [redacted]

May we use your full name in the PA report? (Yes) No (circle one)

If not, you will be identified by your role. Yes No (circle one)

What entity/organization performs the Environmental Performance Assessment System audits?

Unknown

Where can I find previous installation ownership information?

Unknown

# Preliminary Assessment Interview Questionnaire

**AFFF Use**

What can you tell us about the history of aqueous film forming foam (AFFF) at the installation? Was it used for any of the following activities, circle all that applies? Identify these locations on an installation map.

Maintenance

Fire Training

Firefighting (Active Fire)

Crash

Pest Management

Non-Technical/Recreational

(Fire Suppression System) Annual System testing, discharge product is captured in a holding tank.

Metals Plating Facility

Waterproofing Uniforms

Laundry Facilities (on post)

Other

Is AFFF, being used at the installation? Identify all possible locations.

Foam Suppression System - Aircraft Maintenance Bays and associated allied shops.

What type of AFFF has been/is being used (3%, 6%)? Manufacturer (3M, Dupont, Ansul)?

3%, Chemguard Part # C303

During what timeframe was AFFF used at each location?

System was installed, tested and put into service November 1999. Still presently in use and fully operational.

What was the frequency of use at each location?

Annual Testing usually performed in the May to July timeframe.

## Preliminary Assessment Interview Questionnaire

Did AFFF come in tanks? Above ground storage/ below ground storage? Is there a tank inventory and/or specifications on the tanks (tank type, size of tanks, double-walled)?

The AFFF product came in 55 gallon drums that were pumped into two 1100 gallon bladder style tanks. Tanks were manufactured May 1999. Chemguard Tank, Model: CHBT1100, Capacity: 1100 gallons,

Did/do the AFF tank lots expire? What was/is done with expiring AFFF (discharged on the ground surface, sent to Defense Logistics Agency or local recipient, used in training event for the purpose of expending)? * See Attached Data Sheet

The Chemguard 3% AFFF Foam Concentrate has an expected shelf life of 20-25 years.

* This information is from Data Sheet # D100301B, Rev: 09/2005

If AFFF was discharged/used at the installation, can the area be located on a map?

Yes

Is there someone to talk to about materials ordered for the installation?

Yes, [redacted]

Are you aware of supply/inventory records?

I have some older records on site. However, they aren't well detailed.

Are any building constructed with AFFF dispensing systems? How often are these systems tested?

The main facility has the foam suppression system and is tested annually.

Who responds to fire emergencies now for the installation? Was it always this way? If not how was it managed prior to ARNG taking over operations of the installation?

Rapid City Fire Department responds to all fire alarms / emergencies.

Are there specific crash incidents with incident reports? If so, may we please copy these reports? Who (entity) was the responder?

There aren't any crash incidents that I am aware of.

## Preliminary Assessment Interview Questionnaire

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

I spoke with an on-site Instructor Pilot. Per his experience, AFFF has not been used for forest fires since the late 1980s.

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?

Yes, with the State Forest Service.

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 photos to share with us?

State Forest Service personnel attend annual training at the Army Aviation Facility each May. Purpose of training is to better understand each agency's role in controlling forest fires.

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

Yes, during the annual training with the State Forest Service. Training is normally conducted near Angantura Reservoir by Hot Springs S.D.

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

AFFF was not used during these training exercises

Are you aware of any other creative uses of AFFF? If so, where and who was involved?

None that I am aware of.

# Preliminary Assessment Interview Questionnaire

Are there past studies you are aware of with environmental information on plants/animals/groundwater/soil types, etc. Such as Integrated Cultural Resources Management Plans or Integrated Natural Resources Management Plans?

None I'm aware of

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

None I'm aware of

If there is an active airfield, what is the contact information for the flight line officer?

We are located at the Rapid City Regional Airport

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

# Preliminary Assessment Interview Questionnaire

**Date of Interview:** Dec 17, 2017

**Installation Name:** SD Nat Guard Army Aviation Support Facility

**Interviewer**

Name:

Affiliation:

**Interviewee**

Name of interviewee: [redacted]

Current affiliation: Retired

Role or activity with the installation (or other entity Years working with installation (or other entity):

Fire Marshal, From 1982-2010

How would you like to be contacted for any follow up questions?

Telephone number: [redacted]

Email:

May we use your full name in the PA report? (Yes) No (circle one)

If not, you will be identified by your role. Yes No (circle one)

What entity/organization performs the Environmental Performance Assessment System audits?

?

Where can I find previous installation ownership information?

UNKNOWN

# Preliminary Assessment Interview Questionnaire

**AFFF Use**

What can you tell us about the history of aqueous film forming foam (AFFF) at the installation? Was it used for any of the following activities, circle all that applies? Identify these locations on an installation map.

Maintenance

Fire Training

(Firefighting (Active Fire)) through out Black Hills, from helicopters 2000-2010

Crash

Pest Management

Non-Technical/Recreational

(Fire Suppression System) ANNUAL testing, captured in tank, taken to Landfill

Metals Plating Facility

Waterproofing Uniforms

Laundry Facilities (on post)

Other

Is AFFF, being used at the installation? Identify all possible locations.

ONLY USED IN SUPPRESSION SYS

What type of AFFF has been/is being used (3%, 6%)? Manufacturer (3M, Dupont, Ansul)?

3%, MANUFACTURER UNKNOWN

During what timeframe was AFFF used at each location?

INSTALLED WITH NEW BUILDING ADDITION, STILL IN USE TODAY.

What was the frequency of use at each location?

IT WAS ONLY USED DURING ANNUAL TESTING ANY TRAINING WAS WITH WATER ONLY

# Preliminary Assessment Interview Questionnaire

Did AFFF come in tanks? Above ground storage/ below ground storage? Is there a tank inventory and/or specifications on the tanks (tank type, size of tanks, double-walled)?

AFFF came in 55 gal drums when the system was put into service.

Did/do the AFFF tank lots expire? What was/is done with expiring AFFF (discharged on the ground surface, sent to Defense Logistics Agency or local recipient, used in training event for the purpose of expending)?

UNKWOWN

If AFFF was discharged/used at the installation, can the area be located on a map?

All AFFF was contained in capture tank and removed by contractor

Is there someone to talk to about materials ordered for the installation?

Supply Dept AASF

Are you aware of supply/inventory records?

NO

Are any building constructed with AFFF dispensing systems? How often are these systems tested?

Just the main building, annually

Who responds to fire emergencies now for the installation? Was it always this way? If not how was it managed prior to ARNG taking over operations of the installation?

the Rapid City Fire Dept handles all Fire response.

Are there specific crash incidents with incident reports? If so, may we please copy these reports? Who (entity) was the responder?

NO incidents occured during my time at the AASF

# Preliminary Assessment Interview Questionnaire

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

For several years we used AFFF on fires. State forestry would have records when + where it was used.

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?

yes. Rapid city Fire Dept.

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 photos to share with us?

NO training was conducted at the ARSF. All training was conducted at EAFB.

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

See Above

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

Are you aware of any other creative uses of AFFF? If so, where and who was involved?

NO

# Preliminary Assessment Interview Questionnaire

Are there past studies you are aware of with environmental information on plants/animals/groundwater/soil types, etc. Such as Integrated Cultural Resources Management Plans or Integrated Natural Resources Management Plans?

NO

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

UNKNOWN

If there is an active airfield, what is the contact information for the flight line officer?

UNKNOWN

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

[redacted]

**PA Interview Questionnaire - Other**

**Facility: Rapid City AASF**
**Interviewer:** [redacted]
**Date/Time: 9/10/19 at 1000**

| | |
|---|---|
| **Interviewee:** [redacted]<br>**Title: Fire Emergency Services Manager**<br>**Phone Number:** [redacted]<br>**Email:** | Can your name/role be used in the PA Report? **Y** or N<br>Can you recommend anyone we can interview?<br>Y or **N** _____ |

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

Fire Emergency Services Manager- 2 years at the facility

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

- No record of sanctioned fire training events
- No municipal crashes or airport crashes
- No emergency response to airport or AASF

| **Known Uses** |
|---|
| Use |
| Procurement |
| Disposition |
| Storage (Mixed) |
| Storage (Solution) |
| Inventory, Off-Spec |
| Containment |
| SOP on Filling |
| Leaking Vehicles |
| Nozzle and Suppression System Testing |
| Dining Facilities |
| Vehicle Washing |
| Ramp Washing |
| Fuel Spill Washing and Fueling Stations |
| Chrome Plating or Waterproofing |

**PA Interview Questionnaire - Other**

**Facility: Rapid City AASF**
**Interviewer:** [redacted]
**Date/Time: 4/13/2020 at 1000**

| | |
|---|---|
| **Interviewee:** [redacted]<br>**Title:**<br>**Phone Number:** [redacted]<br>**Email:** | Can your name/role be used in the PA Report? Y or N<br>Can you recommend anyone we can interview?<br>Y or **N** _____ |

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

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

- First Fire Suppression System Testing:
  - During the first fire suppression system test in December of 1999, a contractor connected a firehose to the test header port just inside the hangar, and foam/water was allowed to flow through the firehose to a large plastic container where the foam mixture was analyzed. During this test, the large plastic container over-flowed spilling foam/water onto the concrete and a small amount of AFFF traveled to the grass area outside the hangar. The majority of the AFFF that over-flowed was swept up by the contractor and the approximate 500 gallons of AFFF were taken off site for disposal.

| **Known Uses** |
|---|
| Use |
| Procurement |
| Disposition |
| Storage (Mixed) |
| Storage (Solution) |
| Inventory, Off-Spec |
| Containment |
| SOP on Filling |
| Leaking Vehicles |
| Nozzle and Suppression System Testing |
| Dining Facilities |
| Vehicle Washing |
| Ramp Washing |
| Fuel Spill Washing and Fueling Stations |
| Chrome Plating or Waterproofing |

**PA Interview Questionnaire - Other**

**Facility: Rapid City AASF**
**Interviewer:** [redacted]
**Date/Time: 9/10/19 at 10:00**

| | |
|---|---|
| **Interviewee:** [redacted]<br>**Title: Maintenance**<br>**Phone Number:** [redacted]<br>**Email:** [redacted] | Can your name/role be used in the PA Report? **Y** or N<br>Can you recommend anyone we can interview?<br>Y or **N** _____ |

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

Maintenance, 16 years at the facility

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

- New Hangar
  - Fire suppression system installed in 1999
  - Equipped with two, 1,100-gallon 3% AFFF tanks
  - Bypass tank: when the fire alarm is activated, an automatic switch causes the trench drains in the hangar to go to a holding tank to capture the AFFF foam/water mixture. The bypass tank holds 3000-gallons and is underground, on the southwest side of the hangar. The pathway of all the drains is to the oil/water separator, then to a lagoon on the south side of the airstrip. The tank is made of concrete and there are no reports of any leaking.
  - When the tank is full, they pump contents into a truck and it is sprayed on an unknown landfill to help prevent any landfill fires
- Fire Suppression Testing (New Hangar)
  - October 28th, 1999: the fire suppression system was engaged and flowed with foam. The AFFF foam/water mixture went down the trench drains and into the bypass UST.
  - August 2002: annual maintenance to present
    - Conducted via contractor where testing occurs directly from the suppression system (bypassing sprinklers) and empties approximately 500-gallons and directly dispenses into the bypass underground tank via hose.
- Mobile Fire extinguishers have been 6 Halon extinguishers since 1987. Information on fire extinguishers prior to then is unknown.
- Old hangar (armory) does not have a fire suppression system
- No bulk AFFF has been stored at the AASF, they wait to order AFFF concentrate until they can fill it up with the entire amount ordered.

| **Known Uses** |
|---|
| Use |
| Procurement |
| Disposition |
| Storage (Mixed) |
| Storage (Solution) |
| Inventory, Off-Spec |
| Containment |
| SOP on Filling |
| Leaking Vehicles |
| Nozzle and Suppression System Testing |
| Dining Facilities |
| Vehicle Washing |
| Ramp Washing |
| Fuel Spill Washing and Fueling Stations |
| Chrome Plating or Waterproofing |

| | |
|---|---|
| • All surface water and groundwater flow towards the lagoon south of the runway | |

# Appendix B.2
# Visual Site Inspection Checklists

# Visual Site Inspection Checklist

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

**Recorded by:** [redacted]

**ARNG Contact:** [redacted]

**Date and Time:** 9/10/2019 10am

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

## *Source/Release Information*

**Site Name / Area Name / Unique ID:** Rapid City AASF

**Site / Area Acreage:** approximately 39 acres

**Historic Site Use (Brief Description):** The original portion (11.48 acres) of the 38.88 acre property was acquired in 1957, and the hanger was built in 1959. In 1999, a new AASF shop facility was constructed. The facility consists of a storage hangar, repair hangar, shops, and a two story office area. Exterior features are vehicle parking areas, roads, aircraft parking and taxiways.

**Current Site Use (Brief Description):** The AASF supports the South Dakota Army National Guard (SDARNG).

**Physical barriers or access restrictions:** Access to the area is restricted to SDARNG.

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):
Hangar fire suppression system dispensed foam in 1999, 2002-present roughly 500-gallon test release annually. The first release of the environemnt through the pumping of the bypass tank was January, 6th, 2006.

2. Has usage been documented? **Y** / N

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

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

3a. Indicate what businesses are located near the site
Rapid City Municipal Airport, and residental are adjacent.

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

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

# Visual Site Inspection Checklist

**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:

The fire suppression systems have 3% AFFF tanks.

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

Hangar fire suppression system dispensed foam in 1999, 2002-present roughly 500-gallon test release annually.

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

The fire suppression systems have two 1,100 gallon tanks with 3% AFFF.

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

The floor drains lead to an oil/water separator then to a lagoon on the south side of the airstrip. Yes, there are as-builts for the fire suppression system.

## *Transport / Pathway Information*

**Migration Potential:**

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

1a. If so, note observation and location:

Surface water flows to the south to the Rapid Creek which travels east to the Cheyenne River.

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

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

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

3a. If so, please note the location:

There are 26 domestic wells and 8 monitoring wells are located within 2 miles of the site.

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

4a. If so, please note the location:

Murphy Ditch is located less than one mile south of the AASF and Rapid Creek is located two miles south of the facility.

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

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

N/A

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

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

Yes, Rapid City Fire Department and Ellsworth AFB are potential sources of PFAS ajacent to the AASF.

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

# Visual Site Inspection Checklist

**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):
In 1999 the new AASF hangars were built.

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

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

3. Does the site or area exhibit evidence of erosion? Y / **N**

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

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

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

## *Receptor Information*

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

1a. If so, please note to what extent:
The facility has controlled access

2. Who can access the site? **Site Workers / Construction Workers / Trespassers / Residential / Recreational Users / Ecological**

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

3. Are residential areas located near the site? **Y** / N

3a. If so, please note the location/distance:
Residents to the south and west

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

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

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

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

## Visual Site Inspection Checklist

*Additional Notes*

*Photographic Log*

| Photo ID/Name | Date & Location | Photograph Description |
|---|---|---|
| 1 | 9/10/19, located north of the hangar | The near manholes lead to the bypass tank while the far pair of manholes leads to the oil/water separator. |
| 2 | 9/10/19, located inside a room in the hangar | AFFF fire suppression system sprinkler system located in the hangar. |
| 3 | 9/10/19, located inside a room in the hangar | There are the two 1,100-gallon tanks that hold 3% AFFF concentrate that supplies the hangar. |
| 4 | 9/10/19, located inside a room in the hangar | Mobile Halon fire extinguisher used on the flight line. |
| 5 | 9/10/19, located inside a room in the hangar | Halon and dry chem ABC mobile fire extinguishers used on the flight line. |

# Appendix B.3
# Conceptual Site Model Information

# Preliminary Assessment – Conceptual Site Model Information

**Site Name: Rapid City Army Aviation Support Facility**

**Why has this location been identified as a site?**
*Facility is an aviation support site with an aircraft hangar, high probability of release due to asset type and historical site usage.*

**Are there any other activities nearby that could also impact this location?**
Yes, the potential adjacent sources include the Rapid City Fire Department at Rapid City Regional Airport and Ellsworth Air Force Base.

**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? *To the south towards the Rapid Creek*

Average rainfall? 18.32 *inches*

Any flooding during rainy season? *unknown*

Direct or indirect pathway to ditches? *Direct*

Direct or indirect pathway to larger bodies of water? *Indirect to Rapid Creek; Rapid Creek discharges to Cheyenne River.*

Does surface water pond any place on site? *No*

Any impoundment areas or retention ponds? No

Any NPDES location points near the site? *unknown*

How does surface water drain on and around the flight line? *Around the flight line, the surface water ultimately drains south to Rapid Creek.*

**Groundwater:**

Groundwater flow direction? *To the south towards Rapid Creek*

Depth to groundwater? *unknown*

Uses (agricultural, drinking water, irrigation)? *Not used.*

Any groundwater treatment systems? *No*

Any groundwater monitoring well locations near the site? *Yes*

Is groundwater used for drinking water? *Drinking water is supplied by the Rapid City Water Division,*

# Preliminary Assessment – Conceptual Site Model Information

*which receives water from groundwater sources.*

Are there drinking water supply wells on installation? *No*

Do they serve off-post populations? *No*

Are there off-post drinking water wells downgradient? *No potable water wells are located within the boundary of the AASF; however, wells exist within one mile of the facility.*

**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?
*No*

2. Are nozzles tested? How often are nozzles tested? Where are nozzles tested? Are nozzles cleaned after use? Where does the rinse water flow after cleaning nozzles?
*No*

3. Other?
*Firefighting services for the AASF are provided by the Rapid City Fire Department.*

**Identify Potential Receptors:**

Site Worker *Yes*

Construction Worker *Yes*

Recreational User N*o*

Residential *No*

Child *No*

Ecological *No*

Note what is located near by the site (e.g. daycare, schools, hospitals, churches, agricultural, livestock)?
*Residential area is within one mile of the facility.*

**Documentation**

Ask for Engineering drawings (if applicable). Has there been a reconstruction or changes to the drainage system? When did that occur? *The AASF has a drainage system, where surface water drains to Rapid Creek, then flows into the Cheyenne River.*

# Appendix C
# Photographic Log

# APPENDIX C – Photographic Log

| Army National Guard, Preliminary Assessment for PFAS | Rapid City AASF | South Dakota |
|---|---|---|

**Photograph No. 1**

**Description:**

The near manholes lead to the bypass tank while the far pair of manholes leads to the oil/water separator.

**Photograph No. 2**

**Description:**

AFFF fire suppression system sprinkler system located in the hangar.

# APPENDIX C – Photographic Log

| Army National Guard, Preliminary Assessment for PFAS | Rapid City AASF | South Dakota |
|---|---|---|

**Photograph No. 3**

**Description:**

These are the two 1,100-gallon tanks that hold 3% AFFF concentrate that supplies the hangar fire suppression system.

**Photograph No. 4**

**Description:**

Mobile Halon fire extinguisher used on the flight line.

# APPENDIX C – Photographic Log

| Army National Guard, Preliminary Assessment for PFAS | Rapid City AASF | South Dakota |
|---|---|---|

**Photograph No. 5**

**Description:**

Halon and dry chem ABC mobile fire extinguishers used on the flight line.