FINAL
Preliminary Assessment Report
Roswell Readiness Center
Roswell, New Mexico

Perfluorooctanesulfonic 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

Table of Contents

Figures

Tables

Appendices

Acronyms and Abbreviations

°F	degrees Fahrenheit
AECOM	AECOM Technical Services, Inc.
AFFF	aqueous film forming foam
AOI	Area of Interest
ARNG	Army National Guard
ASN	Aviation Safety Network
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSM	conceptual site model
DRMO	Defense Reutilization Marketing Office
EDR™	Environmental Data Resources, Inc.™
FMS	Field Maintenance Shop
FTA	fire training area
HA	Health Advisory
msl	mean sea level
NMARNG	New Mexico Army National Guard
NOAA	National Oceanic and Atmospheric Administration
NWR	National Wildlife Refuge
PA	Preliminary Assessment
PFAS	per- and poly-fluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
RC	Readiness Center
SI	Site Inspection
UCMR3	Unregulated Contaminant Monitoring Rule 3
US	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey

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 the Roswell Readiness Center (RC; also referred to as the "facility") in Roswell, New Mexico, to identify areas of known or suspected releases known as Areas of Interest (AOIs) and possible exposure pathways to receptors. The following tasks were performed as part of this PA :

- 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 1-day PA site visit on 02 October 2019 and completed visual site inspections at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current New Mexico ARNG (NMARNG) personnel during the site visit and NMARNG environmental managers and operations staff;
- Identified 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.

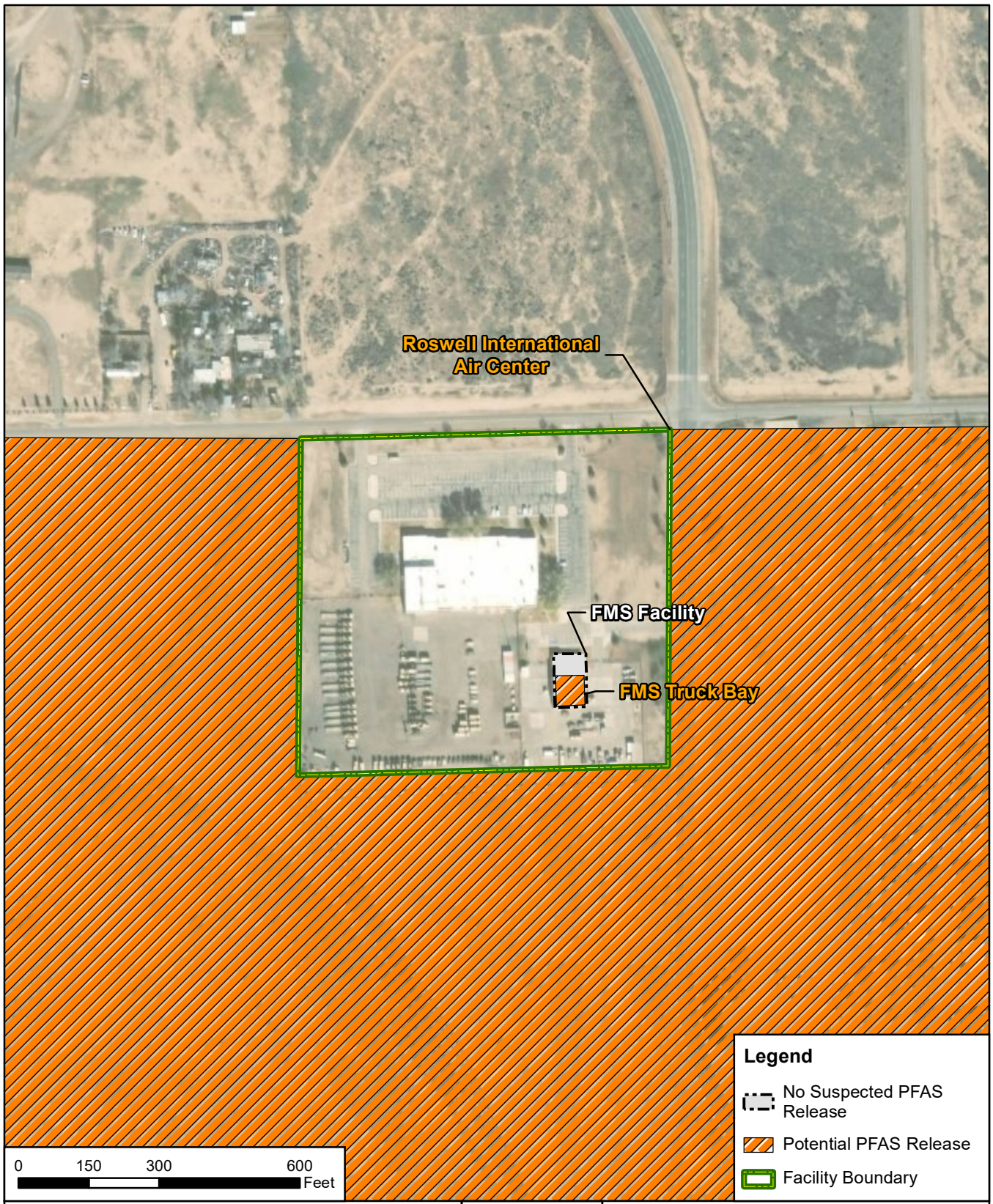
One AOI related to a potential PFAS release was identified at Roswell RC during the PA. The AOI is shown on **Figure ES-1** and described in **Table ES-1** below:

Table ES-1: AOIs at Roswell RC

Area of Interest	Name	Used by	Potential Release Date
AOI 1	FMS Truck Bay	NMARNG	Through 2016

One adjacent off-facility potential PFAS release area was identified that includes emergency response areas from two separate incidents in 2011 and 2019. As a result of possible adjacent PFAS releases, it is possible PFAS are in site media surrounding the RC.

Based on possible PFAS releases at the AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Roswell RC, which presents the potential receptors and media impacted, is shown on **Figure ES-2**. Based on the United States (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 (HA) within 20 miles of the facility. The HA is 70 parts per trillion for PFOA and PFOS, 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.

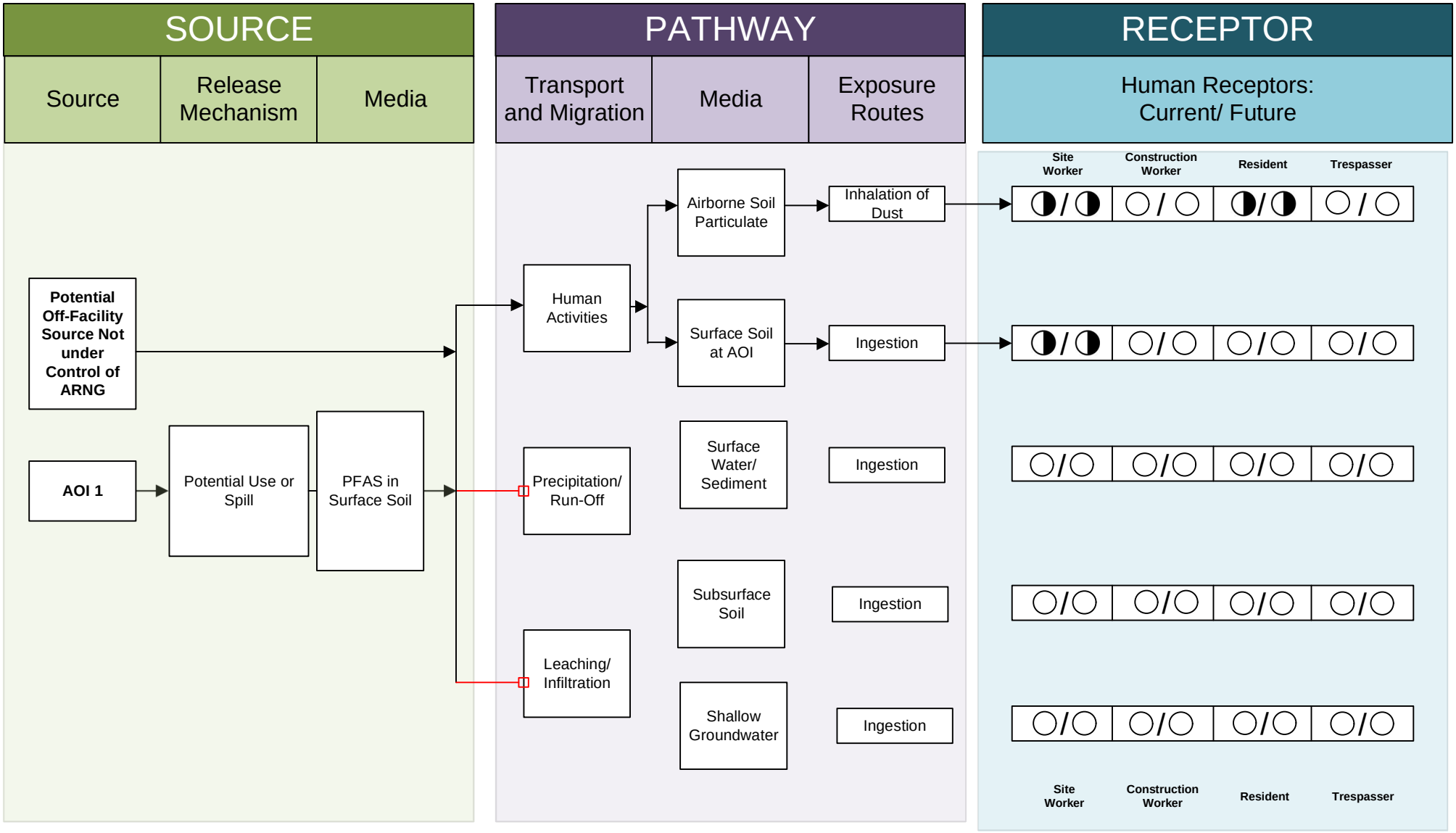


CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	5/12/2020	GIS BY	GC	5/12/2020
SCALE	1:3,600	CHK BY	MW	5/12/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/12/2020

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure ES-1



LEGEND

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

Notes:
1. The residential receptor refers to an off-facility receptor.
2. Human consumption of agricultural products potentially affected by PFAS is possible

Figure ES-2
Preliminary Conceptual Site Model
Roswell, New Mexico

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 suspected impacted facilities that used per- and poly-fluoroalkyl substances (PFAS). PFAS is most commonly used in aqueous film forming foam (AFFF) discharged as part of firefighting activities, fire training, and equipment testing or maintenance. Other sources of PFAS include, for example, metal plating and uniform weatherproofing. This PA also evaluates suspected PFAS sources with a 1-mile radius of the facility that are not under the control of ARNG.

PFAS are classified as emerging environmental contaminants that are garnering increasing regulatory interest due to their potential risks to human health and the environment. The US Environmental Protection Agency (USEPA) issued Drinking Water Lifetime Health Advisories (HAs) for PFOA and PFOS in May 2016, but there are currently no promulgated national standards regulating PFAS. The HA is 70 parts per trillion for PFOA and PFOS, individually or combined.

This document presents the findings of a PA for PFAS-containing materials at the Roswell Readiness Center (Roswell RC; also referred to as the "facility"), Roswell, New Mexico, 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) as well as other locations where PFAS may have been released into the environment at the RC. 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. If a known or suspected discharge of AFFF or other PFAS-containing material has occurred, that location is designated an Area of Interest (AOI). The process for conducting the PA is discussed in the next section.

1.2 Preliminary Assessment Methods

The following tasks were performed as part of this PA:

- 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 1-day PA site visit on 02 October 2019 and completed visual site inspections (VSIs) at locations where PFAS-containing materials were suspected of being stored, used, or disposed;
- Interviewed current New Mexico ARNG (NMARNG) personnel including environmental managers and operations staff during the site visit;

- Identified 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 as follows:

- **Section 1** – **Introduction:** identifies the project purpose and authority and describes the facility location, environmental setting, and methods used to complete the PA.
- **Section 2** – **Fire Training Areas:** describes the FTAs at the facility identified during the site visit.
- **Section 3** – **Non-Fire Training Areas:** describes other locations of 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

Roswell RC sits on 13.01 acres in Chaves County, southeastern New Mexico, along W Earl Cummings Blvd and approximately 5 miles south of the City of Roswell (**Figure 1-1**).

The facility is located on the northwest corner of the Roswell International Air Center and is leased to the NMARNG by the City of Roswell. The land for the facility was acquired in 1987, and the buildings were constructed in 1989. The facility features two buildings (an armory and a field maintenance shop [FMS] building), hazmat storage, and several parking areas.

1.5 Facility Environmental Setting

Roswell RC is located on the Mescalero Pediment, within the Lower Pecos Valley subsection of the Great Plains physiographic province. The elevation of the facility is approximately 3,600 feet above mean sea level (msl) and is generally flat with a gentle slope towards the east.

1.5.1 Geology

Roswell RC is located on the Mescalero Pediment of the lower Pecos River valley within the Roswell Basin, which comprises a 12,000-square-mile area in southeastern New Mexico. The facility is underlain by Permian age bedrock from the Artesia Group that dips eastward (**Figure 1-2**).

The Yates Formation and the underlying Seven Rivers Formation both outcrop at the facility and are associated with the Artesia Group (Land and Newton, 2008). The Yates Formation is composed of sandstone, siltstone, limestone, dolomite, and anhydrite (New Mexico Bureau of Geology and Mineral Resources, 2003). The underlying Seven Rivers Formation is composed primarily of white gypsum and orange to red mudstone, sandstone, siltstone, and shale (New Mexico State Highway Department, 1971). The Artesia Group also locally includes the Queen and Grayburg Formations, which underlie the Seven Rivers Formation. The Queen Formation consists of fine-grained sandstone and siltstone with interbedded gypsum, and the Grayburg Formation consists of dolomite and gypsum with interbedded sandstone and shale (US Geological Survey [USGS], 1995).

The San Andres Formation underlies the Artesia Group and consists of gray, massive- to thin-bedded, cavernous limestone and dolomite. While limestone and dolomite are the principal rock types, the San Andres Formation also contains the Glorieta Sandstone near the base of the formation. The depth of the San Andres Formation ranges from 300 to 1,300 feet along the eastern margin of the Roswell Basin (New Mexico State Highway Department, 1971; USGS, 1995).

Quaternary-aged alluvium associated with the Pecos River floodplain is located to the west of the facility. This alluvium consists of unconsolidated gravel, sand, silt, and clay deposits, which overlie the Permian-age bedrock. The thickness of this alluvium is generally 150 to 300 feet (USGS, 1995). To the east of the facility, Eolian/Piedmont alluvial deposits have been mapped. While these deposits are similar to those mapped west of the Pecos River floodplain, they also contain deposits of wind-blown sand and silt (New Mexico State Highway Department, 1971).

1.5.2 Hydrogeology

Roswell RC is located on the Roswell Basin aquifer system, which underlies a portion of the Pecos River and encompasses an area of approximately 2,200 square miles from north of Roswell to northwest of Carlsbad, New Mexico. This aquifer system consists of a shallow alluvial aquifer and the Roswell Artesian aquifer (USGS, 1995).

The Roswell Artesian aquifer is a leaky-confined carbonate aquifer with a saturated thickness of approximately 500 feet; it consists of water-bearing zones associated with the lower Grayburg Formation and upper to middle sections of the San Andres Formation. The generally low permeability of the Queen Formation and upper Grayburg Formation serves as an upper confining unit for the aquifer. The lower confining unit of the Roswell Artesian aquifer is formed by the lower, unaltered portion of the San Andres Formation, Glorieta Sandstone, and the Yeso Formation (USGS, 1995). The direction of groundwater flow across the basin is to the east, then upward through the leaky upper confining unit, and into the Pecos River (**Figure 1-2**).

Recharge to the Roswell Artesian aquifer is primarily through infiltration of precipitation, a majority of which occurs west of the City of Roswell, where the San Andres Formation outcrops. Additional recharge occurs through sinkholes via solution-enlarged pathways (Land and Newton, 2008). Principal discharge from the Roswell Artesian aquifer is by groundwater withdrawal, primarily for the purpose of irrigation. Although there is agricultural land use near the City of Roswell, agricultural activity and demand for water to irrigate crops are more intensive south of Roswell (Land and Newton, 2008). Natural discharge also occurs and is evidenced by the presence of karst springs, lakes, and wetlands in the Roswell Basin (USGS, 1995).

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. The City of Roswell currently sources its drinking water from groundwater drawn from the San Andres water basin through a network of more than 20 wells (City of Roswell 2014). The USEPA Unregulated Contaminant Monitoring Rule 3 (UCMR3) data indicate that PFOS/PFOA were not detected in a public water system above the USEPA HA within a 20-mile radius of the facility. The HA is 70 parts per trillion for PFOA and PFOS, 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.

1.5.3 Hydrology

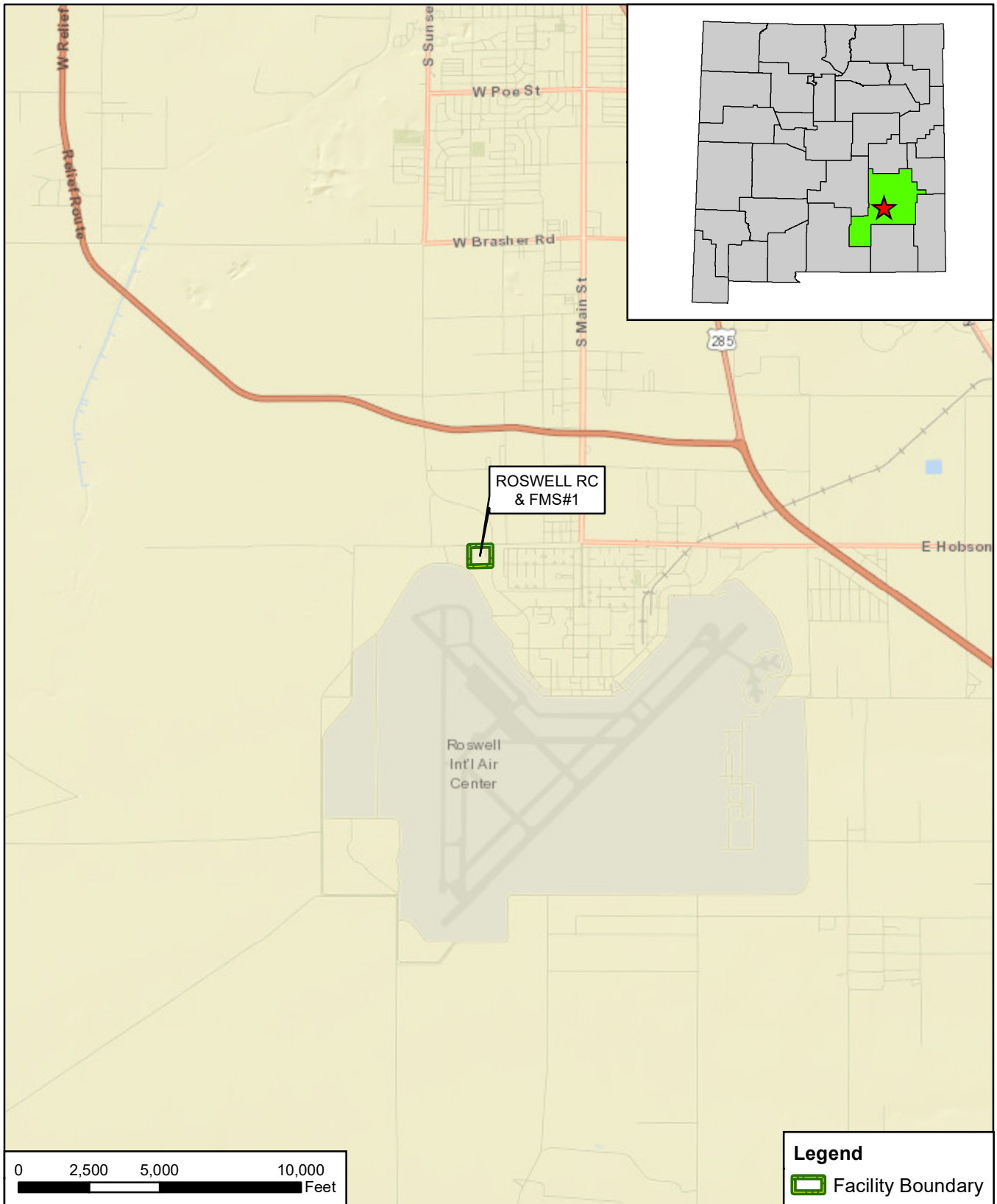
The Pecos River Basin drains an area of approximately 19,500 square miles within New Mexico. The Pecos River flows north to south through Chaves County. A portion of the Pecos River flows approximately 10 miles west of Roswell. The Pecos River has an average flow rate of 185 cubic feet per second (USGS, 1995). Wetlands east of the City of Roswell are associated with segments of the Pecos River and the Bottomless Lakes State Park. These wetlands are specifically classified as freshwater emergent wetlands, freshwater forested/shrub wetlands, and riverine zones (US Fish and Wildlife Service (USFWS), 2008). Water features near the facility are shown in **Figure 1-3**.

1.5.4 Climate

The climate of the Roswell area is temperate and semiarid. The average annual daily temperature ranges from 41 to 77 degrees Fahrenheit (°F). The average annual precipitation is approximately 15 inches, most of which occurs during the months of July and August, and the average annual snowfall is approximately 7.3 inches (National Oceanic and Atmospheric Administration [NOAA], 2019). Precipitation is exceeded by an annual evaporation rate of 89 inches, according to a measurement taken at the Bitter Lake National Wildlife Refuge (NWR) (NOAA, 2019).

1.5.5 Current and Future Land Use

Presently, the Roswell RC resides on land owned by the City of Roswell and is part of the Roswell International Air Center. The facility comprises one FMS building and an armory building used as administrative space. The current land use is listed as L-2 Heavy Industrial (**Appendix A**). Future land use is not anticipated to change.



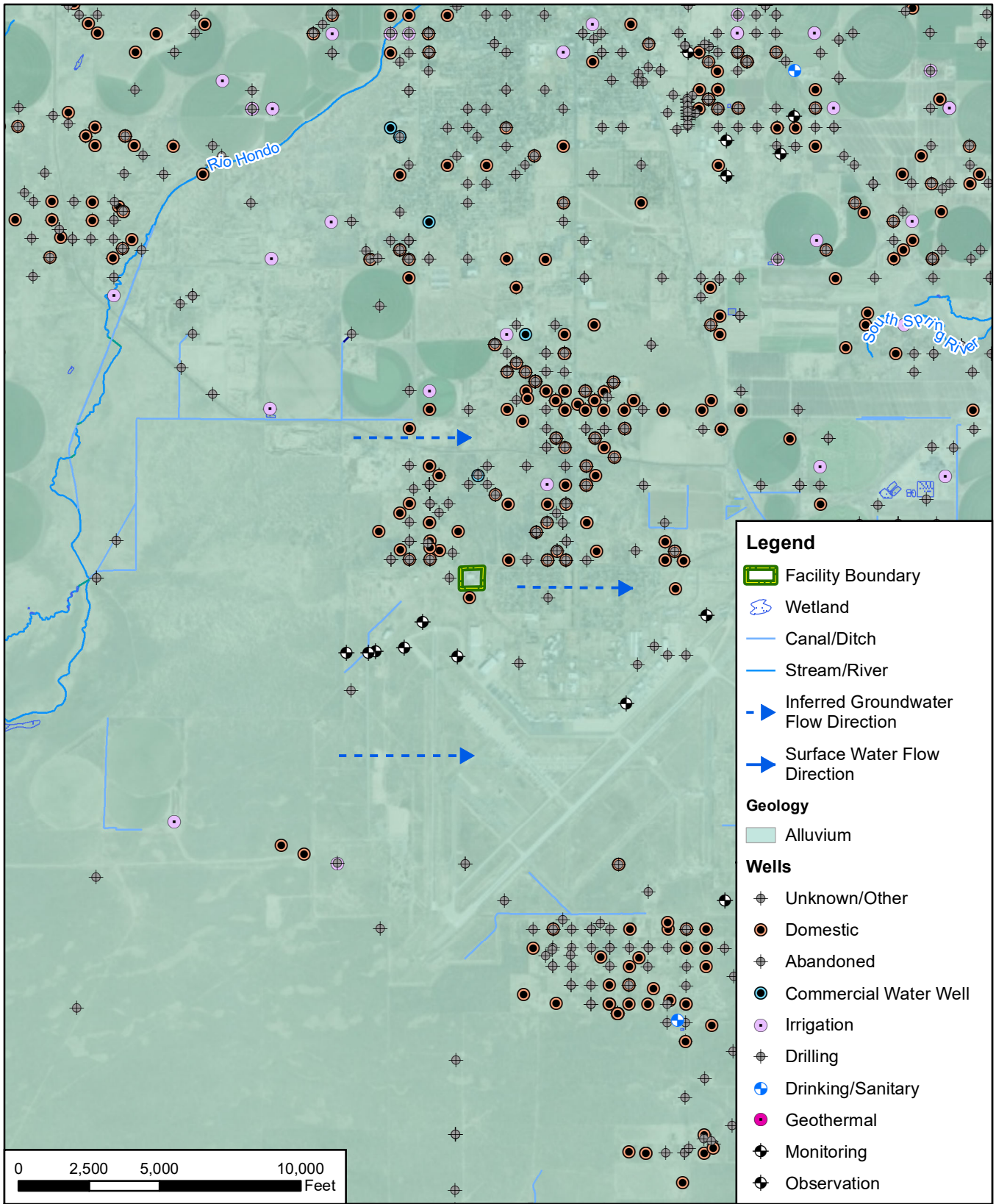
CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	12/13/2019	GIS BY	GC	12/13/2019
SCALE	1:60,000	CHK BY	MW	12/13/2019
Base Map: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,		PM	RG	12/13/2019

N

Facility Location

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-1

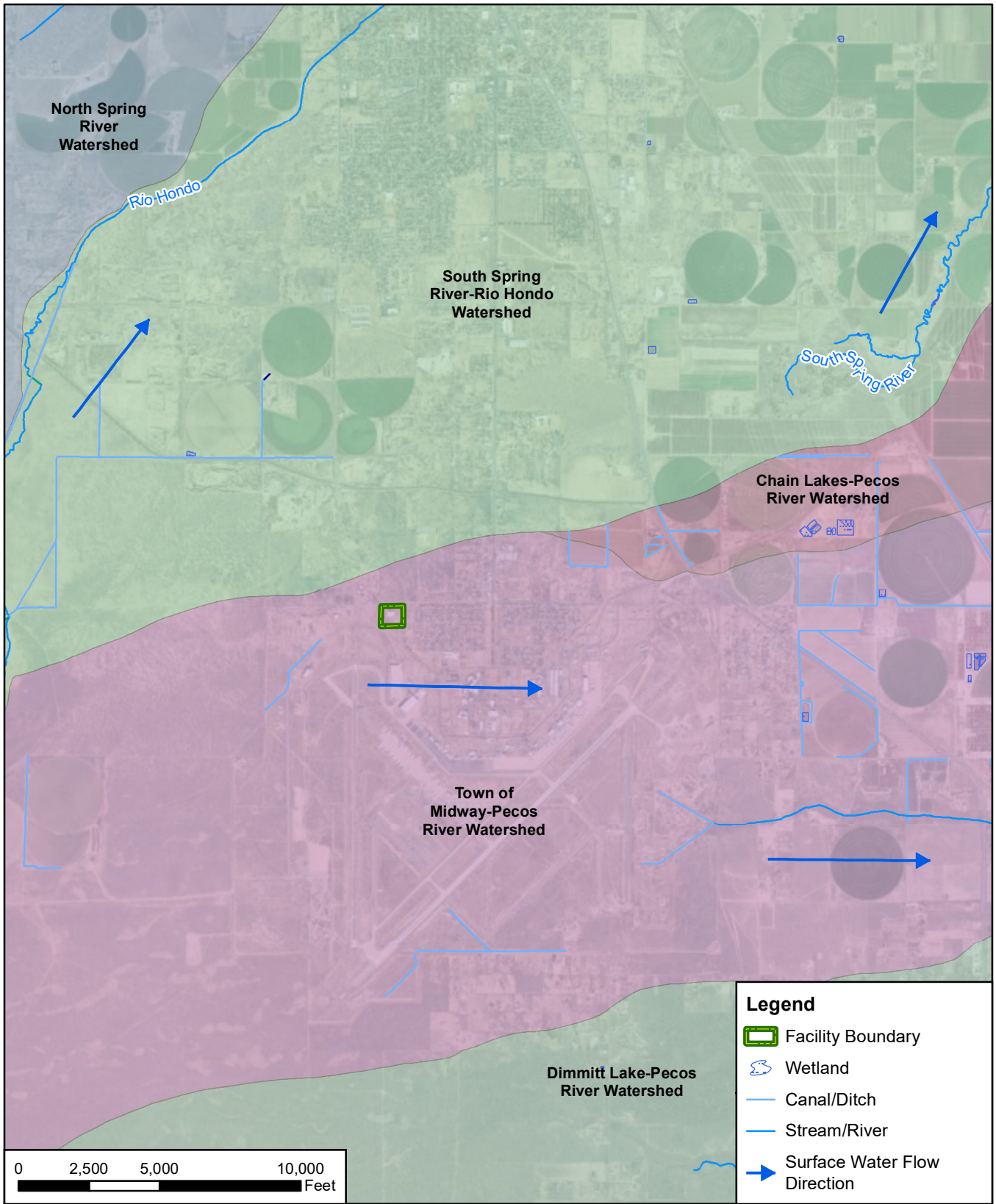


CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	5/12/2020	GIS BY	GC	5/12/2020
SCALE	1:60,000	CHK BY	MW	5/12/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/12/2020

Groundwater Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-2



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	12/17/2019	GIS BY	GC	12/17/2019
SCALE	1:60,000	CHK BY	MW	12/17/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	12/17/2019

N

Surface Water Features

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 1-3

2. Fire Training Areas

No FTAs were identified within the Roswell RC facility during the PA through interviews or EDR™ reports. Interviews were conducted with retired and current personnel whose collective firsthand knowledge dates back to 1987, when the Roswell RC was first operational, through present day. Roswell Fire Department provides emergency services to the facility. Interview records appear in **Appendix B**.

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**. One non-FTA where AFFF was stored was identified during the PA. A description of the non-FTA is presented below, and the non-FTA is shown on **Figure 3-1**. Interview records with relevant information appear in **Appendix B**, and photographs appear in **Appendix C**.

3.1 FMS Truck Bay

The truck bay, which is in the FMS building of the Roswell RC, is located on the southeastern portion of the facility. This maintence bay is used to service various vehicles on and around the factility. According to personnel interviews, one Tri-Max™ hand truck was stored within this bay until 2016, when it was turned in to the Defense Reutilization Marketing Office (DRMO). One interviewee, who has 25+ years of experience and recollection of activities at the site, stated that the Tri-Max™ unit was never used or leaked and was regularly serviced by a contractor. There are no records or recollection of any leaks or incidents.

CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	5/12/2020	GIS BY	GC	5/12/2020
SCALE	1:4,200	CHK BY	MW	5/12/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/12/2020

N

Non-Fire Training Areas

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 3-1

4. Emergency Response Areas

No emergency response areas were identified within the boundaries of the facility during the PA through interviews, previous investigations, online research, and the EDR™ report (**Appendix A**). Personnel interviewed during the PA site visit, whose collective firsthand knowledge dates back to 1987, when the Roswell RC was first operational, stated that no incidents have occurred on site, and the facility does not feature a fire suppression system (**Appendix B**). The City of Roswell Fire Department provides emergency response to Roswell RC.

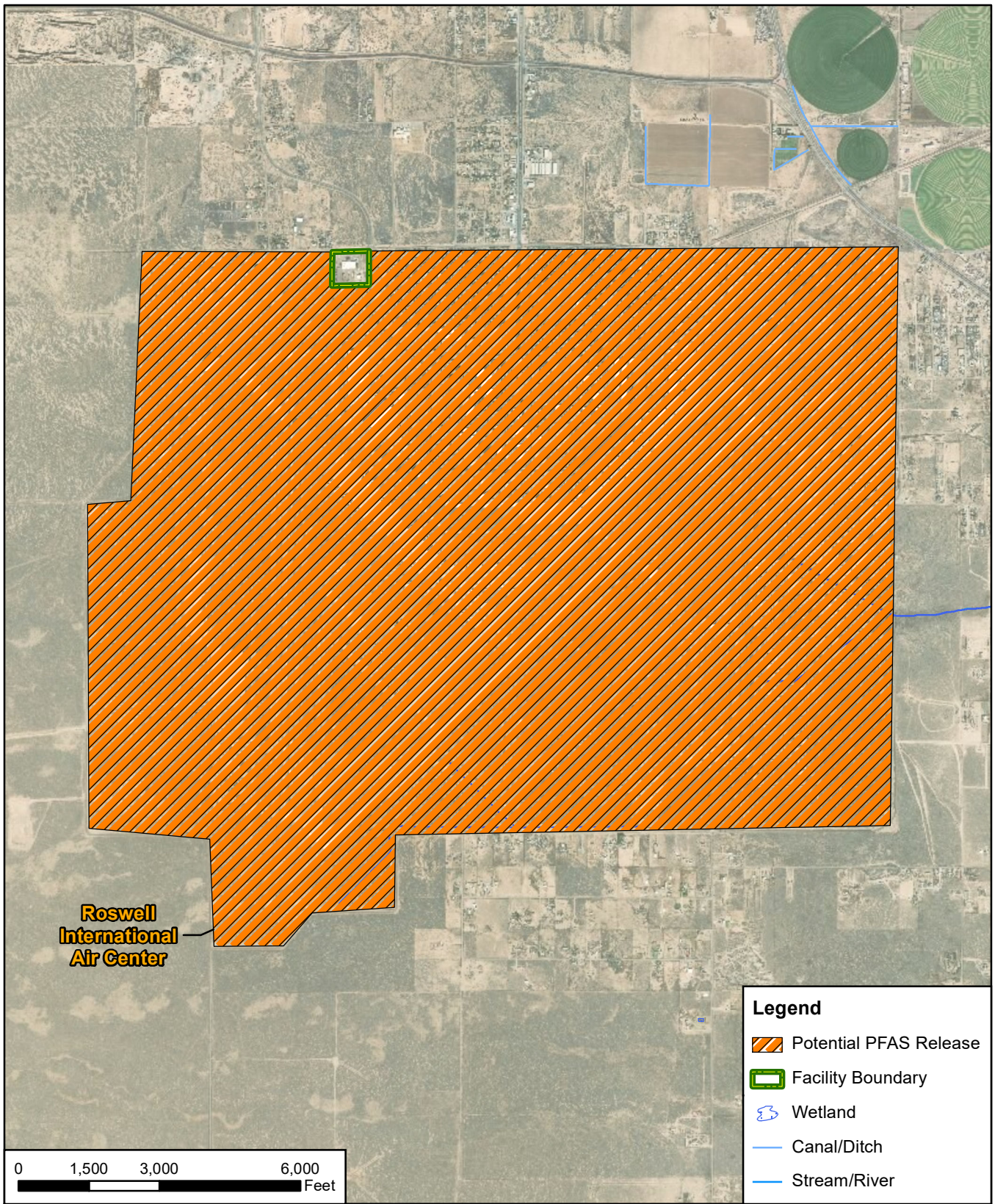
5. Adjacent Sources

One off-facility site was identified during the PA as a possible PFAS source adjacent to Roswell RC and is discussed below. **Figure 5-1** presents the location of the suspected adjacent PFAS source.

5.1 Roswell International Air Center

Roswell International Air Center began as Roswell Army International Airfield during World War II, and Walker Air Force Base during the Cold War. The airfield was then developed and renamed the Roswell International Air Center after the closure of Walker Air Force Base. The Roswell International Air Center covers roughly 5,029 acres of land at an elevation of 3,671 feet above msl and has two asphalt runways (Sky Vector, 2019).

Interviews with NMARNG facility staff and online searches revealed little information regarding use of AFFF at Roswell International Air Center. During a general online search search, it was found that two emergency incidents occurred at the Air Center on 02 April 2011 and 05 June 2019 (Aviation Safety Network [ASN], 2019; Lysee, 2019). According to the ASN, on 02 April 2011, a Gulfstream G650 jet was damaged beyond repair in a takeoff accident at Roswell International Air Center Airport. The airplane impacted a concrete structure and an airport weather station, resulting in extensive structural damage and a postcrash fire that completely consumed the fuselage and cabin interior (ASN, 2019). On 05 June 2019, a massive fireworks explosion happened in a storage building on-site in which Class C fireworks (3,4,5, and 6 inch shells) were being moved from an adjacent storage box. An ignition event occurred that set off a shell and set in motion a chain reaction leading to the explosion/consumption of all the fireworks in the structure. The build up of pressure from the exploding shells caused the walls of the structure to be blown out (Mitri, 2019). It is unknown if PFAS containing chemicals were used at either of these incidents.



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	12/17/2019	GIS BY	GC	12/17/2019
SCALE	1:36,000	CHK BY	MW	12/17/2019
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	12/17/2019

N

Adjacent Sources

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

6. Preliminary Conceptual Site Model

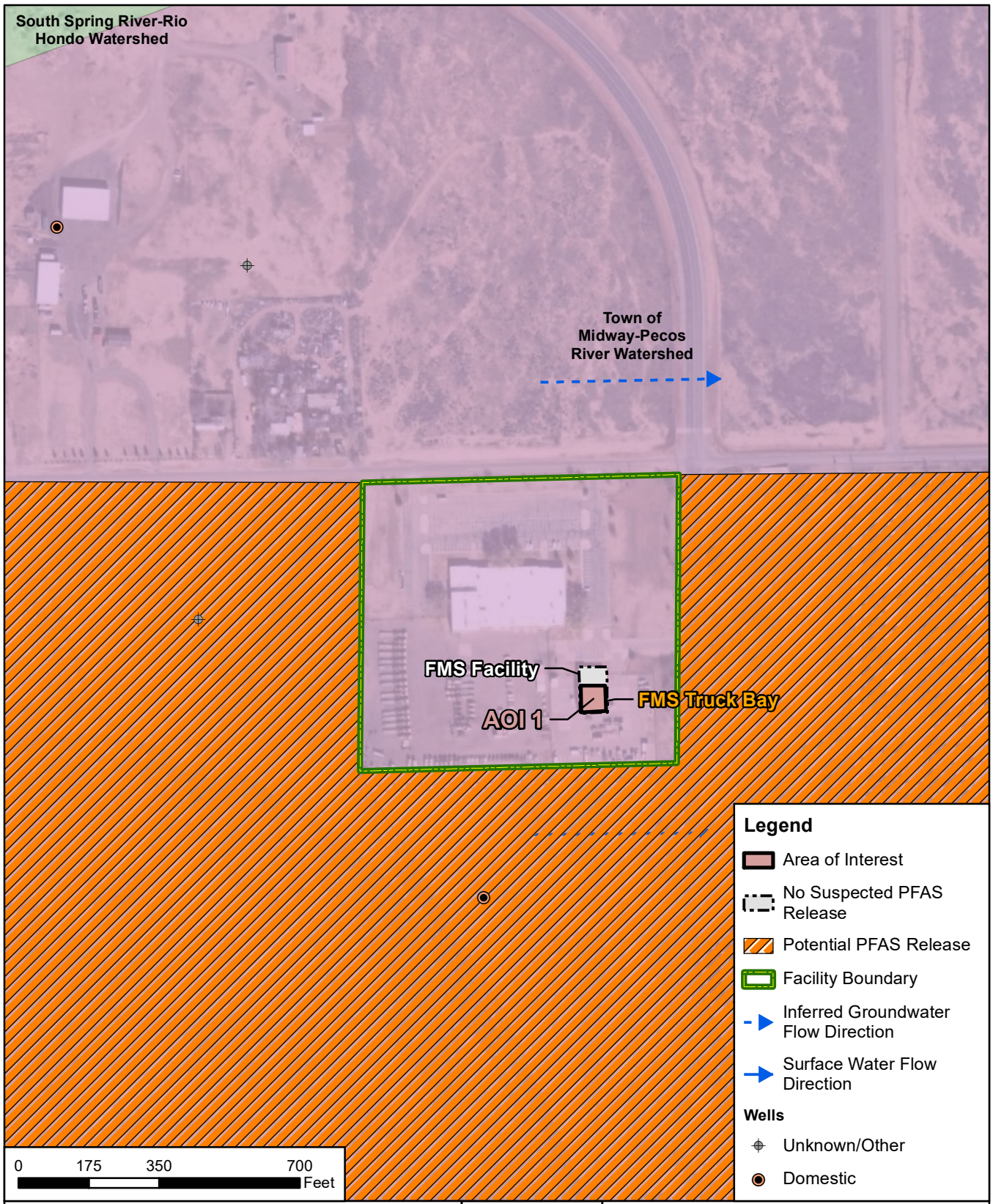
Based on the PA findings, one potential release area was identified at Roswell or adjacent areas as a result of NMARNG actions and will be considered an AOI. The AOI location is shown on **Figure 6-1**. A CSM includes three components necessary for potentially complete exposure pathways related to a site: (1) source, (2) pathway, and (3) receptor. If any of these elements are missing, the pathway is considered incomplete.

In general, the potential PFAS exposure pathways are ingestion and inhalation. Human exposure via the dermal contact pathway may occur, and current risk practice suggests it is a negligible pathway compared to ingestion; however, exposure data for dermal pathways are sparse and continue to be the subject of PFAS toxicological study. Receptors for Roswell include site workers and nearby residents. The CSM indicates which specific receptors could potentially be exposed to PFAS.

6.1 FMS Truck Bay

AOI 1 is the truck bay located in the FMS building of the Roswell RC. This maintenance bay is located in the southeastern portion of the facility and services various vehicles on and around the facility (**Figure 6-1)**. According to personnel interviews who collectively have 25+ years of experience and recollection of activities at the facility, the single Tri-Max™ hand truck stored until 2016 was never used or leaked, and was regularly serviced by a contractor. No records of maintenance, leaks, or incidents involving this hand truck exist.

The AOI encompasses the truck bay, as use outside of the bay is not expected. If the Tri-Max™ hand truck was used or leaked during the time it was stored in the truck bay, it was likely left to dry before being cleaned up and disposed of as there are no drains within or near the truck bay. If a release occurred ground disturbing activites could result in site worker and nearby resident exposure to PFAS contamination via inhalation of dust and to site workers via ingestion of surface soil. PFAS are water soluble and can migrate readily from soil to groundwater or surface water via leaching and run-off. However, groundwater beneath the facility is approximately 500 feet bgs; and while the city sources its drinking water from the San Andres water basin through a network of more than 20 wells, it is unlikely that PFAS contamination will reach the aquifer depth, making the groundwater exposure pathway incomplete. Due to the arid desert climate, the pathway for surface water is considered incomplete. The preliminary CSM for the AOI is shown on **Figure 6-2**.

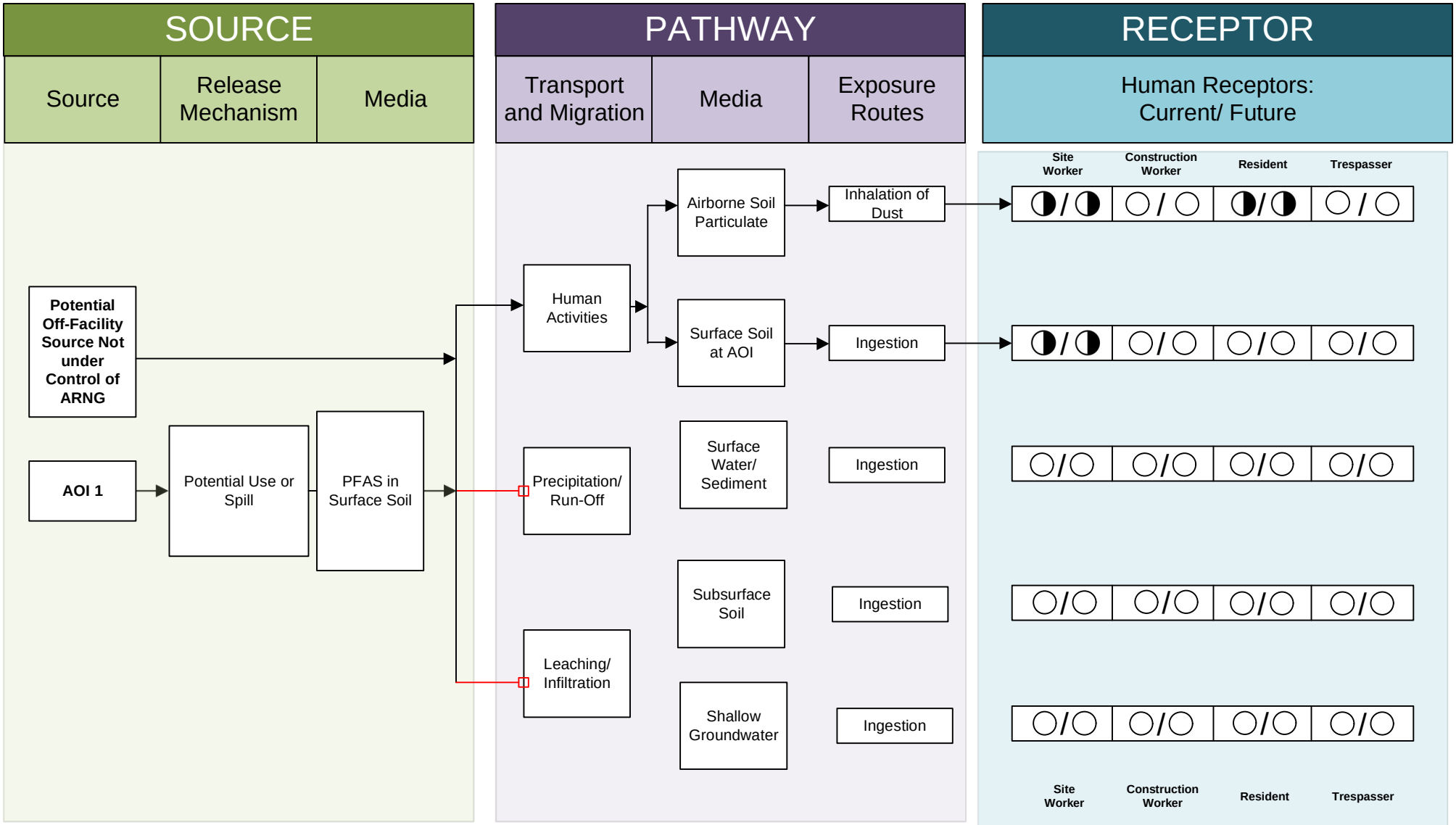


CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	5/14/2020	GIS BY	GC	5/14/2020
SCALE	1:4,200	CHK BY	MW	5/14/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/14/2020

Areas of Interest

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 6-1



LEGEND

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

Notes:
1. The residential receptor refers to an off-facility receptor.
2. Human consumption of agricultural products potentially affected by PFAS is possible

Figure 6-2
Preliminary Conceptual Site Model
Roswell, New Mexico

7. Conclusions

This document presents a summary of information on known or suspected management of AFFF at the Roswell RC. The PA findings are based on personnel interviews, environmental investigations and reports, historical documents, and the VSI. The PA findings are based on the information presented in **Appendix A**, **Appendix B**, and **Appendix C**.

7.1 Findings

One AOI related to suspected PFAS release was identified at Roswell RC during the PA (**Figure 7-1**) and is described in **Table 7-1** below:

Table 7-1: AOIs at Roswell RC

Area of Interest	Name	Used by	Potential Release Dates	Determination
AOI	FMS Truck Bay	NMARNG	Through 2016	Storage of AFFF

An adjacent potential PFAS release area was identified next to the NMARNG facility. Roswell International Air Center had two separate incidents in 2011 and 2019 in which emergency fire response was required, though it is unknown whether AFFF were used to respond to these situations.

Based on documented potential PFAS release at the AOI, there is potential for exposure to PFAS contamination in media at or near the facility. The preliminary CSM for Roswell RC, which presents the potential receptors and media impacted, is shown on **Figure 6-2**. A summary of PA findings is presented in **Figure 7-1**.

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. There is no historically documented use of PFAS-containing materials at the Roswell RC by NMARNG staff.

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 7-2 summarizes the uncertainties associated with the PA:

Table 7-2: Sources of Uncertainty

Location	Source of Uncertainty
FMS Truck Bay	The precise timeframe in which the Tri-Max™ hand truck was stored at the facility and how often the unit was serviced are unknown. Interviewee recollection spans the 33-year history of the facility, but interviewees were uncertain as to when exactly the Tri-Max™ unit arrived at Roswell RC.

7.3 Potential Future Actions

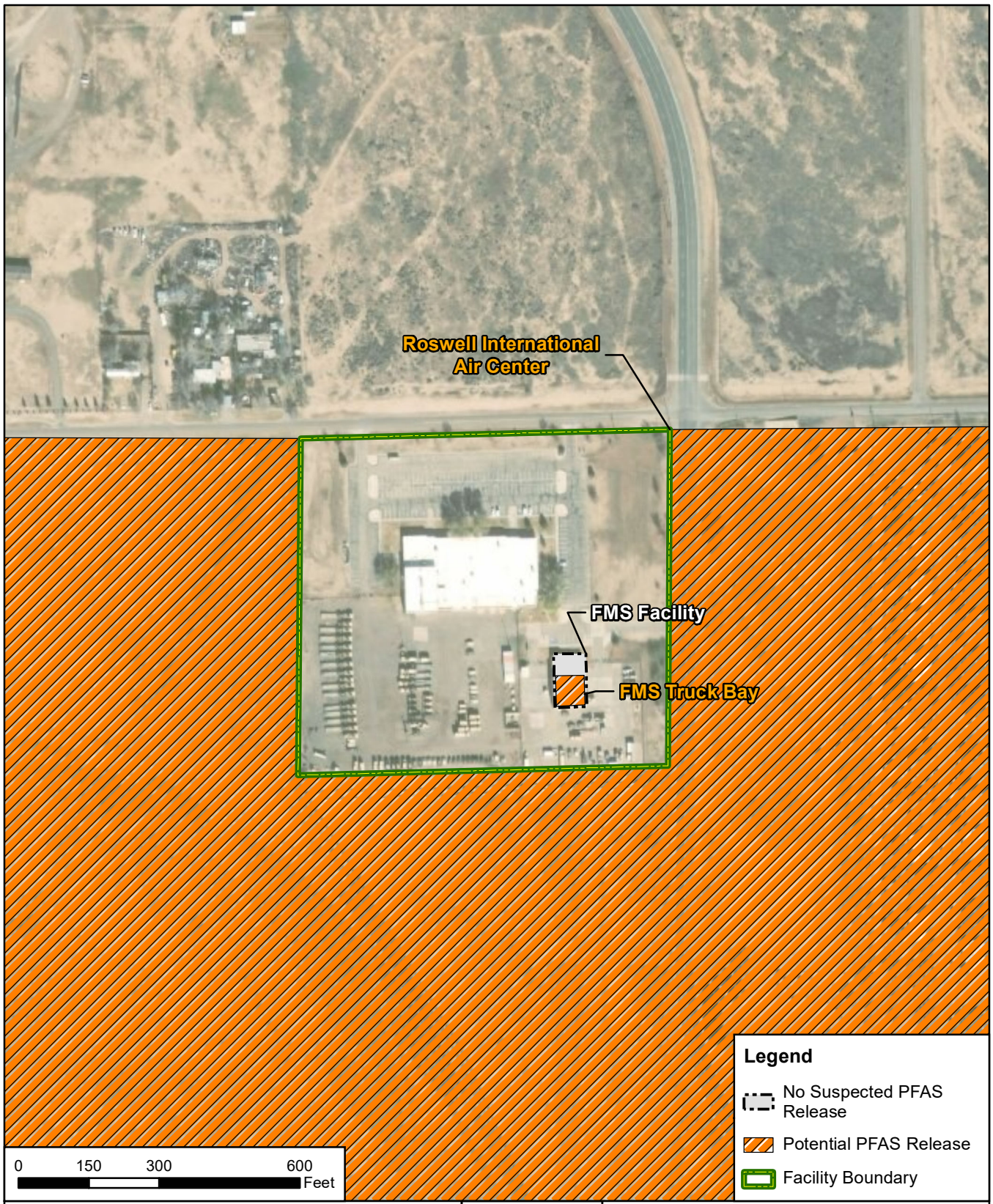
Interviews with NMARNG facility staff indicate that past ARNG activities might have contributed PFAS contamination to soil at the facility or adjacent areas.

Records review and interviews with NMARNG facility staff indicate that current or former ARNG activities may have resulted in PFAS releases at the AOI at Roswell RC. PFAS have the potential to be present in the surface soil pathway. Based on the preliminary CSM developed for the AOI, there is potential for receptors to be exposed to PFAS contamination in soil and airborne soil particulate. **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
FMS Truck Bay	33°19'12.6"N; 104°32'06.6"W	Potential release from an AFFF Tri-Max™ hand truck	Proceed to an SI focusing on soil

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



CLIENT	ARNG			
NOTES	Preliminary Assessment for PFAS at Roswell RC & FMS #1, NM			
REVISED	5/12/2020	GIS BY	GC	5/12/2020
SCALE	1:3,600	CHK BY	MW	5/12/2020
Base Map: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,		PM	RG	5/12/2020

Summary of Findings

AECOM
12420 Milestone Center Drive
Germantown, MD 20876

Figure 5-1

8. References

Aviation Safety Network. 2019. Incident Database. Flight Safety Foundation. https://aviation-safety.net/database/record.php?id=20110402-0

City of Roswell. 2014. City of Roswell Water Quality Report. City of Roswell. https://roswell-nm.gov/Archive/ViewFile/Item/78

Land, L., and B.T. Newton. 2008. Seasonal and Long-term Variations in Hydraulic Head in a Karstic Aquifer: Roswell Artesian Basin, New Mexico.

Mitri, Lysee. 2019. Report details findings of Roswell fireworks explosion investigation. KRQE. Nexstar Broadcasting. https://www.krqe.com/news/new-mexico/report-details-findings-of-roswell-fireworks-explosion-investigation/

National Oceanic and Atmospheric Administration. 2019. Climate Data Online Database. https://www.ncdc.noaa.gov/cdo-web/datatools/normals

National Oceanic and Atmospheric Administration. 2019. NowData – NOAA Online Weather Data. https://www.nws.noaa.gov/climate/xmacis.php?wfo=abq.

New Mexico Bureau of Geology and Mineral Resources, A Division of New Mexico Institute of Mining and Technology. 2003. Water Resources of the Lower Pecos Region, New Mexico: Science, Policy, and a Look to the Future. https://geoinfo.nmt.edu/publications/guides/decisionmakers/2003/DecisonMakers2003.pdf

New Mexico State Highway Department, Materials and Testing Laboratory, Design Division. 1971. Geology and Aggregate Resources District II.

Sky Vector. 2019. Roswell International Air Center Airport. Sky Vector Aeronautical Charts. https://skyvector.com/airport/ROW/Roswell-International-Air-Center-Airport

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

United States Fish and Wildlife Servie (USFWS), 2008. Wetlands Online Mapper. http://wetlandsfws.er.usgs.gov/wtlnds/launch.html

United States Geological Survey (USGS). 1995. GROUND WATER ATLAS of the UNITED STATES Arizona, Colorado, New Mexico, Utah HA 730-C. http://capp.water.usgs.gov/gwa/ch_c/C-text7.html.

Appendix A
Data Resources

Data Resources will be provided separately on CD. Data Resources for the facility include:

Roswell Previous Investigations

- 2012 Atkins Engineering Associates Inc., Investigation Report Forms, Risk-Based Decision Making for Petroleum Releases at Underground Storage Tank Sites in New Mexico

Roswell Online Research

- 1995 United States Geological Survey (USGS), Ground Water Atlas of the United States – Arizona, Colorado, New Mexico, Utah
- 2003 New Mexico Bureau of Geology and Mineral Resources, A Division of New Mexico Institute of Mining and Technology. 2003. Water Resources of the Lower Pecos Region, New Mexico: Science, Policy, and a Look to the Future.
- 2007 New Mexico Bureau of Geology and Mineral Resources, Seasonal and Long-Term Variations in Hydraulic Head In A Karstic Aquifer: Roswell Artesian Basin, New Mexico
- 2011 City of Roswell, New Mexico Zoning Map
- 2014 City of Roswell, New Mexico Water Quality Report
- 2019 City of Rio Rancho, Rio Rancho Pure – New Mexico's First Aquifer Injection Project
- 2019 KRQE News, Report details findings of Roswell fireworks explosion investigation
- 2019 NOAA, Roswell Climate Normals
- 2019 Sky Vector, FAA, Roswell International Air Center Support Information

Roswell Facility Information

- 2014 NMARNG Installation Atlas

Roswell EDR™ Report

- 2019 Roswell Environmental Data Resources, Inc.™ Report

Appendix B
Preliminary Assessment Documentation

Appendix B.1
Interview Records

PA Interview Questionnaire - Other

Facility: ROSWELL IAP
Interviewer: [redacted]
Date/Time: 2/10/19 0900

Interviewee: Various **Title:** **Phone Number:** **Email:**	Can your name/role be used in the PA Report? Y or N Can you recommend anyone we can interview? Y or N

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

[redacted]

→ Sr. Mech./Shop ~~engineer~~ supervisor.
[redacted] - retired.

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

	Known Uses
• Fire training with ABC fire extinguishers only.	Use
• No aviation assets - Airport is different/separate - only ground units. - No records or recollection of AFFF being used.	Procurement Disposition Storage (Mixed) Storage (Solution) Inventory, Off-Spec
• No Fire Suppression Systems • used to have Purple K - got rid of it in 2017	Containment SOP on Filling Leaking Vehicles
• other building is only admin • No known emergency response • City FD handles emergencies • Subcontracted by aircraft - aircraft graveyard nearby.	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:_____
Interviewer:_____
Date/Time:_____

- possible adjacent sources
  - Roswell Airport
  - fireworks disaster.
- Trinax hand + not on site until 2016
  - no known use.

Appendix B.2
Visual Site Inspection Checklists

Facility ST
Visual Survey Inspection Log

Recorded by: [redacted]
ARNG Contact:
Date:

Site Name / Area Name / Unique ID: ROSWELL FMS
Site / Area Acreage:
Historic Site Use (Brief Description): FMS

Current Site Use (Brief Description):

1. Was AFFF used at the site/area? **Y / N**
   3a. If yes, document how AFFF was used and usage time (e.g., *fire fighting training 2001 to 2014)*
2. Has usage been documented? **Y / N**
   2a. If yes, keep a record (place electronic files on a disk)

Significant Topographical Features:

1. Has the infrastructure changed at the site/area? **Y / N**
   1a. If so, please describe change: (*ex. Structures structures longer exist.)*
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 : typical desert 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 :

Migration Potential:

1. Does site/area drainage flow off installation? **Y / N**
   1a. If so, please note observation and location:
2. Is there standing water or drainage issues within the site/area? **Y / N**
   2a. If so, please note observation and location:
3. Is there channelized flow within the site/area? **Y / N**
   3a. If so, please note observation and location:
4. Have man-made drainage channels been constructed within the site/area? **Y / N**
   4a. If so, please note the location of the channel:

Additional Notes

Facility ST
Visual Survey Inspection Log

Photographic Log

Photo ID/Name	Date & Location	Description	Photograph

Appendix B.3
Conceptual Site Model Information

Preliminary Assessment – Conceptual Site Model Information

Site Name: Roswell, NM

Why has this location been identified as a site?

Storage of Trimax hand truck

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

Fireworks explosion in 2018 / nearby airfield.

Training Events

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

If so, how often? N/A

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

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

Surface Water:

Surface water flow direction? East

Average rainfall? ~15 inches

Any flooding during rainy season? yes

Direct or indirect pathway to ditches? NO

Direct or indirect pathway to larger bodies of water? NO

Does surface water pond any place on site? NO

Any impoundment areas or retention ponds? NO

Any NPDES location points near the site? NO

How does surface water drain on and around the flight line? N/A

Preliminary Assessment – Conceptual Site Model Information

Identify Potential Receptors:

Site Worker Y

Construction Worker N

Recreational User N

Residential Y

Child N

Ecological N

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

Airfield / Airport

Documentation

Ask for Engineering drawings (if applicable).

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

Appendix C
Photographic Log

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Roswell Readiness Center	Roswell, New Mexico

Photograph No. 1

Description:

Facing East. New Fire extinguisher that replaced the former Tri-Max™ hand truck.

Photo Date: 10/02/2019 0940

Photograph No. 2

Description:

Facing West. Hazmat Storage Unit – contains no AFFF

Photo Date: 10/02/2019 0942

APPENDIX C – Photographic Log

Army National Guard, Preliminary Assessment for PFAS	Roswell Readiness Center	Roswell, New Mexico

Photograph No. 3

Description:

Facing Southwest. Drain in wash rack we concrete berms around it.

Photo Date: 10/02/2019 1002