

**FINAL
PRELIMINARY ASSESSMENT REPORT
FOR PERFLUORINATED COMPOUNDS
AT
JOINT BASE ELMENDORF-RICHARDSON
ALASKA**

Prepared for:



**Air Force Civil Engineer Center
2261 Hughes Avenue, Suite 155
Lackland AFB, Texas 78236-9853**

**Contract No. FA8903-08-D-8772
Task Order 0065
CDRL A001A**

April 2015

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April 2015

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LIST OF APPENDICES

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
ANG	Air National Guard
ARRC	Alaska Railroad Corporation
AWACS	Airborne Warning and Control System
AWWU	Anchorage Water & Wastewater Utility
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CES	Civil Engineering Squadron
EDR	Environmental Data Resources, Inc.
E&E	Ecology and Environment, Inc.
ERP	Environmental Restoration Program
FTA	Fire Training Area
HEF	high-expansion foam
HGL	HydroGeoLogic, Inc.
JBER	Joint Base Elmendorf-Richardson
JBER-E	JBER, former Elmendorf Air Force Base area
JBER-R	JBER, former Fort Richardson area
NFRAP	no further remedial action planned
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PA	preliminary assessment
PCB	polychlorinated biphenyl
PFC	perfluorinated compound
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RI	remedial investigation
SI	site inspection
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank

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JOINT BASE ELMENDORF-RICHARDSON
ALASKA**

1.0 INTRODUCTION

The Air Force Civil Engineer Center (AFCEC) contracted with HydroGeoLogic, Inc. (HGL) and subcontractor CH2M HILL (the HGL Team) to perform preliminary assessment (PA) activities at multiple U.S. Air Force (Air Force or USAF) and Air National Guard (ANG) Fire Training Areas (FTAs) to determine probable environmental release of perfluorinated compounds (PFCs). Specifically, HGL is completing PA activities consistent with the U.S. Environmental Protection Agency (USEPA) Guidance for Preparing Preliminary Assessments under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (USEPA, 1991) to determine potential releases of PFCs at 82 Air Force and ANG installations from FTAs and other known and suspected PFCs or aqueous film-forming foam (AFFF) usage or storage areas. The work is being performed by HGL and its team subcontractor, CH2M HILL, under the existing 4P Architecture and Engineering Contract, Contract Number FA8903-08-D-8772, Task Order 0065.

Under authority of CERCLA and the Superfund Amendments and Reauthorization Act of 1986, CH2M HILL conducted a PA visit at Joint Base Elmendorf-Richardson (JBER) during the week of December 15, 2014, with a follow-up visit on January 12 and 13, 2015, to secure additional information. JBER is an active installation located within the Municipality of Anchorage, Alaska. The location of JBER and the areas identified on JBER during this PA visit are shown on Figures 1.1 and 1.2.

1.1 BACKGROUND

PFCs are compounds used in the formulation of AFFF, which the Air Force has used in fire training exercises, suppressing aircraft and other vehicle fires, and in aircraft hangar fire suppression systems. Although PFCs are not regulated under CERCLA or the Resource Conservation and Recovery Act, there is evidence that perfluorooctane sulfonate (PFOS) (and less so perfluorooctanoic acid [PFOA]) is a possible environmental contaminant following AFFF release. Both compounds may present potential non-carcinogenic risks to human health and the environment (Chang et al., 2014; Porter, 2011; Rak and Vogel, 2009; USAF, 2012b).

Several federal government documents confirm the initial use of AFFF by the Air Force beginning in 1970:

- Military Specification for AFFF (MIL-F-24385), formally issued in 1969
- General Accounting Office determination on sole source award protest to provide AFFF to the Navy in December 1969
- A History of USAF Fire Protection Training at Chanute Air Force Base 1964-1976 (Coates, 1977)

Based on Air Force performance testing results on AFFF, the Air Force Director of Civil Engineering, M.G. Goddard, in 1970 issued authorization for the Air Force to procure AFFF. No use within the Air Force is documented or suspected prior to 1970.

1.2 PURPOSE AND OBJECTIVES

The objective of this PA Report is to identify locations at JBER where PFCs may have been released into the environment and to provide an initial assessment of possible migration pathways and receptors of potential contamination. In 1991, the Air Force began a program to replace existing, non-engineered FTAs with new engineered FTAs that use propane fuel. The current FTA on JBER was built in the mid-1990s (Bakker, 2015, personal communication; Appendix C). The new engineered FTAs include a surrounding berm, a double-layered synthetic lining, leak detection systems, and wastewater containment or treatment provisions. The first funded year for replacing old FTAs at all bases was 1991. The Air Force began accepting the new engineered FTAs in 1995, and by about 2005, the Air Force had completed all new FTAs (Walker, 2014, personal communication; Appendix C).

This PA Report documents known FTAs and additional locations where AFFF may have been released into the environment at JBER. The purpose of the PA is to determine the potential environmental release of PFCs specifically from AFFF usage and storage. This PA Report differentiates locations that pose little or no potential threat to human health and the environment from locations that warrant further investigation. Table 1.1 lists FTAs and other locations identified during the PA; the locations are shown in Figures 1.1 and 1.2.

1.3 BASEWIDE ENVIRONMENTAL SETTING

This section describes the environmental setting of JBER, including basewide climatic and ecological information as well as regional geologic, hydrogeological, and hydraulic properties.

JBER comprises the former Elmendorf Air Force Base (JBER-E) and former Fort Richardson (JBER-R), located adjacent to the city of Anchorage, Alaska. As a result of the 2005 Department of Defense Base Realignment and Closure Commission recommendation, the two installations merged to form JBER on October 1, 2010.

JBER is bounded by the city of Anchorage to the south, Knik Arm to the north and west, and primarily undeveloped land to the east. Most of the surrounding undeveloped land is part of Chugach State Park and the Chugach Mountain Range. The installation encompasses 74,000 acres, with elevations ranging from sea level along the Knik Arm shoreline to 3,800 feet above mean sea level in the Chugach Mountains to the south and east. The main cantonment areas for both JBER-R and JBER-E are north and east of the Glenn Highway. The installation property extends south of the highway; that area is largely unpopulated but includes the water treatment plant, active range areas, a former missile location, a golf course, and a ski area.

Table 1.1
Identified Fire Training Areas and Non-Fire Training Areas
Joint Base Elmendorf-Richardson, Alaska

JBER-RICHARDSON	
Fire Training Areas	Non-Fire Training Areas
AT029 Ruff Road FTA	Bryant Army Airfield
AT052 Landfill FTA	Fire Station 4 (Building 654)
	Fire Station 5 (Building 48010)
	Yak-54 Crash Location (1998)
	SS044 (Building 35-752)
	SS047 Nike Site Summit
JBER-ELMENDORF	
Fire Training Areas	Non-Fire Training Areas
FT023 FTA	Corrosion Control Hangar (Building 6263)
Current FTA	Hangar 6 (Building 9311)
	Hangar 8 (Building 14410)
	Hangar 10 (Building 15444)
	Hangar 16 (Building 15658)
	Hangar 17 (Building 16670)
	Hangar 18 (Building 17470)
	Fire Station 1 (Building 11415)
	Fire Station 2 (Building 5126)
	Fire Station 3 (Building 3786)
	Fire Station 6 (Building 16673)
	Fire Station 7 (Building 14431)
	SS108 C-17 Crash Location (2010)
	C-124C Crash Location (1974)
	Cessna UC-35A Crash Location (2009)
	E3/Airborne Warning and Control System (AWACS) Crash Location (1995)
	Current AFFF Spray Test Area
	Former AFFF Spray Test Area
	Fire Suppression Foam Storage (Building 6210)
	Hangar 5 (Building 7309) Former AFFF Spray Test Area
	C-17 Debris Storage Yard
	Cherry Hill Ditch (SD052)

JBER can be characterized as having a transitional climate between the marine climate zone along the southern coast and the continental climate zone in the interior of Alaska. Average July low and high temperatures are 52 degrees Fahrenheit (°F) and 66°F, and average January low and high temperatures are 11°F and 23°F, as recorded at Ted Stevens Anchorage International Airport for the period of record from 1981 to 2010 (National Oceanic and Atmospheric Administration [NOAA], 2014). Extreme temperatures during this period have ranged from -38°F to 86°F.

Average annual precipitation in the Anchorage area is about 16.6 inches, with a range of 13 to 20 inches (higher precipitation may be expected in higher-elevation areas). Most of the precipitation falls from July through September, when the wind is from the southwest. Snowfall averages 66 inches, which is about one-third (5.5 inches) of the total precipitation. The depth of snow on the ground does not normally exceed 24 inches. The local freeze-thaw cycles result in variable amounts of precipitation being available to recharge groundwater and surface water throughout the year.

1.3.1 Geologic Setting – JBER-Richardson

The surficial and subsurface geology and stratigraphy of JBER-R are complex because the area is covered by glacial, glacial-marine, and glaciofluvial deposits of Quaternary age (Hunter et al., 1999).

The geology underlying JBER-R consists of glacial deposits, alluvial deposits, and metamorphic rock. The northern and central portions of JBER-R are made up of glacial sediments deposited in the Cook Inlet basin during a number of glacial periods, which range in thickness from 230 to 320 feet thick (U.S. Air Force [USAF], 2013a). Specifically, terminal moraine deposits (the Elmendorf Moraine) are located directly northwest of the main cantonment area. These soils are composed of fine-grained, poorly sorted glacial materials with interbedded heterogeneous layers of boulders, cobbles, gravel, sand, silt, and clays. Alluvial deposits on the cantonment area are bounded by the Elmendorf Moraine to the northwest and metamorphic bedrock terrain to the southeast. Glacial outwash, alluvial fan, and fluvial deposits comprise the alluvial sediments that range from gravel in the eastern portion of the plain to sand in the southwestern portion. The cantonment area is composed of deposits with well-bedded and well-sorted gravel (Hunter et al., 1999).

The Bootlegger Cove Formation was deposited in this region via glacial outwash deposits and consists primarily of thinly bedded gray to light gray silt clay to clayey silt. The Bootlegger Cove Formation is a common aquitard and confining unit in the area. The ground moraine and the Bootlegger Cove Formation form an irregular surface upon which the younger alluvial sediments were deposited (Hunter et al., 1999). The depth and thickness of the formation vary widely, with depths from 30 to 175 feet and thicknesses suspected to be around 30 feet in the southern area of JBER-R and absent north of Davis Highway (the northern portion of the JBER-R cantonment area) (USAF, 2013b).

The Mountain View Fan is the uppermost stratigraphic unit beneath JBER-R. This formation is a large alluvial fan ranging from 40 to 60 feet thick that emanates from the Eagle River Valley and extends under the JBER-R cantonment area (Hunter et al., 1999, and USAF, 2013b). The Elmendorf Moraine borders the fan to the north while low hills that protrude through younger glacial sediment border the fan to the south. These hills consist of ground moraine. The fan slopes to the west-southwest and extends beyond the Base. The fan was likely deposited by ice-marginal, glacially fed streams, based on its composition (stratified outwash) during outburst flooding events from ice-dammed lakes in the Eagle River Valley. Beneath the Mountain View Fan lie older glacial and glacio-marine deposits (Hunter et al., 1999).

Mountains composed of metamorphic bedrock make up the south-central and southern areas of JBER-R (Hunter et al., 1999).

1.3.2 Hydrogeologic Setting – JBER-Richardson

One shallow and one deep groundwater system have been identified in the area of JBER-R; however, three separate aquifer systems exist in the cantonment area, including a shallow unconfined system, a locally confined system, and a deeper confined system (Freethey, 1976).

The shallow system occurs under unconfined conditions in the Anchorage Plain deposits and in unconfined to semiconfined conditions in the till of the Elmendorf Moraine. Shallow perched groundwater of limited volume and extent exists in localized areas within the Elmendorf Moraine till deposits. Groundwater in the Anchorage Plain deposits occurs between 10 and 20 feet below ground surface (bgs). Flow in the Anchorage Plain is westerly parallel to Ship Creek.

Groundwater occurs in the locally confined aquifer system at a depth of about 80 feet within the central part of the cantonment area. The locally confined aquifer changes from confined to semiconfined to unconfined, moving from south to north across the cantonment area. The upper confining unit pinches out north of Davis Highway (in the northern half of the cantonment area) causing the shallow unconfined and locally confined aquifers to merge. Overall, the direction of flow in the locally confined aquifer tends to be to the northwest. Evidence suggests, however, that flow within the locally confined aquifer is also influenced by discontinuous fine-grained units that result in local groundwater flow directions that diverge from the regional pattern. Groundwater flow directions vary widely in the central part of the cantonment area, where the hydraulic gradient is shallower and discontinuous fine-grained units are present at depth (Astley et al., 2000).

Groundwater in the deep confined system is at its shallowest depth (130 feet bgs) in the northern area of JBER-R. The flow in the deep confined system is generally toward Knik Arm in a westerly to northwesterly direction (Figure 1.1), with a hydraulic gradient between 0.02 and 0.0025 foot per foot. The deep confined system occurs under confined conditions beneath areas where the Bootlegger Cove Formation is present. When the Bootlegger Cove Formation is intermittently present or absent (as it is in the northern half of the cantonment area), the underlying aquifer can be described as a leaky confined system.

The deep aquifer serves as a secondary drinking water source for JBER when there is low stream flow in Ship Creek (Freethey, 1976), which is the primary drinking water source. On JBER-R three standby water supply wells supplement the surface water system with a maximum of two of the wells in use at a time during peak demand. The water source for the standby wells is a confined aquifer in the Knik outwash deposit. A drinking water well with a single service connection to the Otter Lake Recreational facility also serves a transient population. This well is screened from approximately 45 to 48 feet bgs (Sommerville Well Drilling, 1972); the overall hydrogeology of this location is not well documented. On JBER-E, there are 17 drinking water supply wells screened in the deep aquifer, including 4 that provide a backup supply to supplement surface water (class A), 5 that provide drinking water for at least 25 people for at least 60 days of the year (class B), and 8 that serve populations that are either small (fewer than 25 people), transient populations, or are active fewer than 60 days a year (class C) (Tomlinson, 2015, personal communication; Appendix C).

1.3.3 Hydrologic Setting – JBER-Richardson

Surface waterbodies on JBER-R include Ship Creek, Eagle River, Otter Lake, and several other small lakes north of the Elmendorf Moraine.

Ship Creek flows from the Chugach Mountains to the east of JBER across the southern margin of JBER to Cook Inlet on the west side of the installation. Ship Creek is described as a losing stream where it flows across its alluvial fan at the foot of the mountains (because water from the stream recharges groundwater) and as a gaining stream west of Boniface Road area, where groundwater tends to flow into the stream channel (USAF, 2014d). Ship Creek serves as the main source of drinking water for JBER. Water is taken from the creek at a diversion dam located approximately 10.5 miles upstream from the mouth and approximately 2.5 miles upstream from the Glenn Highway (all identified locations in Table 1.1 are north of the Glenn Highway). A water treatment plant near the dam processes the drinking water using sand filtration and chlorination.

Quarterly sampling for two PFCs (PFOA and PFOS) in Base drinking water was initiated in September 2014 by the 673 AMDS/SGPB. Samples were collected at three locations along the supply line, including at the water treatment plant at Ship Creek and two locations further down the supply lines on JBER-R and JBER-E. Neither PFOS nor PFOA have been detected above their practical quantitation limits of 0.04 microgram per liter and 0.02 microgram per liter, respectively (Wright, 2015, personal communication, Appendix C).

The JBER- R area is not within the 100- or 500-year floodplains.

1.3.4 Geologic Setting – JBER-Elmendorf

JBER-E is located within the Susitna Lowlands, a broad lowland area west of the Chugach Mountains (Warhaftig, 1965), referred to as the “Anchorage Plain” or “Anchorage Lowland.” The southern third of the installation lies on the Anchorage glacio-fluvial outwash plain. The Elmendorf Moraine (a glacial end moraine) crosses the Base from the southwest to the northeast, and ground moraine and glacio-fluvial soils (unconsolidated deposits between bedrock and the earth’s surface) cover the northern portion of the Base and are between approximately 30 and 100 feet thick (USAF, 1994). The runways and most of the Base facilities lie on the relatively flat outwash plain. The outwash soils consist predominantly of sandy gravels and gravelly sands deposited by streams draining glaciers advancing out of the Knik and Matanuska Valleys about 12,000 years ago. The outwash varies in thickness across JBER-E, but tends to be relatively thin just south of the Elmendorf Moraine and increases to a thickness of up to about 60 feet near Ship Creek. Ship Creek, which flows roughly along the southern margin of JBER-E, has deposited an alluvial fan that overlies the outwash where the creek flows out of the Chugach Mountains to the east and has eroded or incised into the outwash and deposited alluvial floodplain soils on top of the Bootlegger Cove Formation in its western reaches. The Elmendorf Moraine is a low, hummocky ridge composed of a heterogeneous mixture of sand, gravel, silt, and clay, with cobbles and boulders. The moraine was deposited by the glaciers advancing out of the Knik and Matanuska Valleys. The ground moraine north of the end moraine is dominated by low, rolling hills composed of materials similar to those forming the end moraine and may be mantled with glacio-fluvial soils. Fine-grained glacio-marine and glacio-lacustrine sediments of the Bootlegger Cove Formation underlie the outwash and the moraine (USAF, 2014d).

The geotechnical properties of several of the primary JBER-E soil types have been characterized during location investigations. The data show that the outwash and glacio-fluvial soils have relatively low fines content, high bulk densities, and low moisture contents, while the moraine soils have higher silt and clay contents, and higher moisture contents, along with relatively high bulk densities (USAF, 2014d).

1.3.5 Hydrogeologic Setting – JBER-Elmendorf

JBER-E is underlain by two aquifers: a shallow water table aquifer (approximately 20 to 45 feet bgs and 15 to 40 feet thick) and a deeper, confined aquifer (occurring anywhere from 50 to 300 feet bgs and 100 to 300 feet thick). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. Water use on Base is either supplied from the Ship Creek Dam or from the deep aquifer. There is no known communication between shallow and deep aquifers in the areas of investigation, located north of the flightline and south of the Elmendorf Moraine (USAF, 1994; USAF, 2011a). A records search identified one supply well on JBER-E, located east of Jerstadt Avenue and north of Building 5332. Groundwater flow in the outwash plain is generally toward the south or southwest, while groundwater flow in the moraine areas is more variable and is best characterized using localized data.

Data regarding the hydraulic conductivity of JBER-E indicate that the outwash soils, the glaciofluvial soils north of the Elmendorf Moraine, the Ship Creek alluvium, and the Ship Creek alluvial fan have relatively high hydraulic conductivity values, while the moraine has variable but significantly lower hydraulic conductivity values. The Bootlegger Cove Formation may generally be characterized as having a very low hydraulic conductivity (although some interbedded sand layers are in the formation) (USAF, 2014d).

1.3.6 Hydrologic Setting – JBER-Elmendorf

Surface waterbodies on JBER-E include Ship Creek, Six Mile Lake, Six Mile Creek, and several other small lakes north of the Elmendorf Moraine.

Ship Creek flows from the Chugach Mountains to the east of JBER-E across the southern margin of JBER-E to the Knik Arm on the west side of the Base. Ship Creek is described as a losing stream where it flows across its alluvial fan at the foot of the mountains (because water from the stream recharges groundwater), and as a gaining stream west of Boniface Road area, where groundwater tends to flow into the stream channel (USAF, 2014d). Ship Creek serves as the main source of drinking water for JBER-E. Water is taken from the creek at a diversion dam located approximately 10.5 miles upstream from the mouth. A water treatment plant near the dam processes the drinking water using sand filtration and chlorination.

Six Mile Lake and Six Mile Creek drain much of JBER-E north of the Elmendorf Moraine. Flow in the creek is from east to west, and the creek discharges to the Knik Arm (USAF, 2014d).

The JBER-E area is not within the 100- or 500-year floodplains.

1.3.7 Ecological Receptors

1.3.7.1 Federally Threatened and Endangered Species

The following federally threatened or endangered animal species may potentially move on or within proximity to JBER, but they occur so infrequently that activities on JBER are expected to have no effect on them (USAF, 2012a):

- Beluga Whale Cook Inlet Distinct Population Segment (mammal, endangered)
- Steller Sea Lion (mammal, endangered)

- Steller's Eider (bird, threatened)
- Chinook Salmon (fish, endangered or threatened, depending upon the watershed)
- Steelhead (fish, endangered or threatened, depending upon the watershed)

The Knik Arm of the Cook Inlet is part of the critical habitat designated for the Beluga Whale Cook Inlet Distinct Population Segment (NOAA, 2011).

1.3.7.2 Other Fish and Wildlife Species

Within its borders, JBER provides a wide variety of wildlife habitat, such as rivers, creeks, wetlands, tidal marsh, alpine areas, and old growth forests. These areas are home to a variety of fish and wildlife species indigenous to the south-central Alaska region. Native species include large mammals such as moose, Dall sheep, black and brown bear, wolves, and more than 100 species of birds (including 25 species of waterfowl) (USAF, 2012a).

All five Pacific salmon species found in North America return to JBER streams to spawn. Ship Creek, which runs along the southern border of JBER, has enhanced runs of Chinook and coho salmon, with natural returns of chum and pink salmon. Sockeye salmon return in small numbers to Ship Creek each year, beginning in early June, with different species present through the end of September (USAF, 2012a; Alaska Department of Fish and Game, 2015). The Alaska Department of Fish and Game's William Jack Hernandez Sport Fish Hatchery is located south of JBER on Ship Creek at the intersection of Post Road and Reeve Boulevard, and provides fish stock for lakes across the state. The water supply for the hatchery is primarily self-contained, with 95 percent recirculated (Storm, 2013). A dam at the fishery prevents most salmon from accessing the upper portions of Ship Creek. No national fish hatcheries or nationally designated fish and wildlife habitat are within 15 miles of JBER (U.S. Fish and Wildlife Service [USFWS], 2015a and 2015b).

1.4 PRELIMINARY ASSESSMENT METHODS

This PA Report was prepared in accordance with the following guidance:

- CERCLA Guidance (USEPA, 1991)
- Interim Air Force Guidance (USAF, 2012b)
- USFWS Guidance (2015a)

The performance of this PA included the following activities:

- Reviewing information and reports in the Administrative Record.
- Reviewing documents related to Air Force use of AFFF.
- Conducting a 5-day visit to JBER.
- Conducting interviews with government personnel in Environmental Management, the JBER Fire Department, Civil Engineering, and Aircraft Hangar Maintenance and Operations.
- Visiting and photographing locations where AFFF has been used or may have been used.
- Performing an environmental data records search to document nearby populations and recording water supply well information and wetlands information.

1.5 REPORT ORGANIZATION

This PA Report is organized as follows:

- Section 1.0, Introduction, provides a project overview and describes the methods used to conduct the PA.
- Section 2.0, Fire Training Areas, describes the FTAs identified during the visit.
- Section 3.0, Non-Fire Training Areas, describes the non-FTAs identified during the visit.
- Section 4.0, Summary and Conclusions, summarizes and provides conclusions for both FTAs and Non-FTAs.
- Section 5.0, References, lists the references cited in this report.

In addition, the following support information is appended to this report:

- Appendix A, Photo Documentation
- Appendix B, Field Documentation
- Appendix C, Records of Communication

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FIGURES

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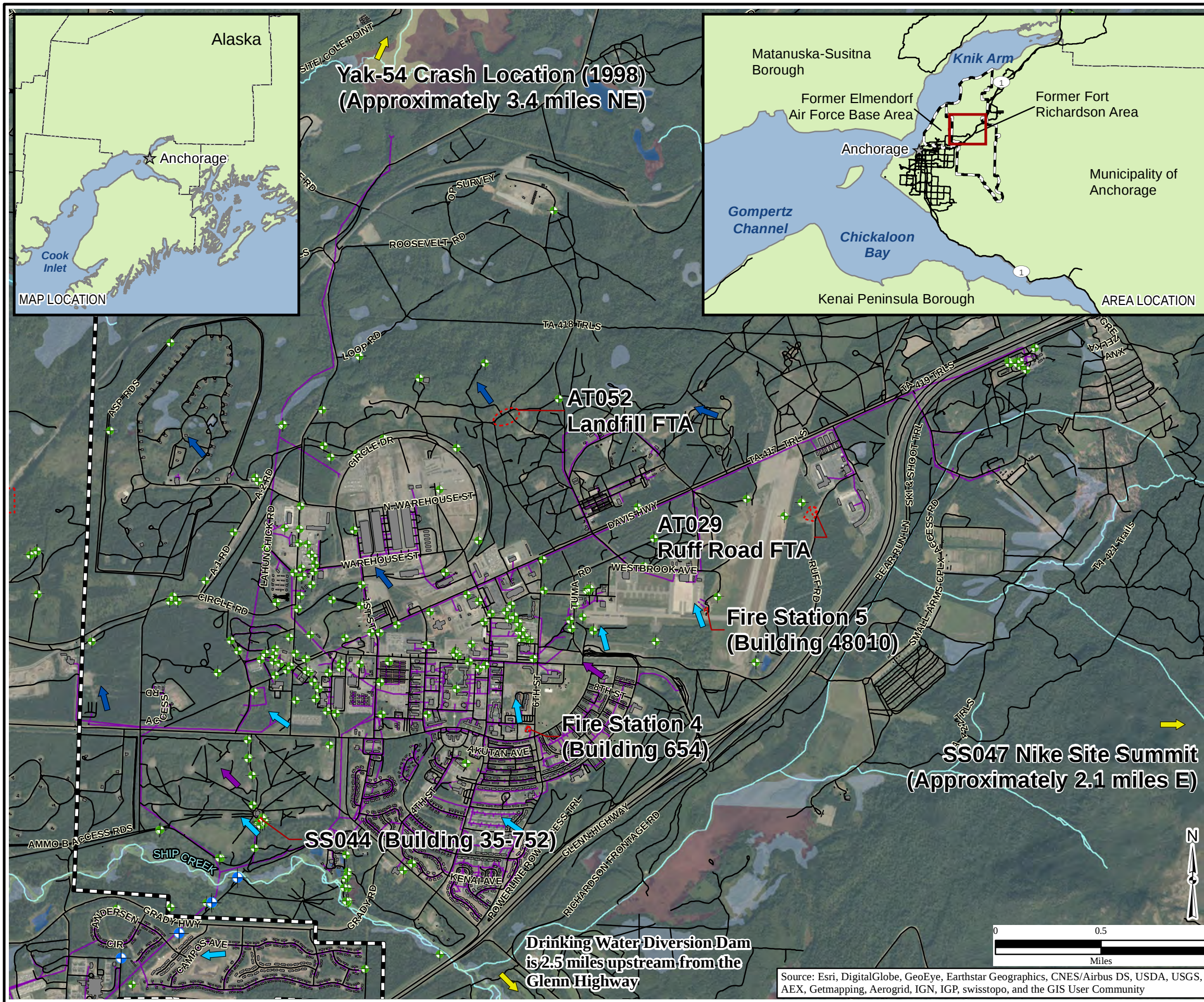


Figure 1.1
All Identified Locations:
Joint Base Elmendorf-Richardson
(Former Fort Richardson area), Alaska

Legend

- Water Supply Well
- Monitoring Well
- Shallow Aquifer Groundwater Flow Direction
- Combined Aquifer Groundwater Flow Direction
- Deep Aquifer Groundwater Flow Direction
- Stream/River
- Wastewater Line
- Road
- Approximate Location
- Base Boundary
- Building
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Lake
- Riverine Wetland

Notes:
FTA = fire training area
ROW = right-of-way

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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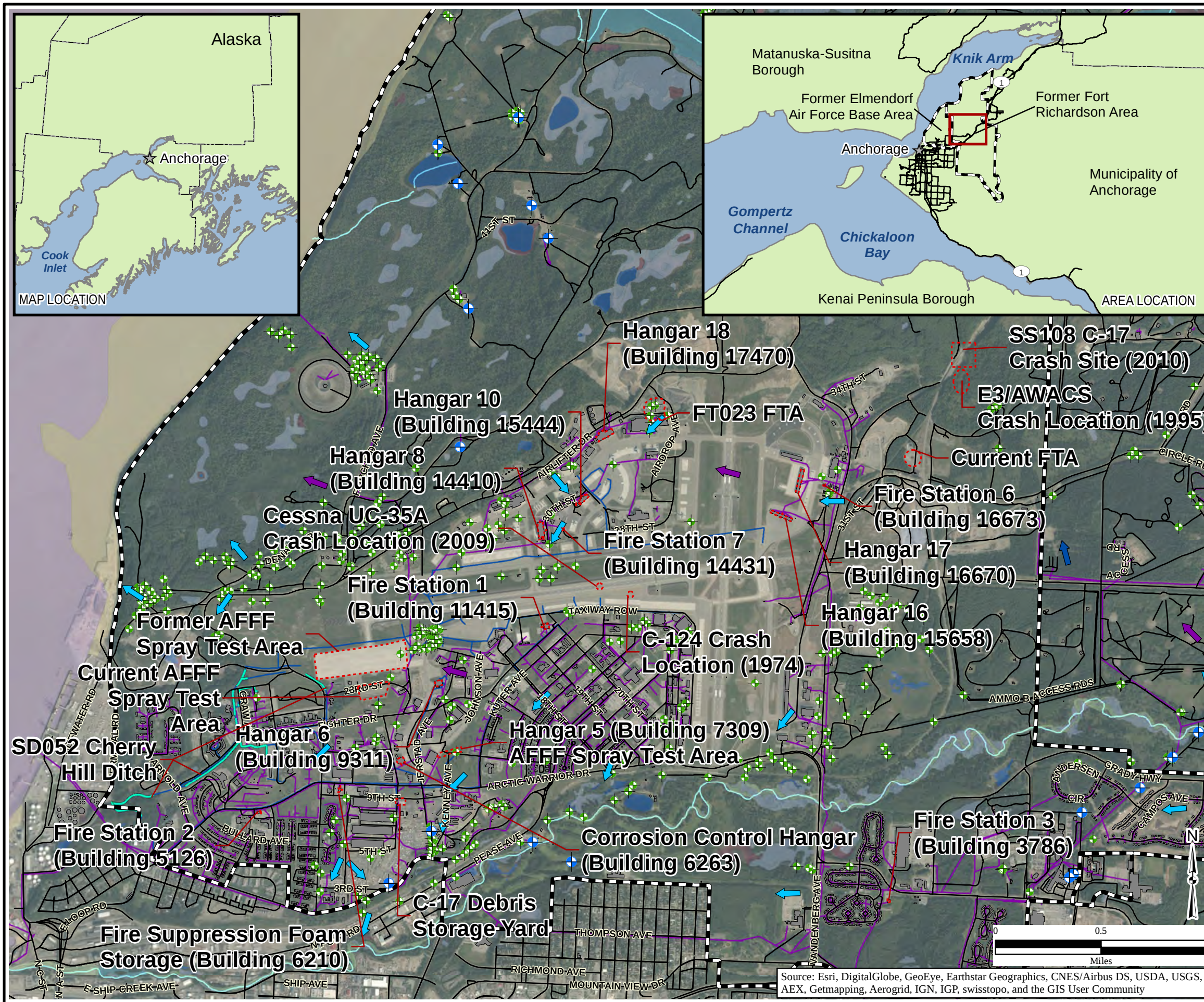


Figure 1.2
All Identified Locations:
Joint Base Elmendorf-Richardson
(Former Elmendorf Air Force Base
Area), Alaska

Legend

- Water Supply Well
- Monitoring Well
- Shallow Aquifer Groundwater Flow Direction
- Combined Aquifer Groundwater Flow Direction
- Deep Aquifer Groundwater Flow Direction
- Stream/River
- Cherry Hill Ditch/Drainage System Open Channel
- Cherry Hill Ditch/Drainage System Closed Conduit
- Wastewater Line
- Road
- Approximate Location
- Base Boundary
- Building
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Lake
- Riverine Wetland

Notes:
AFFF = aqueous film-forming foam
AWACS = Airborne Warning and Control System
FTA = fire training area
In general, deep aquifer groundwater flow on Elmendorf is to the west.

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4/22/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

2.0 FIRE TRAINING AREAS

JBER has four known FTAs: three historical that are no longer in use and one that is currently in use. Records of historical activities at FTAs are limited. Although some information about typical procedures is available, little information exists about whether AFFF has been used during training at any of the FTAs. The sections below present known information on the JBER-R and JBER-E FTAs.

2.1 JBER-R

2.1.1 AT029 Ruff Road Fire Training Area

2.1.1.1 Description and Operational History

AT029 Ruff Road FTA consists of flat grassland surrounded by thick trees and brush and is used for industrial purposes (runway lights). A small parking lot is south of the site, and a pedestrian walkway adjacent to Ruff Road is a popular biking and running path adjacent to the site. The geographic coordinates (North American Datum 1983) are 61°16'11.04"N and -149°38'45.06"W.

This site historically consisted of an FTA, an approximate 50-foot-diameter circular area in which approximately 85,500 gallons of wastes were burned and disposed of at the site from approximately 1940 until the 1980s (Ecology and Environment, Inc. [E&E], 1996). Fire training exercises were historically conducted by saturating an unlined area with water, pumping fuel into the depression, and igniting the fuel. Materials that were burned included jet fuel, waste oil, diesel, brake fluid, and solvents (E&E, 1996). In 1991, the original road in the area was demolished and the current Ruff Road was constructed. The charred debris associated with the FTA was removed at that time. AT029 Ruff Road FTA is a current Environmental Restoration Program (ERP) site for JBER. Investigations have identified petroleum-related compounds and solvents in soil and groundwater at the site. The most recent investigations in 2014 indicated that petroleum compounds and solvents remain at concentrations that may cause risk, and further investigation and/or action is necessary (USAF, 2014e). Land use controls are in place to prevent land disturbance and prohibit the use of groundwater at this location for any reason (USAF, 2011b). A complete site description and operation history are in previous investigation reports. The location of AT029 Ruff Road FTA is shown on Figures 1.1 and 2.1.

2.1.1.2 Waste Characteristics

General practices related to the fire training at this location are unknown. However, according to the Assistant Fire Chief (involved with JBER fire safety since 2003), AFFF has not been used to extinguish the fires during training events now or in the past (Bakker, 2014b, personal communication; Appendix C). Because the operational history and potential for release of AFFF during the years prior to the current Assistant Fire Chief is unclear, it is assumed that the potential for an AFFF release to the environment is present.

2.1.1.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (Environmental Data Resources, Inc. [EDR], 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to AT029 Ruff Road FTA is Ursa Major Elementary School, approximately 1.8 miles southwest.

2.1.1.4 Groundwater Pathway and Targets

The uppermost, shallow groundwater at AT029 Ruff Road FTA occurs at a depth of approximately 140 to 153 feet bgs as an unconfined sandy gravel aquifer. The groundwater flows to the northwest with an estimated hydraulic gradient of 0.04 foot per day (based on slug test data collected during the remedial investigation [RI]) (E&E, 1996). AT029 Ruff Road FTA is currently an ERP site and has land use controls in place to prevent access to and development of groundwater at the site. Groundwater is not expected to impact excavation workers because it is not at depths where workers would be present.

Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. Because there is no current use of groundwater as a drinking water source at AT029 Ruff Road FTA, and the nearest standby drinking water well is approximately 3.2 miles from the site to the southwest (cross-gradient), this exposure pathway is considered incomplete for JBER workers and residents.

2.1.1.5 Surface Water Pathway and Targets

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this site is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to AT029 Ruff Road FTA is a small drainage wetland/pond approximately 1,500 feet northeast of the site. The nearest large surface waterbodies are Fossil Creek, located 1.3 miles north, and a wetland located 1.8 miles south-southwest of the site (east of the Glenn Highway and north

of Arctic Valley Road). No exposed, eroding impacted soils are present at the site. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area. Dermal contact exposure to surface water is unlikely because there are no clear pathways to local surface water.

The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 5 miles northeast and is the only sensitive environment identified as potentially within 15 miles downstream of this location (although no clear overland flow pathways are evident).

2.1.1.6 Soil and Air Exposure Pathways and Targets

A release of AFFF to the soil surface during fire training activities may have occurred. No workers or residents are currently present within 200 feet. The nearest building is more than 500 feet north-northeast. AT029 Ruff Road FTA is currently an ERP site and has land use controls in place to prevent land disturbance, which would mitigate any subsurface soil contamination. The site is well-vegetated and would preclude any fugitive dust emissions and potential exposures. Current and planned future land use does not involve any human health exposures. Utilities are present near the former burn pits and could potentially allow for dermal soil exposures to utility workers. The potential of exposure for burrowing animals would also be present.

The population within 4 miles of the site includes JBER, Eagle River, and Anchorage residents, with an estimated total population of 8,200. No schools or day care facilities are within a 200-foot radius of the site. The nearest school is Ursa Major Elementary School, approximately 1.7 miles southwest; the nearest day care facility (K and K Day Care) is more than 4 miles southwest; and the nearest residential area is approximately 1.2 miles west-southwest (EDR, 2015). No other potentially sensitive targets have been identified within a 4-mile radius.

The site is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future. No sensitive environments have been identified within 200 feet or within 4 miles.

2.1.2 AT052 Landfill Fire Training Area

2.1.2.1 Description and Operational History

AT052 Landfill FTA consists of flat grassy area surrounded with thick trees and brush. The site is located inside the closed JBER-R landfill, north of the main cantonment area, approximately 0.5 mile from the Davis Highway. The area is currently used for army training exercises. The geographic coordinates are 61°16'31.79"N and -149°41'22.89"W.

Fire training exercises were conducted from 1985 until 1988 and involved filling a bermed area with water and then emptying waste petroleum products, solvents, or petroleum-contaminated soils into the pit and igniting them. Fluids were stored at the site until they were burned. An estimated 1,500 to 2,300 gallons of waste petroleum products were burned at the pit each year. After 1988, the fire training pit was covered with an estimated 3 to 6 feet of petroleum, oil, and lubricants-contaminated soil originating from other locations on the Base (U.S. Army Engineer District, 2000). AT052 Landfill FTA is a current ERP site for JBER. No investigations have been conducted at the site; however, the site was recommended for No Further Action under CERCLA because it is located within the closed JBER-R landfill. This area is monitored as part of the landfill

monitoring program, which includes visual inspections as well as monitoring landfill gas and groundwater. In recent years, an increase in petroleum compounds in groundwater (below cleanup levels) was detected downgradient of AT052 Landfill FTA, but the precise source of the increase has not been determined (USAF, 2012a). Land use controls are in place to prevent land disturbance and prohibit the use of groundwater within the landfill (including AT052 Landfill FTA) for any reason (USAF, 2011b). The location of AT052 is shown on Figures 1.1 and 2.1.

2.1.2.2 Waste Characteristics

General practices related to the fire training at this site are unknown. However, according to the Assistant Fire Chief (involved with JBER fire safety since 2003), AFFF was not used to extinguish the fires during training events now or in the past (Bakker, 2014b, personal communication; Appendix C). Because the operational history and potential for release of AFFF during the years prior to the current Assistant Fire Chief is unclear, it is assumed that the potential for an AFFF release to the environment is present.

2.1.2.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release site of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to AT052 Landfill FTA is Ursa Major Elementary School, approximately 1.8 miles southwest. The next closest potential receptors are Ursa Minor Elementary School (2.2 miles south), the Mary Conrad Prestige and Rehabilitation Center (3.6 miles south), and Rainbow's End Day Care, 3.9 miles south-southwest.

2.1.2.4 Groundwater Pathway and Targets

No groundwater wells have been installed specifically to monitor AT052 Landfill FTA because this area is monitored as part of the closed landfill. The closest groundwater monitoring well is AP-3010, located approximately 1,400 feet northwest (downgradient). Several aquifers exist beneath the landfill area. The general groundwater flow direction for the JBER-R aquifers is to the northwest. A shallow perched aquifer and several others (not included in landfill monitoring) along the northern landfill boundary are found between 20 and 50 feet bgs. The shallow, perched aquifer appears to be discontinuous and highly dependent on local deposits of silt and clay. The perched

aquifer does not appear to extend into the Elmendorf Moraine. The depth of the deeper aquifer under the landfill varies from approximately 130 feet bgs below the outwash plain to more than 200 feet bgs when measured from the top of the moraine. A third potential aquifer was identified in an area along the eastern boundary of the landfill at approximately 204 feet above mean sea level within gravelly, silty sand overlying a 6-foot-thick silt layer. This aquifer may simply be a small area of perched water 15 feet above the deep glacial till aquifer, or an area of fine materials where the capillary fringe has elevated the water table above the elevation of the deep aquifer. The expanse of this potential aquifer is not known; however, it does not extend upgradient (approximately 0.7-mile west of Circle Road and approximately 1.1 miles east of the geographic center of the landfill) (USAF, 2012a). AT052 Landfill FTA is currently an ERP site and has land use controls in place to prevent access to and development of groundwater at the site.

Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. Because there is no current use of groundwater as a drinking water source at AT052 Landfill FTA, and the nearest standby drinking water well is approximately 2.6 miles to the southwest (cross-gradient), this exposure pathway is considered incomplete for JBER workers and residents. Groundwater is also not expected to impact excavation workers because it is not present at depths where workers would be present (and land use controls prohibit excavations).

2.1.2.5 Surface Water Pathway and Targets

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this site is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. A number of small wetlands are to the northeast and northwest (around 0.5 to 0.8 mile away). The nearest large surface waterbodies are Otter Lake, 1.5 miles northwest, and Ship Creek, around 1.5 miles south of the site. No exposed, eroding impacted soils are at the site. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area. Dermal contact exposure to surface water is unlikely because there are no clear pathways to local surface water.

The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 4 miles north-northwest and is the only sensitive environment identified as potentially within 15 miles downstream of this location (although no clear overland flow pathways are evident).

2.1.2.6 Soil and Air Exposure Pathways and Targets

AT052 Landfill FTA is located in an isolated area of JBER. No workers or residents are currently present within 200 feet of the site, and the closest buildings are more than 1,800 feet away. The U.S. Army conducts some training exercises in this area; however, AT052 Landfill FTA is a current ERP site and has land use controls in place to prevent land disturbance, which would help prevent contact with any subsurface soil contamination. The site is composed of well-vegetated areas, a gravel pit area, and gravel roads. Fugitive dust emissions and potential exposures could be

possible. Current and planned future land use includes U.S. Army exercises. The potential of exposure for burrowing animals would be present.

The population within 4 miles of the site includes JBER and Anchorage residents, with an estimated total population of 10,730. No schools or day care facilities are within a 200-foot radius of the site. The nearest school is Ursa Major Elementary School, approximately 1.8 miles southwest. The next closest potential receptors are Ursa Minor Elementary School (2.2 miles south), the Mary Conrad Prestige and Rehabilitation Center (3.6 miles south), and Rainbow's End Day Care (3.9 miles south-southwest). The nearest residential area is approximately 1.4 miles south-southeast.

AT052 Landfill FTA is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future. No sensitive environments have been identified within 200 feet or within 4 miles.

2.2 JBER-E

2.2.1 FT023 Fire Training Area

2.2.1.1 Description and Operational History

FT023, FTA, is located north of 33rd Street and east of Airlifter Drive. The site historically consisted of a bermed fire training pit area, which was an approximate 50-foot-diameter circular area in which combustible wastes were burned for training exercises at the site. From approximately 1940 until 1983, each training exercise included burning an estimated 250 to 3,000 gallons (USAF, 2006) of oils, fuels, and solvents (USAF, 2015). Specific historical fire training procedures at this site are unknown. The site currently consists primarily of paved parking lots and roads surrounded by buildings to the south. The geographic coordinates are 61°15'49.40"N and -149°48'15.09"W.

FT023, the FTA, is a current ERP site for JBER (investigations ongoing). Historical contaminants include chlorinated solvents and benzene in groundwater, and petroleum compounds in soil. Bioventing was conducted to remediate soils starting in 1995; treatment was discontinued in 2009 when soils were found to have met cleanup levels. Chlorinated solvents are still present in groundwater above cleanup levels (USAF, 2014a) Land use controls are in place to prevent land disturbance and prohibit the use of groundwater at this site for any reason (USAF, 2015). The location of FT023, the FTA, is shown on Figures 1.2 and 2.2.

2.2.1.2 Waste Characteristics

General practices related to the fire training at this location are unknown. However, according to the Assistant Fire Chief (involved with JBER fire safety since 2003), AFFF was not used to extinguish the fires during training events now or in the past (Bakker, 2014b, personal communication; Appendix C). Because the operational history and release of AFFF during the years prior to the current Assistant Fire Chief is unclear, it is assumed that the potential for PFCs released to the environment is present.

2.2.1.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to FT023, the FTA, is Mt. Spurr Elementary School, approximately 1.5 miles south-southwest. The next closest potential receptors are a number of in-home day care facilities located in northern Anchorage and several elementary schools (Aurora, Mt. Iliamna, and Orion).

2.2.1.4 Groundwater Pathway and Targets

The uppermost, shallow groundwater at FT023 FTA, occurs from approximately 40 to 100 feet bgs as a shallow, unconfined gravelly sand aquifer that flows to the southwest (USAF, 1994). FT023 FTA, is currently an ERP site and has land use controls in place to prevent access to and development of groundwater at the site.

Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. There is no current use of groundwater as a drinking water source at FT023 FTA, and the nearest standby drinking water wells (1 mile west-southwest and west-northwest [downgradient]) are screened in the deep, confined aquifer. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Groundwater is not expected to impact excavation workers because it is not present at depths where workers would be present. Exposure pathways for groundwater ingestion and dermal contact are incomplete for JBER workers and residents.

2.2.1.5 Surface Water Pathway and Targets

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this site is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to FT023 FTA are Triangle Lake and Fish Lake, located just more than 0.5 mile north-

northwest. The Knik Arm is more than 1.7 miles west. Because drainage patterns in the area are generally to the southwest, there is potential during times of high flow for surface runoff from the site to enter the stormwater drainage system, which runs through the Cherry Hill ditch (SD052) and then to the Knik Arm approximately 2.8 miles southwest. Ship Creek runs along the southern boundary of JBER, approximately 2 miles south of the site, but stormwater drainage routes do not connect to Ship Creek. There are no exposed, eroding impacted soils at the site. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area. Dermal contact exposure to surface water is unlikely because there are no clear pathways to local surface water.

The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.8 miles west and is the only sensitive environment identified as potentially within 15 miles downstream of this location (although no clear overland flow pathways are evident).

2.2.1.6 Soil and Air Exposure Pathways and Targets

FT023 FTA is located in the flightline area of the Base. Workers, but no residents, are present within 200 feet of the site; much of the area is paved parking, and buildings are within 200 feet of the site. FT023 FTA is currently an ERP site and has land use controls in place to prevent land disturbance, which would mitigate any subsurface soil contact. The site is primarily paved, which would preclude any fugitive dust emissions and potential exposures. Current and planned future land use does not involve any human health exposures. Utilities may be present near the former burn pits and could potentially allow for dermal soil exposures to utility workers; however, as a known ERP site, workers would be made aware of potentially contaminated areas during the dig permit process. The potential of exposure for burrowing animals would also be present in the unpaved portion of the site.

The population within 4 miles of the site includes JBER and Anchorage residents, with an estimated total population of 36,400. The closest identified potential receptor to FT023 FTA, is Mt. Spurr Elementary School, approximately 1.5 miles south-southwest. The next closest potential receptors are Cardona's Child Care and Sugar Babies Day Care, each approximately 2.3 miles south of the site, and several elementary schools (Aurora, Mt. Iliamna, and Orion) are clustered approximately 2.7 miles southwest. The nearest residential area is approximately 1.6 miles south-southwest. No sensitive environments have been identified within 200 feet or within 4 miles.

2.2.2 Current Fire Training Area

2.2.2.1 Description and Operational History

The current FTA consists of a circular, lined burn area that is protected by a berm. The burn area is surrounded by gravel roads, parking lots, a mock building, and an onsite pump system. This FTA has been in use since the mid-1990s (Bakker, 2015, personal communication; Appendix C). The location is approximately 0.3 mile east of the north end of the flightline. The other primary activity in the area is gravel mining, and the Alaska Railroad tracks run along the east side of the area. The geographic coordinates are 61°15'40.20"N and -149°46'2.15"W.

The FTA consists of a 125-foot-diameter bermed circular area with a large mock aircraft (comprised primarily of large sections of pipe and plate steel) as well as a building used for structural fire training. A drain located in the mock plane area runs to an onsite holding pond where

excess fluids generated during training are held. If the holding area becomes too full, water is pumped onto the ground and allowed to drain to the east along the railroad tracks. Fire training exercises are conducted by saturating a lined area with water, pumping liquid propane fuel into the area, and igniting the fuel. The location of the current FTA is shown on Figures 1.2 and 2.2.

2.2.2.2 Waste Characteristics

Fire training occurs at this location approximately 20 times per year, during which 18,500 gallons of liquid propane are used to ignite the training fires. According to the Assistant Fire Chief (involved with JBER fire safety since 2003), AFFF has not been used to extinguish the fires during training events now or in the past (Bakker, 2014b, personal communication; Appendix C). However, a separate account from Frontier Emergency Equipment Services (performing maintenance of mobile foam units that were used at Hangar 6 [Building 9311]) indicates that AFFF testing may have occurred at the current FTA. If so, the AFFF testing discharge would 3.5 gallons of concentrate per event for each of three units annually (10.5 gallons each year) (Green, 2015, personal communication; Appendix C). Because AFFF may have been released at the location, it is assumed that the potential for PFCs to have been released to the environment is present.

Although the system is primarily contained by the lined berm area and holding pond, when the water volume in the holding area becomes too high as a result of gaining water from rain/snow events, excess water is discharged to the ground east of the area and has been observed to drain to the east along the railroad tracks (Bakker, 2015, personal communication; Appendix C).

2.2.2.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to the current FTA is Mt. Spurr Elementary School, approximately 2.1 miles southwest.

2.2.2.4 Groundwater Pathway and Targets

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These

aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water use on Base is either supplied from the Ship Creek Dam or from the deep aquifer. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The closest standby groundwater well in the deep aquifer is 1.9 miles southeast; the closest downgradient well is 2 miles northwest. Although AFFF could have been discharged to the ground along with excess water volume from the holding pond and infiltrated to the shallow aquifer, there is no hydraulic communication between shallow and deep aquifers in the area of investigation (USAF, 1994). The pathway for groundwater ingestion is considered incomplete for residents and workers. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

2.2.2.5 Surface Water Pathway and Targets

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the current FTA include several small, isolated wetlands to the north and east of the location. The nearest large surface waterbodies are an unnamed pond approximately 1 mile south of the location, Ship Creek (approximately 1.5 miles south of the location), and the Knik Arm, 3.5 miles west of the location. No exposed, eroding impacted soils are at the location. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area; therefore, contamination of surface waterbodies does not appear likely and dermal contact exposure is not considered a complete pathway.

The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 3 miles west-northwest and is the only sensitive environment identified as potentially within 15 miles downstream of this location (although no clear overland flow pathways are evident).

2.2.2.6 Soil and Air Exposure Pathways and Targets

The current FTA is located in an isolated area of JBER and is designated for the purpose of fire training events. With the exception of these events, workers are not present within 200 feet (residents are not present). Utilities are present to provide power to the pump system and could potentially allow for dermal soil exposures to utility workers.

Workers may be present within 1 mile of the location; however, residents are not. The current FTA location is primarily gravel surfaces outside of the lined berm area. Any AFFF that may have been incidentally applied outside of the bermed area or pumped out of the holding pond could be present in the gravel/sand surrounding the current FTA. Therefore, fugitive dust emissions and potential exposures are possible.

The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 44,660. The closest identified potential receptor to the current FTA

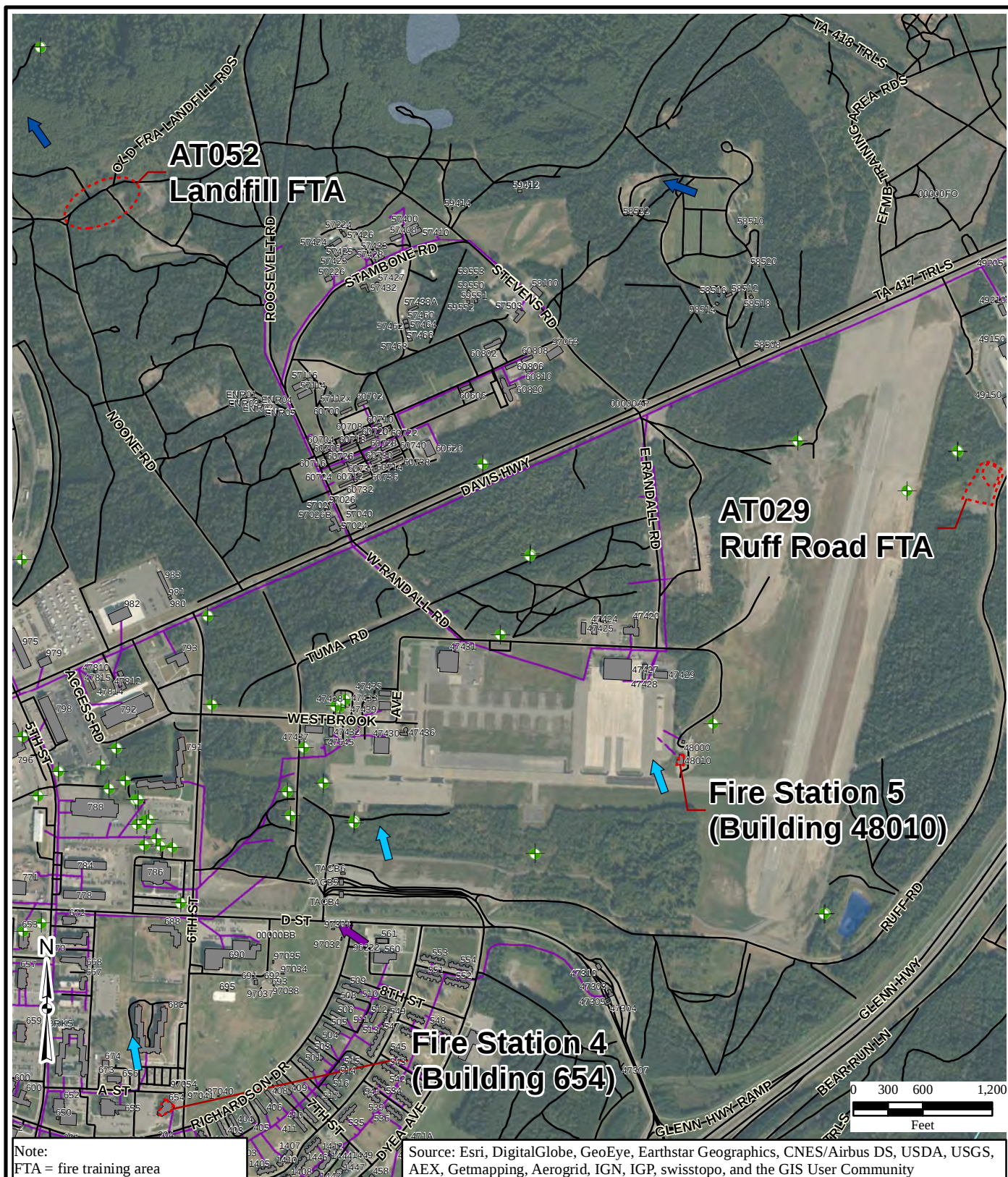
is Mt. Spurr Elementary School, approximately 2.1 miles southwest. The next closest potential receptors (within 4 miles) are a number of in-home day care facilities located in northern Anchorage (the closest of which are Stacy S. Day Care and Sugar Babies Day Care just under 3.7 miles away), 10 middle schools, 1 high school, and the Elmendorf and Alaska Veteran's Hospitals, which are around 2 miles southeast of the location. The closest residential area is approximately 1.6 miles south-southeast. The potential of exposure for burrowing animals would also be present.

The location is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future. No sensitive environments have been identified within 200 feet or within 4 miles.

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FIGURES

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4/22/2015 JR

Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

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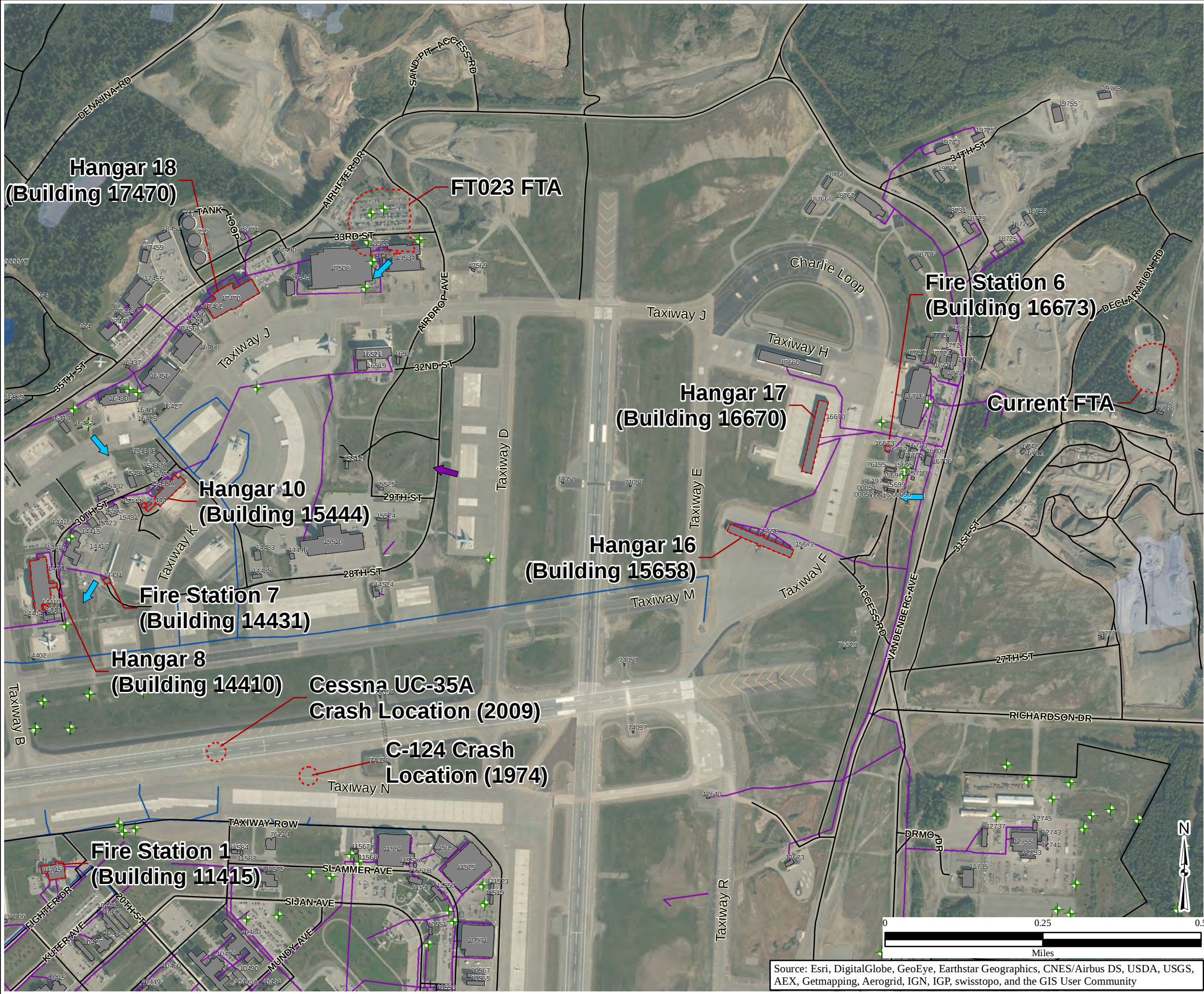


Figure 2.2
Locations Identified in the Eastern
and Central Part of the
Former Elmendorf Air Force Base
Area of Joint Base Elmendorf-
Richardson, Alaska

- Legend
- Monitoring Well
 - Shallow Aquifer Groundwater Flow Direction
 - Deep Aquifer Groundwater Flow Direction
 - Storm Sewer
 - Wastewater Line
 - Road
 - Approximate Location
 - Building
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond

Note:
FTA = fire training area

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4/15/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

3.0 NON-FIRE TRAINING AREAS

3.1 HANGARS

Thirty-four hangars were identified during the PA on JBER-R and JBER-E, including 3 hangars on JBER-R and 31 on JBER-E. The sections below describe the fire suppression systems on JBER-R and JBER-E.

3.1.1 JBER-R

Three hangars were identified on JBER-R at Bryant Army Airfield and are described below.

3.1.1.1 Bryant Army Airfield

3.1.1.1.1 Description and Operational History

Bryant Army Airfield was established in 1958, after the primary airfield was turned over to the newly formed USAF in 1950 and the Army found it required an airfield of its own. The airfield is currently operated by the Army National Guard and includes three hangars (Buildings 47427, 47430, and 47431). These hangars have water deluge fire suppression systems and have never had AFFF. These hangars are scheduled for upgrades to high-expansion foam (HEF) systems in the next few years (Baker, 2014, personal communication; Appendix C).

3.1.1.1.2 Waste Characteristics

Not applicable.

3.1.1.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.1.1.1.4 Groundwater Pathway and Targets

Not applicable.

3.1.1.1.5 Surface Water Pathway and Targets

Not applicable.

3.1.1.1.6 Soil and Air Exposure Pathways and Targets

Not applicable.

3.1.2 JBER-E

Six hangars on JBER-E either currently have or historically have had AFFF fire suppression systems, and an additional 25 hangars have not contained AFFF. In 2001, the 773rd Civil Engineer Squadron (CES) took over maintenance of the fire suppression systems; prior to this time, fire

suppression system maintenance was the responsibility of individual building custodians, and there was not an established procedure or schedule for performing or documenting system maintenance. As a result, less is known about discharges and system maintenance issues prior to 2001. Since the 773rd CES took over, general practices at the hangars where foam systems are installed (including AFFF systems) include annual testing to determine whether the system is responding as designed (without releasing foam) and biennial testing that includes the discharge of 5 to 10 gallons of AFFF concentrate to observe and adjust spray patterns. Foam discharged during testing is primarily collected in hangar drainage systems; although, some may be dispersed onto paved surfaces outside the hangar (Ellis, 2015, personal communication; Appendix C).

The types of AFFF currently used on JBER-E include 3M and Ansulite 3 percent concentrates. Approximately 3 years ago, JBER-E began replacing 3M AFFF reserves with Ansulite; however, existing stocks of 3M are generally being used up before the Ansulite is phased in, and most hangars still have an existing stock of 3M onsite. In addition to existing supplies in the tanks that are part of the fire suppression systems, additional stocks of six to twenty-five 55-gallon drums of AFFF concentrate (depending on the volume needed to refill the primary tank) are generally stored onsite in the hangar mechanical room (Ellis, 2015, personal communication; Appendix C).

3.1.2.1 Hangars without Known AFFF Use

There are currently 25 hangars with numbers in the range of 1 to 27 on JBER-E. The following 18 hangars have never had documented AFFF onsite:

- Hangar 1, Building 11551: Has only had HEF (since about 2001 or 2002 to present).
- Hangar 2, Building 11525: No fire suppression system, just fire detection.
- Hangar 3, Building 10571: No fire suppression system, just fire detection.
- Hangar 4, Building 8565: No fire suppression system, just fire detection.
- Hangar 5, Building 7309: No fire suppression system, just fire detection.
- Hangar 7, Building 10286: No fire suppression system, just fire detection.
- Hangar 12, Building 16456: Has only had HEF.
- Hangar 14, Building 16521: No fire suppression system, just fire detection.
- Hangar 15, Building 16716: Has only had HEF (since 2005-2006).
- Hangar 19, Building 8681: Has only had HEF.
- Hangar 20, Building 17534: Has only had HEF.
- Hangar 21, Building 17508: Has only had HEF.
- Hangar 22, Building 9696: Has only had HEF.
- Hangar 23, Building 17660: Has only had HEF.
- Hangar 24, Building 9684: Has only had HEF.
- Hangar 25, Building 9694: Has only had HEF.
- Hangar 26, Building 8698: Has only had HEF.
- Hangar 27, Building 10682: Has only had HEF.

3.1.2.1.1 *Description and Operational History*

These 18 hangars were constructed between the 1940s and the 1980s and either never had a fire suppression system of any kind or have only had a HEF system installed. These hangars are not expected to have had any onsite use of AFFF (Ellis, 2014, personal communication; Appendix C).

3.1.2.1.2 Waste Characteristics

Not applicable.

3.1.2.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.1.2.1.4 Groundwater Pathway and Targets

Not applicable.

3.1.2.1.5 Surface Water Pathway and Targets

Not applicable.

3.1.2.1.6 Soil and Air Exposure Pathways and Targets

Not applicable.

3.1.2.2 Corrosion Control Hangar (Building 6263)

3.1.2.2.1 Description and Operational History

The Corrosion Control Hangar (Building 6263) is south of the main flightline on Gibson Avenue. The hangar was built in 1944 and is used for F-15 exterior paint maintenance and is equipped with an AFFF fire suppression system. The hangar has grassy areas to the north and south and pavement to the east and west. A paved access to the taxiway opens along the west side of the building. The geographical coordinates are 61°14'20.28"N and -149°50'17.08"W. The location of the Corrosion Control Hangar (Building 6263) is shown on Figures 1.2 and 3.1.

3.1.2.2.2 Waste Characteristics

The Corrosion Control Hangar (Building 6263) AFFF fire suppression system includes a 400-gallon AFFF tank and one oscillating AFFF cannon within the hangar. In addition to the regular system tests described in Section 3.1.2, the system has had one known (accidental) activation since 2000. This activation occurred in 2001 and emptied the 400-gallon tank (Ellis, 2015, personal communication; Appendix C). After discharge, AFFF was directed to floor drains (connected to an oil-water separator and subsequently to the wastewater system) as well as allowed to flow out the hangar door on the east side of the building (Ellis, 2015, personal communication; Appendix C), and likely was released to nearby grassy areas.

3.1.2.2.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other

release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range of each other, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the Corrosion Control Hangar (Building 6263) are Denali Child Development Center (2,270 feet east) and Katmai Child Development Center (2,170 feet west). The next closest potential receptors are several additional elementary schools 0.5 mile away and greater, to the south and southwest, one additional child development center, 0.5 mile west, and a large number of in-home day care facilities, the closest of which is just more than 1 mile to the southeast.

3.1.2.2.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the runway may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The Bootlegger Cove Formation acts as an impermeable layer between the shallow and deep aquifers in the area of investigation (USAF, 2011a). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.6 mile south. The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.2.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the hangar. In times of high-volume flow, drainage is generally to the south and southwest, and overland flow from the hangar area would likely become part of the main stormwater drainage running through the grassy area south of the building, which flows to the Cherry Hill outfall and ultimately to Cook Inlet (Figure 3.2).

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact

drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the Corrosion Control Hangar (Building 6263) includes several small, isolated wetlands to southeast of the location associated with Ship Creek and Ship Creek itself (around 0.5 to 0.6 mile away). No exposed, eroding impacted soils are at the location. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area; therefore, contamination of surface waterbodies is not likely.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Although the water source for JBER is well upstream of this area (and therefore no surface water ingestion concerns are related to the location), contaminants that reach the shallow aquifer have the potential to impact Ship Creek, which is just more than 1.5 miles south of the location. There is also a potential ecological impact to aquatic or marine species, including salmon, which are found in Ship Creek, and to humans and other species that ingest these fish and other aquatic or marine species. If contamination did reach Ship Creek, dermal exposure to fishermen or other people using or playing in the creek would also be possible.

The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.6 miles west and is the only sensitive environment identified as within 15 miles downstream of this location.

3.1.2.2.6 Soil and Air Exposure Pathways and Targets

This area has no residents, but workers are present within 200 feet because the source area is adjacent to an operational building. Wetlands are within 4 miles of the location, but there are no recognized sensitive environments. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure. Burrowing animals would also have a potential for exposure.

The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 93,320. The closest identified potential receptors to the Corrosion Control Hangar (Building 6263) are Denali Child Development Center (2,270 feet east) and Katmai Child Development Center (2,170 feet west). The next closest potential receptors are several elementary schools 0.5 mile away and greater, to the south and southwest, one additional child development center, 0.5 mile west, and a large number of in-home day care facilities, the closest of which (Cardona's Child Care) is just more than 1.1 mile to the southeast. The closest residential area is slightly less than 0.5 mile west-southwest.

3.1.2.3 Hangar 6 (Building 9311)

3.1.2.3.1 Description and Operational History

Hangar 6 (Building 9311) is located on JBER-E south of the main flightline toward the north end of Jerstadt Avenue. The location has small grassy areas immediately adjacent to the north, east, and south of the building, and paved access to the taxiway opening along the west side of the building. The geographical coordinates are 61°14'39.74"N and -149°49'59.30"W.

Hangar 6 (Building 9311) was constructed in 1944. The Alaska National Guard operates the Army's Regional Flight Center within this hangar. The hangar currently has three portable fire

suppression systems. These systems were purchased in 2009 but were later determined not to be necessary to meet safety requirements, and they were taken out of service in late 2014. The units never had any accidental activations or use in emergency responses; however, testing of the AFFF spray patterns was performed annually. The fire suppression system units are still stored at Hangar 6 (Building 9311), but they have been depressurized and decommissioned and are currently awaiting disposal through the Defense Reutilization and Marketing Office. The location of Hangar 6 (Building 9311) is shown on Figures 1.2 and 3.1.

3.1.2.3.2 Waste Characteristics

A total of 3.5 gallons of AFFF concentrate was contained in each of the three portable fire suppression units, which were tested annually. During testing, the AFFF tanks on each unit were emptied completely, for a total of 10.5 gallons discharged during each annual test. Until approximately 2012, AFFF testing was performed on the pavement to the west of the hangar; subsequently, the AFFF units were transported to the current FTA for testing (Green, 2015).

3.1.2.3.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the Hangar 6 (Building 9311) area are Sitka and Denali Child Development Centers, approximately 0.5 mile southeast and Mt. Spurr Elementary School, approximately 0.5 mile east. The next closest potential receptors are a number of in-home day care facilities (appearing around 1.2 miles southeast and greater distances), one more child development center approximately 0.7 mile southwest, and several other elementary schools around 1 mile southwest of the location.

3.1.2.3.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These

aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The Bootlegger Cove Formation acts as an impermeable layer between shallow and deep aquifers in the area of investigation (USAF, 2011a). The nearest standby water supply well (screened in the deep aquifer) is located approximately 1 mile south-southwest (cross-gradient). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render the ingestion exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.3.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the hangar. In times of high-volume flow, drainage is generally to the south and southwest, and overflow from the hangar area would likely become part of the main stormwater drainage to the south and east of the building, which flows to the Cherry Hill outfall and subsequently to the Knik Arm of the Cook Inlet. Although Ship Creek provides the primary drinking water source for JBER, and shallow groundwater from this area may discharge to Ship Creek, the intake is upgradient of the main Base area and on the east side of (and 2.5 miles upgradient from) the Glenn Highway. As a result, ingestion of surface water by workers and residents is not considered a complete pathway. If contamination did reach Ship Creek, dermal exposure to fishermen or other people using or playing in the creek would be possible.

The nearest surface waterbodies to Hangar 6 (Building 9311) are several small, isolated wetlands around 0.7 mile to the northeast of the location and a number of small wetlands in the Ship Creek drainage (0.8 mile south-southwest) and Ship Creek itself (around 0.8 to 0.9 mile away). No exposed, eroding impacted soils are at the location. Sheet flow typically does not come into contact with subsurface soil contaminants, and no clear overland drainage channels are in the area. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.7 miles west and is the only sensitive environment identified as within 15 miles downstream of this location.

3.1.2.3.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 77,880. The closest identified potential receptors to the Hangar 6 (Building 9311) area are the Sitka and Denali Child Development Centers, approximately 0.5 mile southeast, and Mt. Spurr Elementary School, approximately 0.5 mile east. The next closest potential receptors are a number of in-home day care facilities (appearing around 1.2 miles southeast and greater distances), another child development center,

approximately 0.7 mile southwest, and several other elementary schools approximately 1 mile southwest of the location. The closest residential area is approximately 0.4 mile east-southeast.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.1.2.4 Hangar 8 (Building 14410)

3.1.2.4.1 *Description and Operational History*

Hangar 8 (Building 14410) is located on JBER-E on the north side of the main flightline on Taxiway Bravo and is the home of the 703 Aircraft Maintenance Unit and the 962 Aircraft Maintenance Unit. The hangar was built in 1957 and is a large aircraft maintenance hangar for the E-3/AWACS. The hangar is primarily surrounded by paved surfaces but has small grass areas immediately adjacent to the mechanical room on the south end. The hangar has grassy areas surrounding the adjacent paved surfaces in most directions. A paved access to the taxiway opens along the west side of the building. The geographical coordinates are 61°15'18.56"N and -149°49'10.56"W.

Hangar 8 (Building 14410) has an AFFF fire suppression system (installed in 1987) that is still in use. The AFFF system includes a 1,500-gallon tank, an overhead sprinkler network, and three foam cannons in the hangar located on the northwest, central east, and southwest sides. In addition to the regular system tests described in Section 3.1.2, the cannon on the northwest side of the hangar had three accidental activations between 2000 and 2004 (each approximately 100 to 200 gallons of AFFF concentrate). AFFF was collected in floor drains and was allowed to flow out the door at the northwest corner (facing west) of the hangar (Ellis, 2015, personal communication; Appendix C). The location of Hangar 8 (Building 14410) is shown on Figures 1.2 and 2.2.

3.1.2.4.2 *Waste Characteristics*

Although much of the AFFF discharged during accidental activations was captured in the drain that discharges to the wastewater system, AFFF is known to have been released through the main door at the northwest corner of the hangar (Ellis, 2015, personal communication; Appendix C). The area immediately outside the door is paved, but a grassy area to the west and northwest may receive runoff. The volume of AFFF (out of the 100 to 200 gallons of AFFF concentrate from each of the three accidental activations) that may have escaped out the hangar door is unknown (Ellis, 2015, personal communication; Appendix C).

3.1.2.4.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil

contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Hangar 8 (Building 14410) is Mt. Spurr Elementary School, approximately 0.8 mile south.

3.1.2.4.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.6 mile northwest (downgradient). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.4.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the hangar. In times of high-volume flow, drainage in that area of the flightline is generally to the south and southwest. Overflow from the hangar area would likely become part of the main stormwater drainage on the north side of Taxiway M, which flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer, therefore, have the potential to impact Ship Creek, which is just more than 1.5 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and humans and other species that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to Hangar 8 (Building 14410) is a small pond approximately 2,100 feet north of the location. The nearest large surface waterbodies are Knik Arm, located 1.7 miles northwest, and Ship Creek, located 1.4 miles south of the location. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.6 miles northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.1.2.4.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 61,890. The closest identified potential receptor to the Hangar 8 (Building 14410) area is Mt. Spurr Elementary School, approximately 0.8 mile south. The closest day care facilities are Sitka and Denali Child Development Centers, approximately 0.6 mile south, and the closest residential area is approximately 0.8 mile south.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.1.2.5 Hangar 10 (Building 15444)

3.1.2.5.1 Description and Operational History

Hangar 10 (Building 15444) is located on JBER-E on the north side of the main flightline on Taxiway Kilo and is the home of the 176th Air National Guard. Built in 1957, this is a heavy aircraft fuel maintenance hangar. The hangar is surrounded immediately to the north and south by paved surfaces, but has small grass and gravel areas immediately adjacent to the mechanical room on the west end, along the east side, and beyond the immediately adjacent paved surfaces in most directions. A paved access to the taxiway opens along the south side of the building. The geographical coordinates are 61°15'26.48N and -149°48'49.75"W.

Hangar 10 (Building 15444) has an AFFF fire suppression system that is currently in the process of being converted to an HEF system. The original fire suppression system at the hangar was installed in 1971. The AFFF system included a 1,500-gallon AFFF tank, an overhead sprinkler network, and three oscillating AFFF cannons located inside along the north side of the hangar. In addition to regular system testing described in Section 3.1.2, the westernmost and central cannons have had an estimated five to six accidental activations since 2000 (sometimes one and sometimes both cannons; each approximately 100 to 200 gallons of AFFF concentrate for each cannon). AFFF was collected in floor drains and was allowed to flow out the door at the northeast corner (facing

east) of the hangar (Ellis, 2014, personal communication; Appendix C). At the time of the visit for this PA in December 2014, the AFFF concentrate from the tank had been removed and placed into six 250-gallon totes outside of the mechanical room to await shipment to the contiguous United States for disposal (Galvez, 2014, personal communication; Appendix C). The location of Hangar 10 (Building 15444) is shown on Figures 1.2 and 2.2.

3.1.2.5.2 Waste Characteristics

Although much of the AFFF discharged during accidental activations is captured in the drain system that routes to the wastewater system, AFFF is known to have been released through the main door at the northeast corner of the hangar (Ellis, 2015, personal communication; Appendix C). The area immediately outside the door is paved, but grassy areas to the east and farther west may receive runoff. The volume of foam (out of the 100 to 200 gallons of AFFF concentrate per cannon from each of the five to six accidental activations) that may have escaped from the hangar door is unknown (Ellis, 2015, personal communication; Appendix C).

Historical records indicate that two floor drains in Hangar 10 (Building 15444) were connected to dry wells prior to 1988, at which point they were abandoned and replaced with a 10,000-gallon waste storage tank. By 1992, the dry wells had been connected to two oil-water separators, which discharged to the sanitary sewer. Investigations conducted in 1992 indicated that fuel-contaminated soil (possibly associated with one of the former dry wells) was present at unacceptable levels off of the west corner of the building (USAF, 1992). It may be possible that AFFF was also discharged to this floor drain system and dry well.

3.1.2.5.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Hangar 10 (Building 15444) is Mt. Spurr Elementary School, approximately 1 mile south-southwest.

3.1.2.5.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.6 mile northwest (downgradient). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.5.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the hangar. In times of high-volume flow, drainage in that area of the flightline is generally to the south and southwest, and overflow from the hangar area would likely become part of the main stormwater drainage on the north side of Taxiway M, which flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.5 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other species that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to Hangar 10 (Building 15444) is a small pond approximately 1,900 feet northwest of the location. The nearest large surface waterbodies are Knik Arm, located 1.7 miles northwest; Triangle Lake, 0.9 mile north; and Ship Creek located 1.5 miles south of the location. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.6 miles west and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.1.2.5.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some areas of grass and gravel. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 53,140. The closest identified potential receptor to the Hangar 10 (Building 15444) area is Mt. Spurr Elementary School, approximately 1 mile south-southwest. The closest day care facility is Cardona's Child Care, approximately 1.8 miles south, and the closest residential area is approximately 1 mile south.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area includes an unvegetated area to the southwest, fugitive dust emissions and potential exposures could be possible. Construction activities or other ground-disturbing activities could also result in potential worker exposure to dust. The closest identified potential receptor to Hangar 10 (Building 15444) is Mt. Spurr Elementary School, approximately 1 mile south-southwest. Additional potential receptors within 4 miles include 4 on-Base child development centers, numerous in-home day care facilities, 16 elementary schools, one high school, and the Elmendorf and Alaska Veteran's Hospitals.

3.1.2.6 Hangar 16 (Building 15658)

3.1.2.6.1 Description and Operational History

Hangar 10 (Building 15658) is located on JBER-E on the north side of the main flightline on Taxiway Foxtrot and is the home of the F-22 Combat Alert Cell. Built in 1954, the hangar consists of eight separate bays in a single line. The hangar is completely surrounded by paved surfaces but has grassy areas beyond the immediately adjacent paved surfaces in most directions. A paved access to the taxiway opens along the south side of the hangar. The geographical coordinates are 61°15'24.57"N and -149°47.8.10"W.

Hangar 10 (Building 15658) has an AFFF system that was installed in the mid-1990s. The AFFF system consists of two, fixed AFFF cannons in each of the eight bays. The system is designed so that each bay is independent from the other; therefore, a discharge in one bay does not result in discharges in any of the other bays. Hangar 10 (Building 15658). The location of Hangar 10 (Building 15658) is shown on Figures 1.2 and 2.2.

3.1.2.6.2 Waste Characteristics

In addition to the regular system testing described in Section 3.1.2, two known activations have occurred since 2000, each of which completely emptied the 325-gallon AFFF tank. Around 2007, the AFFF system in Bay 5 was accidentally activated when a sensor was triggered by a cigarette lighter flash. Bay 5 has since been converted to an exercise/storage room because it is adjacent to Combat Alert Cell sleeping quarters. In 2007 or 2008, an aircraft fire in Bay 7 resulted in another complete discharge of the 325-gallon AFFF tank. In each discharge, some AFFF was collected in floor drains, but most of the AFFF was pushed out of each hangar's respective bay door onto the paved pad and left to evaporate. As part of the cleanup after the activation in Bay 7, the airfield

sweeper vehicles spread the AFFF around the pad in front of Bays 4, 5, 6, and 7 (Ellis, 2014, personal communication; Appendix C). Much of this volume may have reached surrounding grassy areas after precipitation events. This volume may have also been collected by the stormwater drainage system to the southwest that runs along the north side of Taxiway Mike and eventually to the Cherry Hill ditch (SD052) system, which ultimately discharges to the Knik Arm to the west.

3.1.2.6.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Hangar 10 (Building 15658) is Mt. Spurr Elementary School, approximately 1.5 miles southwest.

3.1.2.6.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. There are 7 drinking water wells between 1.5 and 2.4 miles downgradient (to the west-northwest to north-northwest). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.6.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the hangar. In times of high-volume flow, drainage in that area of the flightline is generally to the south and southwest, and overflow from the hangar area would likely become part of the main stormwater drainage on the north side of Taxiway M, which flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.3 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other species that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to Hangar 10 (Building 15658) are some small wetland areas starting 0.9 to 1 mile north of the location. The nearest large surface waterbodies are Triangle Lake and Fish Lake, located 1.2 and 1.3 miles northwest, respectively, and Ship Creek, located 1.3 miles south of the location. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 2.6 miles west-northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.1.2.6.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 53,890. The closest identified potential receptor to the Hangar 10 (Building 15658) area is Mt. Spurr Elementary School, approximately 1.5 miles southwest. The closest in-home day care facility is Stacy S. Day Care Home (approximately 1.9 miles south), the closest on-Base child development center (Sitka), is 1.7 miles southwest, and the closest residential area is approximately 1.4 miles southwest.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

The location is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future. No sensitive environments have been identified within 200 feet or otherwise nearby.

3.1.2.7 Hangar 17 (Building 16670)

3.1.2.7.1 *Location Description and Operational History*

Hangar 17 (Building 16670) is located on JBER-E on the east side of the main flightline on Taxiway Foxtrot and is the home of the 90th Aircraft Maintenance Unit for F-22s. The hangar was built in 1996 and consists of eight separate bays in a single line. The hangar is completely surrounded by paved surfaces but has grassy areas to the south and west beyond the immediately adjacent paved surfaces in most directions. Hangar access to the taxiway opens along the west side of the building. The geographical coordinates are 61°15'33.40"N and -149°49'59.40"W.

Hangar 17 (Building 16670) has an AFFF system that was installed around the time the building was constructed. The AFFF system includes a 300-gallon tank and fixed-head sprinkler system in each of the eight bays. The system is designed so that each bay is independent from the others; therefore, a discharge in one bay does not result in discharges in any of the other bays. The location of Hangar 17 (Building 16670) is shown on Figures 1.2 and 2.2.

3.1.2.7.2 *Waste Characteristics*

In addition to the regular system testing described in Section 3.1.2, three or four accidental system activations have occurred since 2000, each of which discharged approximately 5 gallons of AFFF concentrate. In each discharge, some AFFF was collected in floor drains, but much of the AFFF drained onto the paved pad approximately half way down the east side of the building and was left to evaporate. Runoff has been observed to collect and run along a north-south depression in the asphalt approximately 30 feet in front of the hangar (Ellis, 2014, personal communication; Appendix C). Some of the AFFF discharged during the accidental activations is likely to have escaped from the east side drain during the three or four discharges since 2000. Much of the escaped volume may have been released to the surrounding grassy areas to the west and south after precipitation events.

3.1.2.7.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles

distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Hangar 17 (Building 16670) is Mt. Spurr Elementary School, approximately 1.6 miles southwest.

3.1.2.7.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. There are 7 drinking water wells between 1.5 and 2.4 miles downgradient (to the west-northwest to north-northwest). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.7.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas south and west of the hangar. In times of high-volume flow, drainage is generally to the south and southwest, and overflow from the hangar area could potentially become part of the main stormwater drainage on the north side of Taxiway Mike, which flows to the Cherry Hill ditch (SD052) and ultimately to the Knik Arm of the Cook Inlet. Figure 3.2 shows surface drainage flow pathways that could be contaminant transport pathways of AFFF discharges from hangars and other buildings.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just about 1.5 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other species that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to Hangar 10 (Building 15658) are some small wetland areas starting 0.8 to 0.9 mile north of the location. The nearest large surface waterbodies are Triangle Lake and Fish Lake, located 1.3 and 1.4 miles northwest, respectively, and Ship Creek, located 1.5 miles

south of the location. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 2.6 miles west-northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.1.2.7.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 53,890. The closest identified potential receptor to the Hangar 17 (Building 16670) area is Mt. Spurr Elementary School, approximately 1.6 miles southwest. The closest day care facility is Stacy S. Day Care Home (approximately 2 miles south), the closest on-Base child development center (Sitka), is 1.7 miles southwest, and the closest residential areas are approximately 1.6 miles southwest and approximately 1.6 miles south.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.1.2.8 Hangar 18 (Building 17470)

3.1.2.8.1 Description and Operational History

Hangar 18 (Building 17470) is located on JBER-E on the north side of the main flightline on Taxiway Joker and is the home of the 176th Air National Guard. Built in 1999, this is a large aircraft maintenance hangar. The hangar is primarily surrounded immediately on all sides by paved surfaces but has small grass and gravel areas to the southeast, southwest, and north. A paved access to the taxiway opens along the south side of the building. The geographical coordinates are 61°15'42.66"N and -149°48'39.80"W.

Hangar 18 (Building 17470) has an AFFF fire suppression system that includes two 750-gallon AFFF tanks and four oscillating AFFF cannons within the hangar along the middle line from east to west. The location of Hangar 18 (Building 17470) is shown on Figures 1.2 and 2.2.

3.1.2.8.2 Waste Characteristics

In addition to the regular system testing described in Section 3.1.2, several accidental activations of the system have occurred around 2005, including at least one instance when all four cannons activated simultaneously, and a number of other instances where one or both cannons in the east or west end activated. The estimated maximum volume for each of these discharges is 1,000 gallons of AFFF concentrate. AFFF was collected in floor drains and was allowed to flow out the door at the south side of the west bay of the hangar (Ellis, 2014, personal communication; Appendix C). The area immediately outside the door is paved, but grassy areas to the southeast

and farther southwest may receive runoff. The volume of AFFF that may have escaped from the hangar door is unknown (Ellis, 2014, personal communication; Appendix C).

3.1.2.8.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Hangar 18 (Building 17470) is Mt. Spurr Elementary School, approximately 1.3 miles south.

3.1.2.8.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved surfaces may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. There is no communication between shallow and deep aquifers in the area of investigation (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.5 mile west-northwest (downgradient). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.1.2.8.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas to the southeast and southwest of the hangar. In times of high-volume flow, drainage is generally to the south and southwest, and overflow from the hangar area would likely become part of the main

stormwater drainage on the north side of Taxiway Mike, which flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.8 miles south of the 1, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to Hangar 18 (Building 17470) is a small wetland approximately 1,600 feet northwest and a small pond approximately 1,900 feet west of the location. The nearest large surface waterbodies are Triangle Lake and Fish Lake, located 0.6 and 0.7 mile north, respectively; Knik Arm, located 1.7 miles northwest; and Ship Creek, located 1.8 miles south of the location. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 1.6 miles west and is the only sensitive environment identified as within 15 miles downstream of this location.

3.1.2.8.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the hangar is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 58,060. The closest identified potential receptor to the Hangar 18 (Building 17470) area is Mt. Spurr Elementary School, approximately 0.8 mile south. The closest in-home day care facility is Cardona's Child Care (approximately 2.1 miles south), the closest on-Base child development center (Sitka) is 1.4 miles south-southwest, and the closest residential area is approximately 1.3 miles south.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.2 FIRE STATIONS

Seven fire stations are currently on JBER. Two stations serve JBER-R, and five serve JBER-E. Of these seven stations, five have emergency response vehicles that carry a supply of AFFF (Fire Stations 1, 4, 5, 6, and 7) and two that do not (Fire Stations 2 and 3). None of these stations currently have any AFFF systems installed at the buildings, although Fire Station 1 (Building 11415) previously had an underground storage tank (UST) and overhead refill system. General

practices at the fire station include routine cleaning of the vehicles in the bays, where runoff is captured by wastewater drains (with or without oil-water separators). Small-scale AFFF nozzle testing was likely performed outside of most if not all stations with AFFF-equipped vehicles until 2012, when the 673rd CES National Pollutant Discharge Elimination System (NPDES) program manager issued a memorandum updating the procedures for AFFF testing (Bakker, 2014a, personal communication; Appendix C). These procedures included specifying discharges would occur only at the current AFFF test area, during dry conditions, and avoiding discharge toward stormwater or wastewater drains. Planned outdoor testing also requires notification to the NPDES program manager 48 hours before the event (Haas, 2012).

3.2.1 JBER-R

3.2.1.1 Fire Station 4 (Building 654)

3.2.1.1.1 *Description and Operational History*

Fire Station 4 (Building 654) is located on the west side of Sixth Street on JBER-R. It is surrounded by a paved/concrete area with small grassy areas bordering it to the northwest and southeast. The geographical coordinates are 61°15'15.07"N and -149°41'5.13"W. Fire Station 4 (Building 654) serves as the main fire station on JBER-R and houses four emergency response vehicles, one of which (Crash 9) carries AFFF concentrate. This fire station also has a “skid unit” containing Class A foam (used on combustible material fires) for fighting wildland fires. The location of Fire Station 4 (Building 654) is shown on Figures 1.1 and 2.1.

3.2.1.1.2 *Waste Characteristics*

At Fire Station 4 (Building 654), the only storage of AFFF is in fire engine Crash 9, totaling approximately 56 gallons of AFFF concentrate. Cleaning of the vehicle is conducted inside Fire Station 4 (Building 654) where floor drains are present to capture any runoff and feed into the Anchorage Water & Wastewater Utility (AWWU) system for treatment. It is possible that small-scale nozzle testing may have also been performed outside of the station in the past, resulting in minor releases. Refilling of the fire engine’s AFFF tank occurs from stock supply housed at Building 6210. (Note that Building 6210 was assessed independently; see Section 3.4.2.3).

3.2.1.1.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor’s body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential

migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Station 4 (Building 654) is Ursa Major Elementary School, approximately 1,600 feet southeast.

3.2.1.1.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the station may have infiltrated to groundwater.

One shallow and one deep groundwater system have been identified in the area of JBER-R (Freethy, 1976); however, three separate aquifer systems exist in the cantonment area, including a shallow unconfined system (approximately 10 to 20 feet bgs), a locally confined system (at approximately 80 feet bgs), and a deeper confined system (approximately 130 feet bgs or greater) (Freethy, 1976). The locally confined aquifer changes from confined to semiconfined to unconfined, moving from south to north across the cantonment area. The upper confining unit moves out along the northern boundary of the cantonment area, while the shallow unconfined and locally confined aquifers merge. The nearest standby drinking water well to Fire Station 4 (Building 654) is approximately 1.5 miles southwest.

Groundwater at ERP site SS090 (located approximately 200 feet north of Fire Station 4 [Building 654]) was found to exist beneath the confining Bootlegger Cove Formation at around 70 feet bgs in this area. Based on the calculated groundwater elevations at each well, the local hydraulic gradient is 0.015 foot per foot, and flow is toward the northwest. The investigation at SS090 found that the contaminants of concern had not penetrated the confining unit (USAF, 2014f).

Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 1.5 miles west-southwest (cross-gradient). The closest downgradient well is approximately 3.2 miles northwest. Contamination has not reached the confined aquifer in this area; therefore, the ingestion exposure pathway is incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.2.1.1.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas to the south and southeast of the station. In times of high-volume flow, drainage in that area is generally to the west and south, and overflow from the area would likely become part of the main stormwater drainage flowing south and west and ultimately collecting in a large retention area west of Arctic Valley Road. Overflow from the retention area, while rarely observed (Haas, 2014, personal communication; Appendix C), flows to Ship Creek, located 1.2 miles southwest of the location, which ultimately drains to the Knik Arm of the Cook Inlet. The drainage pathway presents a potentially complete ecological pathway for aquatic or marine species, and for humans and other

animals that ingest these fish and other aquatic or marine species. Dermal exposure to surface water in the retention pond is also possible.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion of surface water by workers and residents is not a complete pathway. The nearest surface waterbodies to the station are two small wetland areas approximately 0.7 mile to the southwest. The nearest large surface waterbody is Ship Creek. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 5.7 miles northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.2.1.1.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A historical release of AFFF to soil in the grassy areas near the station is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 24,680. The closest identified potential receptor to the station is Ursa Major Elementary School, approximately 1,600 feet southeast. The closest in-home day care facility is Garnet's Day Care (approximately 2.6 miles away), the closest on-Base child development centers (Kodiak and Talkeetna) are approximately 2,200 feet southwest, and the nearest residential area is less than 0.1 mile away.

This area of the installation has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction or other ground-disturbing activities could result in potential worker exposure to dust.

3.2.1.2 Fire Station 5 (Building 48010)

3.2.1.2.1 Description and Operational History

Fire Station 5 (Building 48010) is located on the east side of Bryant Airfield and west of Runway 35 on JBER. It is surrounded by a paved/concrete area with small grassy areas bordering it to the west and east. Several other buildings are in the immediate vicinity, including Buildings 47427, 47428, and 47429. The geographical coordinates are 61°15'46.50"N and -149°39'36.79"W. Fire Station 5 (Building 48010) serves Bryant Army National Guard Airfield Station on JBER-R and houses two emergency response vehicles, one of which (Crash 10) carries AFFF concentrate (Bakker, 2014b, personal communication; Appendix C). The location of Fire Station 5 (Building 48010) is shown on Figures 1.1 and 2.1.

3.2.1.2.2 Waste Characteristics

At Fire Station 5 (Building 48010), the only storage of AFFF is in emergency response vehicle Crash 10, totaling approximately 210 gallons of concentrate. Vehicle cleaning is conducted inside Fire Station 5 (Building 48010) where floor drains are present to capture any runoff and direct it

into the AWWU system for treatment. It is possible that small-scale AFFF testing also may have been performed outside of the station in the past, in which case the surrounding vegetated areas may have received AFFF in runoff. Refilling of the fire engine's AFFF tank occurs from stock supply housed at Building 6210 (Bakker, 2014b, personal communication; Appendix C).

3.2.1.2.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Station 5 (Building 48010) is Ursa Major Elementary School, approximately 1 mile southwest.

3.2.1.2.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the station may have infiltrated to groundwater.

One shallow and one deep groundwater system have been identified in the area of JBER-R (Freethy, 1976); however, three separate aquifer systems exist in the cantonment area, including a shallow unconfined system (approximately 10 to 20 feet bgs), a locally confined system (at approximately 80 feet bgs), and a deeper confined system (approximately 130 feet bgs or greater) (Freethy, 1976). The locally confined aquifer changes from confined to semiconfined to unconfined, moving from south to north across the cantonment area. The upper confining unit moves out along the northern boundary of the cantonment area, while the shallow unconfined and locally confined aquifers merge.

Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby drinking water well to Fire Station 5 (Building 48010) is approximately 2.5 miles southwest (cross-gradient), and the nearest potential downgradient drinking water well is more than 3.3 miles northwest at Otter Lake Recreation Center.

Although unlikely because the quantity of AFFF that may have been discharged during spray testing at the station is unknown, and no groundwater data from the location indicate whether there is an effective aquitard preventing contamination of the deep aquifer in this location, the groundwater pathway is considered potentially complete for worker or resident ingestion. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 53,140. The closest identified potential receptor to the station is Ursa Major Elementary School, approximately 1 mile southeast. The closest in-home day care facility is Garnet's Day Care (approximately 3.5 miles southwest), the closest on-Base child development centers (Talkeetna and Kodiak) are approximately 1.4 miles southwest, and the nearest residential area is approximately 0.5 mile southwest. Because the shallow groundwater is relatively deep, the dermal contact pathway is incomplete.

3.2.1.2.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the station. In times of high-volume flow, drainage in that area is generally to the south where there is a small retention area. Overflow from the area would likely become part of the main stormwater drainage flowing south and west and ultimately collecting in a larger retention area west of Arctic Valley Road. Overflow from the retention area, while rarely observed (Haas, 2014, personal communication; Appendix C), flows to Ship Creek, located approximately 2 miles southwest of the station, and ultimately to the Knik Arm of the Cook Inlet. The drainage pathway presents a potentially complete ecological pathway for aquatic and marine species, and for humans and other animals that ingest these fish and other aquatic or marine species; this also presents a potential area for dermal contact exposure.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion of surface water by workers and residents is not a complete pathway. The nearest surface waterbodies to the station are two small retention ponds approximately 0.4 mile to the southeast and 0.6 mile south near the Glenn Highway. The nearest large surface waterbodies are a wetland 0.9 mile south (across the Glenn Highway), and Ship Creek, which is just more than 2 miles southwest. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 6.1 miles west-northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.2.1.2.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A historical release of AFFF to soil in the grassy areas near the station is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles.

This area of the installation has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Information regarding the population and receptors within 4 miles is presented in Section 3.2.1.2.4. Because the area consists primarily of paved or grassy areas,

fugitive dust emissions and potential exposures should be minimal. Construction or other ground-disturbing activities could result in potential worker exposure to dust.

3.2.2 JBER-E

3.2.2.1 Fire Station 1 (Building 11415)

3.2.2.1.1 *Description and Operational History*

Fire Station 1 (Building 11415) is located on the west side of 20th Street and north of Fighter Drive. The fire station is on a relatively flat surface and is surrounded by pavement and grass. Fire Station 1 (Building 11415) serves as the main fire station on JBER-E and houses four engines, three of which carry AFFF (Crash 8, Crash 14, and Crash 16). In addition to the fire engines onsite, a UST that is known to have housed AFFF in the past is onsite (Bakker, 2014a, personal communication; Appendix C). The geographical coordinates are 61°14'54.89"N and -149°49'6.16"W. The location of Fire Station 1 (Building 11415) is shown on Figures 1.2 and 2.2.

3.2.2.1.2 *Waste Characteristics*

The combined total of AFFF that can be stored in the three engines at Fire Station 1 (Building 11415) is 896 gallons of concentrate (Bakker, 2014b, personal communication; Appendix C). The UST onsite may also house AFFF and because the contents and condition of the tank are unknown, a release to the subsurface cannot be discounted. The former fill system that included the tank had an overhead fill pipe. Vehicle cleaning is conducted inside Fire Station 1 (Building 11415) where floor drains are present to capture any runoff and feed into the AWWU system for treatment. Annual AFFF testing (involving the discharge of 5 to 10 gallons of AFFF concentrate for each emergency vehicle) was performed in the grassy area on the northwest side of the station from 2010 to 2012. The annual testing of a maximum of eight emergency vehicles was divided between this location and Hangar 5 during this time. Refilling of the emergency vehicles' AFFF tanks occurs at Building 6210 where stock supply is stored (Bakker, 2014b, personal communication; Appendix C).

3.2.2.1.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile

range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Station 1 (Building 11415) is Mt. Spurr Elementary School, approximately 0.4 mile south.

3.2.2.1.4 Groundwater Pathway and Targets

Residual AFFF discharged to the grassy area adjacent to the station may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an impermeable layer (aquitard) separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E (USAF, 2011a). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 1.1 miles southwest (cross-gradient). The nearest downgradient well is located 0.9 mile north-northwest. The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.2.2.1.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the station. In times of high-volume flow, drainage in that area is generally to the south and southwest, and overflow from the area would likely become part of the main stormwater drainage on the north side of Fighter Drive, which ultimately flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows surface drainage flow pathways that could be contaminant transport pathways of AFFF discharges from Fire Station 1 (Building 11415) operations.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 0.9 mile south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest large surface waterbodies are Knik Arm, located 2 miles west, and Ship Creek. The Knik Arm of the Cook Inlet is designated critical habitat for the beluga whales (NOAA, 2011) and is

the only sensitive environment identified within 15 miles downstream of the location. No known exposed, eroding impacted soils are present.

3.2.2.1.6 Soil and Air Exposure Pathways and Targets

The Fire Station 1 (Building 11415) location is mostly paved with grassy areas. Releases of AFFF to soil in the grassy areas near the station have occurred during AFFF spray tests. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 74,640. The closest identified potential receptor to the station is Mt. Spurr Elementary School, approximately 0.8 mile south. The closest in-home day care facility, Cardona's Child Care, is approximately 1.3 miles south-southeast, the closest on-Base child development center (Sitka) is approximately 1.5 miles south, and the nearest residential area is approximately 0.4 mile away.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.2.2.2 Fire Station 2 (Building 5126)

3.2.2.2.1 Description and Operational History

Fire Station 2 (Building 5126) is located to the south of Arctic Warrior Drive and west of Eaker Avenue on JBER. It is surrounded by a paved/concrete area with small grassy areas bordering it to the northwest and northeast. Several other buildings are in the immediate vicinity, including Buildings 4140 and 5112. The geographical coordinates are 61°14'6.06"N and -149°51'28.22"W. Fire Station 2 (Building 5126) serves as the main structural fire response station on JBER-E and houses one emergency response vehicle that does not carry AFFF. No additional storage of AFFF is associated with this location currently or is known to have occurred historically (Bakker, 2014b, personal communication; Appendix C). The location of Fire Station 2 (Building 5126) is shown on Figures 1.2 and 3.1.

3.2.2.2.2 Waste Characteristics

Not applicable.

3.2.2.2.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.2.2.2.4 Groundwater Pathway and Targets

Not applicable.

3.2.2.2.5 Surface Water Pathway and Targets

Not applicable.

3.2.2.2.6 Soil and Air Exposure Pathways and Targets

Not applicable.

3.2.2.3 Fire Station 3 (Building 3786)

3.2.2.3.1 Description and Operational History

Fire Station 3 (Building 3786) is located to the south of Provider Drive and east of Ward Loop near the Boniface Gate entrance on JBER. It is surrounded by a paved/concrete area with grass areas bordering it to the east and south. The station is set off from the road and is relatively isolated, with the nearest development approximately 300 feet to the west. The geographical coordinates are 61°13'50.94"N and -149°46'4.93"W. Fire Station 3 (Building 3786) houses one engine that does not carry AFFF. No additional storage of AFFF is associated with this location currently or is known to have occurred historically (Bakker, 2014b, personal communication; Appendix C). The location of Fire Station 3 (Building 3786) is shown on Figures 1.2 and 3.3.

3.2.2.3.2 Waste Characteristics

Not applicable.

3.2.2.3.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.2.2.3.4 Groundwater Pathway and Targets

Not applicable.

3.2.2.3.5 Surface Water Pathway and Targets

Not applicable.

3.2.2.3.6 Soil and Air Exposure Pathways and Targets

Not applicable.

3.2.2.4 Fire Station 6 (Building 16673)

3.2.2.4.1 Description and Operational History

Fire Station 6 (Building 16673) is located on the west side of Talley Avenue off of the east end of the flightline on JBER. It is surrounded by a paved/concrete area with a small grassy/gravel areas bordering it to the south. The geographical coordinates are 61°15'32.31"N and -149°49'46.76"W. Fire Station 6 (Building 16673) serves the flightline and houses one emergency response vehicle

that carries AFFF concentrate. The location of Fire Station 6 (Building 16673) is shown on Figures 1.2 and 2.2.

3.2.2.4.2 Waste Characteristics

At Fire Station 6 (Building 16673), the only storage of AFFF is in the fire engine, totaling approximately 500 gallons of concentrate. After a response that requires the application of AFFF, vehicle cleaning is conducted inside Fire Station 6 (Building 16673), where runoff is captured by drains connected to the sanitary sewer system. Small-scale nozzle testing has been conducted outside of Fire Station 6 (Building 16673) (Bakker, 2015, personal communication; Appendix C). Refilling of the fire engine's AFFF tank occurs from stock supply housed at Building 6210 (Bakker, 2014b, personal communication; Appendix C).

3.2.2.4.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Station 6 (Building 16673) is Mt. Spurr Elementary School, approximately 1.7 miles southwest.

3.2.2.4.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved areas around the station may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, prevents communication between the shallow water table aquifer and the deeper, confined aquifer across most of JBER-E (USAF, 1994). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 1.7 miles northwest (downgradient). The

fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.2.2.4.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the station. In times of high-volume flow, drainage in the general area to the south and southwest and overflow from the area may become part of the main stormwater drainage on the north side of Taxiway M, which flows to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is approximately 1.5 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to Fire Station 6 (Building 16673) is a small wetland approximately 0.8 mile north of the location. The nearest large surface waterbodies are Triangle and Fish Lakes, each approximately 1.4 miles northwest, Knik Arm located 2.6 miles northwest, and Ship Creek, located 1.5 miles south of the location. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is the only sensitive environment identified as being within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.2.2.4.6 Soil and Air Exposure Pathways and Targets

Fire Station 6 (Building 16673) is located at the east end of the JBER flightline. The outdoor portion of the fire station is a mixture of a paved surface and gravel/grass. A release of AFFF to soil in the grassy areas near the station is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 53,090. The closest identified potential receptor to Station 6 is Mt. Spurr Elementary School, approximately 1.7 miles southwest. The closest in-home day care facility is Stacy S Day Care Home, approximately 2.1 miles south-southwest, the closest on-Base child development center (Sitka) is approximately 2 miles southwest, and the closest residential area is approximately 1.7 miles southwest.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust

emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.2.2.5 Fire Station 7 (Building 14431)

3.2.2.5.1 *Description and Operational History*

Fire Station 7 (Building 14431) is located on the north side of the flightline, south of Airlifter Drive on JBER-E. It is surrounded by a paved/concrete area with small grassy areas bordering it to the south and west. The station is set off from the flightline and is relatively isolated, with the nearest development approximately 300 feet to the west. The geographical coordinates are 61°15'18.96"N and 149°48'59.14"W. Fire Station 7 (Building 14431) serves the flightline and houses one emergency response vehicle that carries AFFF concentrate. The location of Fire Station 7 (Building 14431) is shown on Figures 1.2 and 2.2.

3.2.2.5.2 *Waste Characteristics*

At Fire Station 7 (Building 14431), the only storage of AFFF is in the fire engine, totaling approximately 210 gallons of concentrate. After a response that requires the application of AFFF, the worker primarily flushes the nozzle at the scene; however, small-scale AFFF testing may also have been performed at the station, which may have been released to nearby grassy areas. Vehicle cleaning is conducted inside Fire Station 7 (Building 14431), where runoff is captured by drains connected to the sanitary sewer system. Refilling of the fire engine's AFFF tank occurs from stock supply stored at Building 6210 (Bakker, 2014b, personal communication; Appendix C).

3.2.2.5.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Station 7 (Building 14431) is Mt. Spurr Elementary School, approximately 0.9 mile south.

3.2.2.5.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the paved areas surrounding the station may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which prevents communication between the shallow water table aquifer, and the deeper, confined aquifer across most of JBER-E (USAF, 1994). The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.6 mile northwest (downgradient). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. Because there is no current use of groundwater as a drinking water source at the station, and the nearest standby drinking water well is approximately 3.2 miles from the location to the southwest (cross-gradient), this exposure pathway is considered incomplete for JBER workers and residents. The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.2.2.5.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the grassy areas surrounding the station. In times of high-volume flow, drainage in that area of the flightline is generally to the south and southwest, and overflow from the hangar area would likely become part of the main stormwater drainage on the north side of Taxiway M, which flows to the Cherry Hill outfall and ultimately into the Knik Arm of Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.5 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to Fire Station 7 (Building 14431) is a small pond approximately 2,000 feet north of the location. The nearest large surface waterbodies are Knik Arm, located 1.7 miles northwest, and Ship Creek, located 1.4 miles south of the location. The Knik Arm of Cook Inlet has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as being within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.2.2.5.6 Soil and Air Exposure Pathways and Targets

Fire Station 7 (Building 14431) is mostly paved with grassy areas. A release of AFFF to soil in the grassy areas near the station is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 46,810. The closest identified potential receptor to the station is Mt. Spurr Elementary School, approximately 0.9 mile south. The closest in-home day care facility is approximately 1.7 miles south (Cardona's Child Care), the closest on-Base child development center (Sitka) is 1.1 miles south, and the closest residential area is approximately 0.9 mile south.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.3 EMERGENCY RESPONSE

Since the time AFFF has been used by the USAF for emergency responses (early to mid-1970s), five plane crashes have occurred on JBER: a C-17 in 2010, a C-124C in 1974, a Cessna in 2009, an E-3 (AWACS) in 1995, and a Yak-54 in 1999. The use of AFFF during the crash response is known to have occurred during the C-17, Cessna, and E-3 events; AFFF was unlikely to have been used for the C-124C event and was not used during the Yak-54 response. Available information on these responses is provided in the sections below.

3.3.1 JBER-R

A single emergency response to a small, private plane was identified as having occurred within the borders of JBER-R.

3.3.1.1 Yak-54 Crash Location (1998)

3.3.1.1.1 *Description and Operational History*

On July 26, 1998, an unlimited class aerobatic Yakovlev Yak-54 airplane crashed in the Range area of JBER-R. The crash location is undeveloped and consists of densely forested topography. The geographical coordinates are approximately 61°20'42.65"N and -149°39'55.81"W. The relative crash location is shown on Figure 1.1, which indicates the distance and direction from the main Base area.

3.3.1.1.2 *Waste Characteristics*

The JBER Fire Department responded to the Yak-54 crash; however, the plane did not burn and AFFF was not applied (Bakker, 2015, personal communication; Appendix C).

3.3.1.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.3.1.1.4 Groundwater Pathway and Targets

Not applicable.

3.3.1.1.5 Surface Water Pathway and Targets

Not applicable.

3.3.2 JBER-E

3.3.2.1 SS108 C-17 Crash Site (2010)

3.3.2.1.1 Description and Operational History

In July 2010, a C-17 aircraft crashed about 2,000 feet northeast of the JBER east-west runway. This area was designated ERP site SS108. The aircraft initially impacted on the northwest side of the Alaska Railroad Corporation (ARRC) tracks, crossed the tracks, and came to rest on the southeast side of the tracks. The crash released approximately 4,000 gallons of jet fuel, but most of the fuel was consumed in the fire resulting from the crash. The crash location is undeveloped except for ARRC tracks that cross the site from the southwest to the northeast. Outside of the cleared and leveled railroad corridor, which is parallel to the west by a gravel road in this area, the site consists of forested rolling hills of the Elmendorf Moraine (USAF, 2013a). The geographical coordinates are 61°16'5.9"N and -149°45'38.54"W. The approximate crash location is shown on Figures 1.2 and 3.4.

In October 2012, a removal action was conducted to remove fuel-contaminated soils from the crash site in order to return the site to unrestricted use. A total of 1,544 cubic yards of fuel-contaminated soil was removed and disposed of offsite in accordance with state regulations, and confirmation samples for diesel range organic compounds, volatile organic compounds, and semivolatile organic compounds indicated that all concentrations were below Alaska Department of Environmental Conservation Method 2 Cleanup Levels and a cleanup complete designation was recommended (USAF, 2013c).

3.3.2.1.2 Waste Characteristics

The JBER Fire Department responded to the crash of the C-17 aircraft. An AFFF blanket was maintained in order to isolate all fuel vapors. After the fire had been put out, the AFFF was allowed to dissipate in place. Approximately 220 gallons of AFFF concentrate were used for the emergency response, though it is unknown which type of AFFF was applied (Bakker, 2015, personal communication; Appendix C). Because AFFF distribution would likely be primarily associated with the fuel-contaminated areas, much of the residual AFFF may have been removed along with the fuel-contaminated soil during the 2012 removal action.

3.3.2.1.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the C-17 crash location are the Elmendorf and Alaska Veteran's Hospitals, approximately 2.5 miles south, and Mt. Spurr Elementary School, approximately 2.6 miles southwest.

3.3.2.1.4 Groundwater Pathway and Targets

The depth to uppermost, shallow groundwater at SS108 C-17 crash site is estimated to be 40 to 50 feet bgs based on data from wells in adjacent areas (USAF, 2013a). JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow aquifer from the deep, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Although the Bootlegger Cove Formation effectively prevents contaminants from reaching the deeper aquifer over much of JBER-E, groundwater has not been investigated at this location and the integrity of the formation is unconfirmed. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest drinking water wells are 1.6 miles northeast at Otter Lake Recreation Facility and 2.1 miles southeast; both are cross-gradient to the primarily westerly flow of the deep aquifer. Because it is unknown whether contamination could reach the deep aquifer and the local flow direction, the exposure pathway is considered potentially complete for JBER-E workers and residents. Because the depth of shallow groundwater is also unknown in this area, the dermal contact pathway is also considered potentially complete.

The population within 4 miles of the site includes JBER and Anchorage residents, with an estimated total population of 35,050. The closest identified potential receptors to SS108 C-17 crash site are the Elmendorf and Alaska Veteran's Hospitals, approximately 1.4 miles south-southeast, and Mt. Spurr Elementary School, approximately 1.6 miles southwest. Additional receptors within 4 miles include eight elementary schools, one high school, six on-Base child development centers,

and numerous in-home day care facilities (in northern Anchorage). The closest day care facility is Sugar Babies Day Care, approximately 1.9 miles south-southwest of the site. The nearest residential area is approximately 2 miles south.

3.3.2.1.5 Surface Water Pathway and Targets

The SS108 C-17 crash site is situated along the cleared railroad corridor and the surrounding wooded area. With no impervious surfaces, any AFFF applied during the emergency response would likely infiltrate into the subsurface. Although no visually obvious overland drainage patterns were observed in the area during the site visit for this PA, hydrology and hydrogeology of the area have not been investigated. The topography generally slopes to the south and west, away from the Elmendorf Moraine. The nearest surface waterbodies are several small wetlands between 0.3 and 0.7 mile away to the northwest, north, and east. The nearest large surface waterbodies are Ship Creek, approximately 1.5 miles to the south, and Knik Arm of the Cook Inlet, approximately 3 miles to the west. The Knik Arm of the Cook Inlet has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as within 15 miles downstream of this location.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion of surface water is considered an incomplete pathway for workers or residents. Because little is known about this area, potentially complete pathways include dermal contact with surface water for workers or residents, ecological impacts to aquatic or marine species affected by runoff or from discharges as seeps and springs of contaminated groundwater, and ingestion of those aquatic or marine species by humans and other species.

3.3.2.1.6 Soil and Air Exposure Pathways and Targets

No residents are present within 200 feet of SS108 C-17 crash site; however, workers may be within this proximity intermittently in association with the railroad tracks. Wetlands are also present within 4 miles of the site, but no sensitive environments have been identified within this range. The crash site is a wooded area adjacent to the railroad tracks; therefore, if contaminated soil remains, the potential receptors would include ecological receptors, especially burrowing animals that inhabit the wooded areas of JBER. The site is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future.

The gravel and dirt road to the west of the railroad tracks presents a possible source of contaminated dust. The remainder of the site is either vegetated or covered in riprap for the railroad bed. Information on the population and receptors within 4 miles is presented in Section 3.3.2.1.4.

3.3.2.2 C-124C Crash Location (1974)

3.3.2.2.1 Description and Operational History

On October 1, 1974, a Douglas C-124C Globemaster II crashed in the central portion of the JBER east-west runway. During the visit to JBER-E, the exact crash location could not be precisely identified, but a general location was presented to the PA installation visit team by the JBER Utility Shop Foreman (Ellis, 2015, personal communication, Appendix C). The location, on the south side

of Airlifter Drive, is a paved area directly on the flightline. The geographical coordinates are approximately 61°15'3.68"N and -149°48'23.42"W. The approximate crash location is shown on Figures 1.2 and 2.2.

The JBER Fire Department responded to the plane crash within the JBER east-west runway. Although exact details of the response are not known, it is assumed that the fire department extinguished the fires, then maintained a foam blanket to isolate vapors. The foam was likely allowed to dissipate in place, as this is the common practice. The quantity and type of foam used is also unknown, but the discharge was likely a protein foam rather than AFFF. Because this was around the time when AFFF was introduced, remaining stocks of protein foam would have been exhausted before replacing with AFFF (Bakker, 2015, personal communication; Appendix C).

3.3.2.2.2 Waste Characteristics

Not applicable.

3.3.2.2.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.3.2.2.4 Groundwater Pathway and Targets

Not applicable.

3.3.2.2.5 Surface Water Pathway and Targets

Not applicable.

3.3.2.2.6 Soil and Air Exposure Pathways and Targets

Not applicable.

3.3.2.3 Cessna Crash Location (2009)

3.3.2.3.1 Description and Operational History

On October 6, 2009, a Cessna UC-35A (Cessna 560 Citation V Ultra) crashed in the central portion of the JBER east-west runway. During the visit for this PA, the exact crash location could not be precisely identified, but a general location was presented to the PA installation visit team by the JBER Utility Shop Foreman (Ellis, 2015, personal communication, Appendix C). The crash was located on the south side of Airlifter Drive, which is a paved area directly on the flightline. The approximate geographical coordinates are 61°15'5.31"N and 149°48'39.31"W. The approximate crash location is shown on Figures 1.2 and 2.2.

3.3.2.3.2 Waste Characteristics

The JBER Fire Department responded to the plane crash on the JBER east-west runway. The fire department sprayed AFFF in the crash area as a precautionary measure, and the AFFF was then allowed to dissipate in place. The quantity of AFFF used during the response is unknown (Bakker,

2015, personal communication; Appendix C). Because the AFFF was allowed to dissipate in place, it is likely that AFFF-contaminated runoff reached the adjacent grass and gravel areas adjacent to the runway.

3.3.2.3.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to the C-124 crash location is Mt. Spurr Elementary School, approximately 0.7 mile southwest.

3.3.2.3.4 Groundwater Pathway and Targets

Residual AFFF that reached grass or gravel surfaces adjacent to the runway may have infiltrated to groundwater.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an impermeable layer (aquitard) separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E (USAF, 2011a). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.9 mile northwest (downgradient). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.3.2.3.5 Surface Water Pathway and Targets

The Cessna crash location is a flat, paved area surrounded by grass/gravel. Surface water drainage in the area is expected to primarily infiltrate into the grass and gravel areas surrounding the runway. In times of high-volume flow, drainage in that area of the flightline is generally to the south and

southwest, and overflow from the hangar area would likely become part of the main stormwater drainage on the south side of Taxiway November, which flows to the Cherry Hill outfall and ultimately into the Knik Arm of the Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1 mile south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the Cessna crash location are some small ponds and wetlands starting approximately 0.8 mile south of the location along the Ship Creek corridor and Ship Creek itself, approximately 1 mile south. The Knik Arm of the Cook Inlet is approximately 2.3 miles west. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as being within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.3.2.3.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved and has some grassy areas. A release of AFFF to soil in the grassy areas near the crash location is possible. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The closest identified potential receptor to the C-124 crash location is Mt. Spurr Elementary School, approximately 0.7 mile southwest.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 38,050. In addition to Mt. Spurr Elementary, eight additional elementary schools, one high school, the Elmendorf and Alaska Veteran's Hospitals, and numerous in-home day care facilities are present within a 4-mile radius. The closest in-home day care facility, Cardona's Child Care, is approximately 1.4 miles south, the closest on-Base child development center (Sitka) is 0.8 mile south-southwest, and the closest residential area is approximately 0.6 mile south.

3.3.2.4 E3/AWACS Crash Location (1995)

3.3.2.4.1 *Description and Operational History*

On September 22, 1995, a Boeing E-3A Sentry/ AWACS, crashed approximately 2,000 feet northeast of the JBER east-west runway. The aircraft crashed on the southeast side of the ARRC tracks. The crash location is undeveloped except for ARRC tracks northwest of the l. Outside of the cleared and leveled railroad corridor, the location consists of forested rolling hills of the Elmendorf Moraine (USAF, 2013a). The geographical coordinates are 61°15'59.38"N and -149°45'38.97"W. The crash location is shown on Figures 1.2 and 3.4.

3.3.2.4.2 *Waste Characteristics*

The JBER Fire Department responded to the E-3/AWACS crash. An AFFF blanket was maintained to isolate vapors, and the AFFF was then allowed to dissipate in place. The volume of AFFF used in the emergency response is unknown (Bakker, 2015, personal communication; Appendix C). Residual AFFF is likely to have infiltrated the ground in the local area.

3.3.2.4.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminant into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the E-3A crash location are the Elmendorf and Alaska Veteran's Hospitals, approximately 2.4 miles south, Illa child development center, 2.5 miles southeast, and Mt. Spurr Elementary School, approximately 2.5 miles southwest.

3.3.2.4.4 *Groundwater Pathway and Targets*

The depth to groundwater at the E-3/AWACS crash location is unknown, but the depth to the shallow, uppermost groundwater at the nearby SS108 C-17 crash site is estimated to be 40 to 50 feet bgs based on data from wells in adjacent areas (USAF, 2013a). Groundwater at the E-3A crash location would be expected to be deeper bgs because the location is on a slope that rises away to the south from the SS108 C-17 crash site.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow aquifer from the deep, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water use on Base is either supplied from the Ship Creek Dam, 10.5 miles upstream from the mouth of the creek, or from the deep aquifer. Although the Bootlegger Cove Formation effectively prevents contaminants from reaching the deeper aquifer over much of JBER-E, groundwater has not been investigated at this location and the integrity of the formation is unconfirmed. The nearest drinking water well is 1.6 miles northeast (cross-gradient) at Otter Lake Recreation Facility and the closest downgradient well is located approximately 1.7 miles northwest. Because it is unknown whether contamination could reach the deep aquifer and the local flow direction, the exposure pathway is considered potentially complete for JBER-E workers and residents. Because the depth of shallow groundwater is also unknown in this area, the dermal contact pathway is also considered potentially complete.

The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 35,050. The closest identified potential receptors to the E-3A crash location are the Elmendorf and Alaska Veteran's Hospitals, approximately 1.4 miles south-southeast, and Mt. Spurr Elementary School, approximately 1.6 miles southwest. Additional receptors within 4 miles include eight elementary schools, one high school, and numerous in-home day care facilities (in northern Anchorage). The closest in-home day care facility, Sugar Babies Day Care, is approximately 2.8 miles south-southwest, the closest on-Base child development centers (Talkeetna, Illa, and Kodiak) are approximately 2.5 miles southeast, and the closest residential area is approximately 1.9 miles south.

3.3.2.4.5 Surface Water Pathway and Targets

The E-3/AWACS crash location is in a wooded area. With no impervious surfaces, any AFFF applied during the emergency response would likely infiltrate into the subsurface. Although no clear overland drainage patterns were observed in the area during the location visit, hydrology and hydrogeology of the area have not been investigated. The crash location is on a northern-facing hillside but, overall, topography generally slopes to the south and west, away from the Elmendorf Moraine. The nearest waterbodies are several small wetlands between 0.4 and 0.7 mile away to the northwest, north, and east. The nearest large bodies of water are Ship Creek, approximately 1.7 miles to the south, and Knik Arm of the Cook Inlet, approximately 3 miles to the west.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion of surface water is considered an incomplete pathway for workers and residents. Because little is known about this area, potentially complete pathways include dermal contact with surface water for workers or residents, ecological impacts to aquatic or marine species affected by runoff or daylighting of contaminated groundwater, and ingestion of those aquatic or marine species by humans and other species. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified within 15 miles downstream of this location (although no clear overland flow pathways are evident).

3.3.2.4.6 Soil and Air Exposure Pathways and Targets

No residents are present within 200 feet of the E-3/AWACS crash location; however, workers may be within this proximity intermittently in association with the railroad tracks. Wetlands are also present within 4 miles of the location, but no sensitive environments have been identified within this radius. The crash location is a wooded area adjacent to the railroad tracks; therefore, if contaminated soil remains, the potential receptors would include ecological receptors, especially burrowing animals that inhabit the wooded areas of JBER. The location is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future.

The location is heavily vegetated and fugitive dust is unlikely to be an issue. Information regarding the population and receptors within 4 miles is in Section 3.3.2.4.4.

3.3.2.4.7 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4 OTHER

Other identified potential AFFF release locations include a one-time burn pit use at Building 35-752, one foam storage building (Building 6210), three AFFF test areas, one crash debris location, and the Cherry Hill ditch (SD052) system, which receives runoff from much of JBER-E. Information on these locations is included in the sections below.

3.4.1 JBER-R

3.4.1.1 SS044 (Building 35-752)

3.4.1.1.1 Description and Operational History

JBER Fire Department personnel identified an area of SS044 (Building 35-752) where a temporary burn pit was used in 1982 to dispose of polychlorinated biphenyl (PCB) oil that had been drained from four transformers. The contents of the pit (PCB oil and 200 gallons of diesel fuel) were allowed to burn to completion prior to being extinguished with AFFF (U.S. Army Cold Regions Research and Engineering Laboratory, 2000). Subsequently, the contaminated soil was stockpiled in an unlined location southwest of the building, and the soil was also used to repair the road that circles Building 35-752. In addition to AFFF, contaminants detected at this site include PCBs, petroleum hydrocarbons, and dioxins/furans in soil, and trichloroethylene in soil and groundwater. This area is located on JBER-R south of Davis Highway, off of Transmitter Road. The site is a combination of large grassy areas with some trees, paved roads, and buildings. The location of the former burn pit is now a paved parking area. Active high-frequency radio transmitter antennas surround the site. SS044 (Building 35-752) is a current ERP site for JBER with a current status of cleanup complete with institutional controls. Land use controls are in place to prevent land disturbance and prohibit the use of groundwater at this site for any reason. As of the 2008 JBER-R 5-Year Review, concentrations of trichloroethene in groundwater at SS044 (Building 35-752) had dropped below applicable cleanup levels. Groundwater continues to be monitored in conjunction with 5-year reviews to ensure the remedy remains protective (USAF, 2013b). The geographical

coordinates are 61°14'50.18'N and -149°43'20.12"W. SS044 (Building 35-752) is shown on Figures 1.1 and 3.5.

3.4.1.1.2 Waste Characteristics

The burn pit was used in a one-time disposal effort at SS044 (Building 35-752). The volume of AFFF applied to the area was not documented. The AFFF applied to the location may have been partially removed and stockpiled with the PCB-impacted soil, as well as applied to the local loop road around the building (U.S. Army Corps of Engineers, 2005). Because investigations have indicated that contaminants (for example, trichloroethylene) have been found in groundwater at the site, PFCs may also have reached the shallow groundwater aquifer.

3.4.1.1.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to SS044 (Building 35-752) is Illa Child Development Center, approximately 0.7 mile east-southeast.

3.4.1.1.4 Groundwater Pathway and Targets

Details regarding the depth and construction of the burn pit are unclear; however, it does appear that the pit and stockpile area were unlined (and the roadway was unpaved); thereby allowing AFFF to infiltrate the subsurface. Groundwater at SS044 (Building 35-752) occurs in the shallow aquifer from approximately 13 to 38 feet bgs within a shallow, unconfined sandy gravel aquifer with groundwater flow to the northwest (USAF, 2014b). Below the shallow aquifer, the Bootlegger Cove Formation, consisting of low-permeability layers containing clay and silt, functions as the prominent aquitard in the area and has been reported to be 75 feet thick in some areas. A deeper confined aquifer, composed of silty sand and gravel, exists at about 160 feet bgs. Because of the confining Bootlegger Cove Formation in the area, contamination in the shallow aquifer is unlikely to migrate into the deeper confined aquifer (USAF, 2011a). SS044 (Building 35-752) is currently an ERP site and has land use controls in place to prevent access to and development of groundwater at the site. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the

primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. Because there is no current use of groundwater as a drinking water source at SS044 (Building 35-752), and the nearest standby drinking water well is cross-gradient and approximately 0.3 mile from the site to the south (screened in the deep aquifer). The closest downgradient groundwater well (screened in the deep aquifer) is located 3.7 miles west-northwest. The groundwater ingestion exposure pathway is considered incomplete for JBER workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.4.1.1.5 Surface Water Pathway and Targets

Topographic relief from the area where the burn pit was situated indicates that surface water would tend to flow to the south/southwest of the site, in the direction of Ship Creek, which is approximately 1,500 feet south of the site. In addition, the primary stormwater drainage pathway in this area is an open ditch, located approximately 600 feet south of the site; the drainage eventually empties to Ship Creek approximately 1,200 feet west. Ship Creek ultimately drains to the Knik Arm of the Cook Inlet. Because the surface of the site is vegetated with trees, small shrubs, and grass, and the subsurface geology is of sandy gravel, it is possible that the AFFF applied to the area would quickly infiltrate into the subsurface, thereby preventing direct runoff to surface waterbodies. There is a potential ecological impact to aquatic and marine species, including salmon, from runoff reaching Ship Creek, and to humans and other animals that ingest these fish. Other aquatic or marine species could also be impacted. Local groundwater flow in the shallow aquifer is to the northwest, away from Ship Creek, and is unlikely to contribute to surface water contamination; however, if contamination did reach Ship Creek, dermal exposure to fishermen or other people using or playing in the creek would also be possible.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion of surface water by workers and residents is not a complete pathway. No known exposed, eroding impacted soils are present. The Knik Arm of the Cook Inlet, designated as part of the critical habitat for beluga whales (NOAA, 2011), is 4.7 miles west-northwest and is the only sensitive environment identified as being within 15 miles downstream of this location.

3.4.1.1.6 Soil and Air Exposure Pathways and Targets

The area of the former burn pit at SS044 (Building 35-752) is paved and has surrounding vegetated areas. A release of AFFF to soil from the pit, stockpile, or road fill areas is likely. SS044 (Building 35-752) is currently an ERP site and has land use controls in place to prevent land disturbance, which would mitigate any subsurface soil contamination. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The closest identified potential receptor to the site is Ursa Minor Elementary School, approximately 1 mile east.

This area has residents and workers within 1 mile, and wetlands are within 4 miles of the site. Because the area consists primarily of paved or vegetated areas, fugitive dust emissions and potential exposures should be minimal. Land use controls should prevent ground-disturbing

activities at the site. The population within 4 miles of the site includes JBER and Anchorage residents, with an estimated total population of 54,690. In addition to Ursa Minor Elementary School, additional potential receptors within 4 miles include six elementary schools, one high school, the Elmendorf and Alaska Veteran's Hospitals, five on-Base child development centers, and numerous in-home day care facilities located in the northern portion of Anchorage. The closest on-Base child development center (Illa) is approximately 0.7 mile east-southeast; the closest in-home day care facilities are the Cynthia Graham and K and K Day Cares. The closest residential area is approximately 0.5 mile west.

The site is not used for hunting, fishing, or harvesting of wild or farmed foods, and such activities are not anticipated in the future. No sensitive environments have been identified within 200 feet or otherwise nearby.

3.4.1.2 SS047 Nike Site Summit

3.4.1.2.1 *Description and Operational History*

SS047 Nike Site Summit, is a former Nike Hercules missile defense site situated on a ridgeline of the Chugach Mountains near the eastern border of JBER. Commissioned in 1959, SS047 Nike Site Summit was active for 20 years before it was decommissioned in 1979 (USAF, 2013d). Although some infrastructure remains, sensitive equipment has been removed, and access to SS047 Nike Site Summit is restricted to authorized personnel and limited historical tours. As is typical for these sites, the operation of SS047 Nike Site Summit involved two distinct areas: the Integrated Fire Control Area (including the radar and computers used to track enemy aircraft and guide missiles) and the Launcher Area (including missile storage and launch areas) (Bender, 2004). SS047 Nike Site Summit is an active ERP site and recently underwent a feasibility study. Identified contaminant types present are petroleum compounds, volatile organic compounds, semivolatile organic compounds, and metals (USAF, 2013d).

No indications that an AFFF-based fire suppression system was installed at SS047 Nike Site Summit were found during records searches, and an inquiry to Mark Frank indicated that only water deluge systems were used for fire suppression at missile sites. Mark Frank has been with the USAF for 51 years, is currently with the 90th CES at Warren Air Force Base (AFB), and was historically involved in missile site operations (Frank, 2015, personal communication; Appendix C).

3.4.1.2.2 *Waste Characteristics*

Not applicable.

3.4.1.2.3 *Pathway and Environmental Hazard Assessment*

Not applicable.

3.4.1.2.4 *Groundwater Pathway and Targets*

Not applicable.

3.4.1.2.5 Surface Water Pathway and Targets

Not applicable.

3.4.2 JBER-E

3.4.2.1 Current AFFF Spray Test Area

3.4.2.1.1 Description and Operational History

The current AFFF spray test area is located south of the west end of the flightline, south of 23rd Street. The trapezoidal-shaped area has a perimeter berm and a graveled surface; the area is also used as a snow dump. All current AFFF spray testing for the emergency response vehicles is conducted at this location. Each vehicle is tested annually, and approximately 5 to 10 gallons of AFFF concentrate are generally discharged in the process. A letter issued by the Department of the Air Force Headquarters, 673rd Air Base Wing, in January 2012 (Haas, 2012), provided an update for approved conditions for the discharge of AFFF during AFFF testing as follows:

- All intentional outdoor discharge of AFFF from firefighting vehicles is to be tested in either (1) the gravel surface, which is surrounded by a gravel berm south of 23rd Street, or (2) 23rd Street north of the berm area when snow or soft soil conditions prevent operations within the berm area.
- Testing shall be conducted only during dry weather, when wind speeds are nominal, and during daylight hours to facilitate degradation of the applied AFFF.
- Notification to the 673rd CES NPDES program manager must occur 48 hours prior to any outdoor discharging. A copy of the Material Safety Data Sheet for the specific type of AFFF being used must also be provided.
- Directing of any non-emergency discharges of AFFF towards storm or sanitary sewer drains is prohibited. Any accidental discharges to these drain systems are to be reported to the 673rd CES NPDES program manager.

The geographical coordinates are 61°14'37.28"N and -149°50'32.33"W. The current AFFF testing area is shown on Figures 1.2 and 3.1.

3.4.2.1.2 Waste Characteristics

AFFF spray nozzle testing has occurred in this area since January 2012. Spray nozzle testing occurs annually at the designated berm area or just north of the berm area dependent on snow and soil conditions. No more than 10 gallons of AFFF concentrate per vehicle are released during AFFF testing for each vehicle. Eight emergency response vehicles are currently equipped with AFFF and undergo annual testing (Bakker, 2015, personal communication; Appendix C). This equates to up to 80 gallons of AFFF concentrate released during annual testing. Additional AFFF testing may be performed for maintenance purposes throughout the year.

3.4.2.1.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2 mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the current AFFF testing area are Katmai Child Development Center (2,020 feet west-southwest), and Sitka and Denali Child Development Centers, approximately 0.7 mile east-southeast.

3.4.2.1.4 Groundwater Pathway and Targets

The depth to shallow groundwater at the current AFFF spray test area is estimated to be approximately 25 feet bgs based on data from wells in adjacent areas (USAF, 2014c). The testing area is an unlined gravel surface, which would allow for AFFF to infiltrate the subsurface. However, preventative measures have been set in place (as outlined in the 2012 approved conditions for purposeful outdoor release of AFFF and summarized above) to minimize release into the environment.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.9 mile south (cross-gradient).

Water use on Base is either supplied from the Ship Creek Dam, 10.5 miles upstream from the mouth of the creek, or from the deep aquifer. The dam is also 2.5 miles upstream from the Glenn Highway; this location is on the downstream side of the Glenn Highway. The Bootlegger Cove Formation serves as an impermeable layer between shallow and deep aquifers in the area of investigation (USAF, 2011a). Because JBER-E does not use the shallow aquifer as a supply of drinking water, the exposure pathway is considered incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.4.2.1.5 Surface Water Pathway and Targets

Surface runoff from the current AFFF spray test area is unlikely due to the approved conditions required for outdoor testing as indicated by the 2012 letter update (Haas, 2012) and the gravel surface designed to help snowmelt infiltrate to the subsurface rather than running off to other areas. If overflow occurred from the area, the flow would likely eventually be captured by the main stormwater drainage to the southeast and southwest along Fighter Drive, which flows to the Cherry Hill outfall and ultimately into the Knik Arm of the Cook Inlet.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.2 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic or marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbody to the former AFFF test area is a few small wetlands approximately 0.5 to 0.6 mile northwest of the location. The nearest large surface waterbodies are Knik Arm, located 1.4 miles west, and Ship Creek, located 1.2 miles south of the location. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as being within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.4.2.1.6 Soil and Air Exposure Pathways and Targets

This location has a gravel surface. Workers, but no residents, may be present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present but unlikely because the gravel area would not provide much habitat. No sensitive environments have been identified within 4 miles. The closest identified potential receptors to the current AFFF test area are Mt. Spurr Elementary School, approximately 0.8 mile east, and Aurora Elementary School, approximately 0.8 mile west-southwest.

Residents and workers are present within 1 mile of the location, and wetlands are within 4 miles of the location. Because of the gravel surface for fugitive dust emissions could result in potential exposures. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 74,550. The closest identified potential receptors to the current AFFF testing area are Katmai Child Development Center (2,020 feet west-southwest), and Sitka and Denali Child Development Centers, approximately 0.7 mile east-southeast. Additional potential receptors that are within 4 miles are five elementary schools, one high school, two hospitals, and numerous in-home day care facilities located in the northern portion of Anchorage. The closest in-home day care facility (Deana Fay Ray Day Care) is approximately 1.3 miles south-southeast, and the nearest residential area is approximately 0.6 mile south.

3.4.2.2 Former AFFF Spray Test Area

3.4.2.2.1 *Description and Operational History*

The former AFFF spray test area is located on the west ramp of the flightline and was used from prior to 2000 until 2010 to test AFFF nozzle spray patterns for emergency response vehicles (Bakker, 2015, personal communication; Appendix C). The testing area is an unbermed, paved surface surrounded by gravel and grass. The geographical coordinates are 61°14'44.34"N and -149°50'39.76"W. The former AFFF test area is shown on Figures 1.2 and 3.1.

3.4.2.2.2 *Waste Characteristics*

AFFF spray nozzle testing in this area was performed from before 2000 to 2010. Testing occurred annually and occasionally when maintenance activities required additional spray nozzle adjustments. Tests were conducted on the designated paved surface. No more than 10 gallons of AFFF concentrate per each emergency response vehicle were released during annual AFFF testing (Bakker, 2015, personal communication; Appendix C). During this period, generally eight emergency response vehicles were equipped with AFFF systems; as a result, it is estimated that up to 80 gallons of concentrate were released during annual testing during at that time. Historical accounts indicate that foam was observed in the drainage south of the former AFFF spray test area and a release, through the stormwater drainage system via the Cherry Hill ditch, is suspected (Bakker, 2014b, personal communication; Appendix C).

3.4.2.2.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the former AFFF testing area are Katmai Child Development Center (0.5 mile south-southwest), and Sitka and Denali Child Development Centers, approximately 0.8 mile east-southeast.

3.4.2.2.4 Groundwater Pathway and Targets

The depth to groundwater at the former AFFF testing area is estimated to be approximately 25 feet bgs based on data from wells in adjacent areas (USAF, 2014c). The testing area is an unbermed, paved surface surrounded by gravel and grass. Any runoff would allow for AFFF to infiltrate the subsurface once it reached the edges of the paved area.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 1.1 miles south (cross-gradient). The Bootlegger Cove Formation serves as an impermeable layer between shallow and deep aquifers in the area of investigation (USAF, 2011a). Because JBER-E does not use the shallow aquifer as a supply of drinking water, the exposure pathway is considered incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.4.2.2.5 Surface Water Pathway and Targets

Surface runoff from the former AFFF test area would tend to flow to the southwest, in the direction of Knik Arm, and would likely eventually be captured by the main stormwater drainage to the southwest along Fighter Drive and Fairchild Avenue, which flow to the Cherry Hill outfall and ultimately into the Knik Arm of Cook Inlet. Figure 3.2 shows stormwater flow pathways suspected to be potentially influenced by the former AFFF test area on the west ramp, as well as hangars and other buildings with AFFF systems.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 1.3 miles south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic or marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the former AFFF test area are a few small wetlands approximately 1,500 to 2,000 feet northwest of the location. The nearest large surface waterbodies are Knik Arm, located 1.3 miles west, and Ship Creek, located 1.3 miles south of the location. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.4.2.2.6 Soil and Air Exposure Pathways and Targets

The former AFFF spray test area is paved and surrounded by gravel and grassy areas, thereby precluding fugitive dust emissions and potential exposures. Workers, but no residents, may be present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations or ground-disturbing activities. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 74,550. The closest identified potential receptors to the former AFFF test area are Mt. Spurr Elementary School, approximately 0.9 mile east, and Aurora Elementary School, approximately 0.8 mile west-southwest. The closest day care facility (Deana Fay Ray Day Care) is approximately 1.5 miles south-southeast, and the nearest residential area is approximately 0.7 mile south.

Residents and workers are present within 1 mile of the location, and wetlands are within 4 miles of the location. The location includes some gravel surface, which could allow for fugitive dust emissions and potential exposures. The closest identified potential receptors to the former AFFF testing area are Katmai Child Development Center (0.5 mile south-southwest), and Sitka and Denali Child Development Centers, approximately 0.8 mile east-southeast. Additional potential receptors within 4 miles are seven elementary schools, one high school, two hospitals, three more on-Base child care centers, and numerous in-home day care facilities located in the northern portion of Anchorage.

3.4.2.3 Fire Suppression Foam Storage (Building 6210)

3.4.2.3.1 Description and Operational History

The JBER Fire Department uses Building 6210 for AFFF storage (as well as other fire-fighting foams and materials) and for transfer of the reserve AFFF to resupply the emergency response vehicles for both JBER-R and JBER-E. This facility is located on the corner of Arctic Warrior Drive and Femoyer Avenue. The AFFF concentrate is stored in 55-gallon drums on pallets inside the building (no secondary containment). The total quantity that is stocked onsite must be enough to refill all emergency vehicles, currently 990 gallons of concentrate (Bakker, 2014a, personal communication; Appendix C). When emergency vehicle drivers need to replenish their onboard supplies, they park at the southeast corner of the building and use a hand pump to transfer the AFFF into the vehicle holding tank. Some small-scale testing of nozzles has occurred in this area outside the building. The geographical coordinates are 61°14'12.65"N and -149°50'47.51"W. Fire Suppression AFFF Storage (Building 6210) is shown on Figures 1.2 and 3.1.

3.4.2.3.2 Waste Characteristics

Small-scale nozzle tests at the facility have resulted in discharges to the pavement south of Fire Suppression Foam Storage (Building 6210), and these discharges then pooled in a low area of the pavement. These tests used approximately 5 to 10 gallons of AFFF concentrate, which were allowed to dry up after pooling on the pavement. Observations by fire department staff indicate that the AFFF discharged during these tests has not been observed to drain away from the building beyond the low spot in the paved area, even during rain events (Bakker, 2014a, personal communication; Appendix C). Although the AFFF-contaminated runoff was generally observed

to dry up after pooling on the pavement, runoff from the area to nearby grassy or gravel areas may have occurred.

3.4.2.3.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to Fire Suppression Foam Storage (Building 6210) is Katmai Child Development Center, approximately 1,110 feet west-southwest.

3.4.2.3.4 Groundwater Pathway and Targets

The depth to groundwater at Fire Suppression Foam Storage (Building 6210) is estimated to be approximately 31 feet bgs based on 2010 data from nearby well 529MW-IN (USAF, 2011a), which is approximately 200 feet southeast. The area where the AFFF pooled after nozzle testing is paved; however, cracks in the paved surface could have allowed some infiltration into the soil below.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.5 mile south-southeast (upgradient). There is no communication between shallow and deep aquifers in the area of investigation (USAF, 2011a). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.4.2.3.5 Surface Water Pathway and Targets

Observations indicate that the discharged AFFF primarily pooled and dried in the low area in the pavement south of Fire Suppression Foam Storage (Building 6210); however, drainage beyond the paved area cannot be completely discounted. In times of high rainfall or snowmelt rates, it is possible that surface water sheet flow reached the grassy area south of the building (across 9th Avenue) or possibly the Cherry Hill ditch (SD052) system, which runs from Fairchild Avenue to the southwest and ultimately to the Knik Arm of the Cook Inlet.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Although the water source for JBER is well upstream of this area (and therefore no surface water ingestion concerns are related to the location), contaminants that reach the shallow aquifer have the potential to impact Ship Creek, which is just more than 0.7 mile south of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to Fire Suppression AFFF Storage (Building 6210) are a couple of small wetlands approximately 0.7 mile north of the location. The nearest large surface waterbodies are Knik Arm, located 1.4 miles west, and Ship Creek, located 0.7 mile south of the location. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.4.2.3.6 Soil and Air Exposure Pathways and Targets

This location is paved with grassy areas to the south. If a release of AFFF reached the grassy areas during times of high volumes of runoff, then soil may present a potential exposure media. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 93,320. The closest identified potential receptor to the Fire Suppression Foam Storage (Building 6210) is Katmai Child Development Center, approximately 1,110 feet west-southwest. The nearest in-home day care facility is Hillcrest Child Care, located approximately 0.9 mile southwest, and the closest residential area is approximately 0.1 mile south.

This area has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.4.2.4 Hangar 5 (Building 7309) Former AFFF Spray Test Area

3.4.2.4.1 *Description and Operational History*

The former AFFF test area at Hangar 5 is located north of Arctic Warrior Drive and west of Kenney Avenue off of the northeast corner of the building. The location was used from 2010 to 2012. The testing area is an unbermed, paved surface surrounded by gravel. Testing of the AFFF systems on the eight emergency vehicles with AFFF was performed annually and during this period, two locations (Hangar 5 [Building 7309] and Fire Station 1 [Building 11415]) were used for this purpose). The geographical coordinates are 61°14'22.93"N and -149°49'52.48"W. The former AFFF test area is shown on Figures 1.2 and 3.1.

3.4.2.4.2 *Waste Characteristics*

AFFF testing in this area was performed from 2010 to 2012. Testing occurred on the designated paved surface. Because annual testing using 5 to 10 gallons of AFFF concentrate was conducted on the eight emergency vehicles equipped with AFFF in two locations, the total (up to 80 gallons of concentrate annually) volume of AFFF is believed to have been divided between the two areas during this time. Other additional small-scale testing may have been performed as needed in these areas. Following testing in this area, foam was observed in the drainage ditch located along the north side of Fifteenth Avenue (Bakker, 2015, personal communication; Appendix C).

3.4.2.4.3 *Pathway and Environmental Hazard Assessment*

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor is Denali Child Development Center, located 1,350 feet east-southeast.

3.4.2.4.4 *Groundwater Pathway and Targets*

The depth to groundwater at the Hangar 5 (Building 7309) former AFFF spray test area is estimated to be approximately 25 feet bgs based on data from wells in adjacent areas (USAF, 2014c). The

testing area is an unbermed, paved surface surrounded by gravel and grassy areas. Any runoff would allow for AFFF to infiltrate the subsurface once it reached the edges of the paved area.

JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.6 mile southeast (upgradient). The Bootlegger Cove Formation acts as an impermeable layer between shallow and deep aquifers in the area of investigation (USAF, 2011a). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Because the shallow groundwater is relatively deep, the dermal contact pathway is also incomplete.

3.4.2.4.5 Surface Water Pathway and Targets

Surface runoff and foam from the test area was observed flowing to the northeast into the drainage ditch at the intersection of Kenney Avenue and 15th Street (Bakker, 2014a, personal communication; Appendix C). Once the runoff reached the ditch, it is likely that the surface water would tend to flow to the southwest and would likely be captured in the drainage to the Cherry Hill ditch (SD052) system and ultimately the Knik Arm of the Cook Inlet. It is possible that the AFFF applied to the area would quickly infiltrate into the subsurface, thereby preventing direct runoff to surface waterbodies.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 0.5 mile south-southeast of the location, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the former Hangar 5 (Building 7309) AFFF spray test area is some small wetlands associated with the Ship Creek Drainage. The nearest large surface waterbodies are Knik Arm, located 1.8 miles west-northwest, and Ship Creek, located 0.5 mile south of the location. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.4.2.4.6 Soil and Air Exposure Pathways and Targets

This location is mostly paved with grassy areas. A release of AFFF to soil in the grassy areas near Hangar 5 was observed during the location's use as an AFFF spray test area (Bakker, 2014b). Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the location includes JBER and Anchorage residents, with an estimated total population of 93,320. The closest identified potential receptor is Denali Child Development Center, located 1,350 feet east-southeast. The nearest in-home day care facility, Deana Fay Ray Day Care, is approximately 1 mile south-southeast, the nearest school (Mt. Spurr Elementary) is approximately 0.5 mile northeast, and the nearest residential area is approximately 0.3 mile west.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the location. Because the area consists primarily of paved or grassy areas, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

3.4.2.5 C-17 Debris Storage Yard

3.4.2.5.1 Description and Operational History

The C-17 debris storage yard is an area where plane parts were transported after the 2010 crash event. The yard is on the southeast corner of Gibson Avenue and 9th Street. The yard is gravel, fully fenced, and locked against unauthorized access. The debris piles within the yard are partially covered with liners. The geographical coordinates are 61°14'10.19"N and -149°50'16.31"W. The C-17 Debris Storage Yard is shown on Figures 1.2 and 3.1.

3.4.2.5.2 Waste Characteristics

Some AFFF residue may have remained on the crash debris when the debris was transported to the current storage yard. Because the debris had been covered with liners, runoff containing residual AFFF was likely mostly prevented; however, because the liners had been damaged or shifted over time, some AFFF-containing runoff likely reached the ground surface.

3.4.2.5.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles from any given potential release location of

PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile vertical range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptor to the C-17 debris storage yard is Denali Child Development Center, approximately 2,490 feet northeast.

3.4.2.5.4 Groundwater Pathway and Targets

The C-17 debris storage yard has a flat, unbermed, gravel surface and precipitation likely infiltrates to the subsurface onsite.

JBER-E is underlain by two aquifers: a shallow water table aquifer and a deeper, confined aquifer. These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E. The shallow aquifer is not currently used as a groundwater source on Base. Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 0.7 mile east-northeast (upgradient). There is no communication between shallow and deep aquifers in the area of investigation (USAF, 2011a). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents.

3.4.2.5.5 Surface Water Pathway and Targets

Surface water drainage in the area is expected to primarily infiltrate into the gravel onsite. In times of high-volume flow, drainage in that area would likely be to the west, where the local stormwater drainage then flows north along Gibson Avenue and then west along Arctic Warrior Drive and ultimately to the Cherry Hill outfall and into the Knik Arm of the Cook Inlet. (See Figure 3.2 for stormwater flow pathways suspected to potentially be influenced by hangars and other buildings with AFFF systems.)

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway. Contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is a little more than 0.5 mile southeast of the location; this indicates a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic or marine species, including salmon, which are found in Ship Creek, and humans and other animals that ingest these fish and other aquatic or marine species.

Although Ship Creek provides the primary drinking water source for JBER, the intake is at a diversion dam 2.5 miles upstream from the Glenn Highway (10.5 miles upstream from the mouth); this location is on the downstream side of the Glenn Highway and therefore would not impact drinking water. As a result, ingestion by workers and residents is not a complete pathway. The nearest surface waterbodies to the C-17 debris location are some small wetlands associated with the Ship Creek Drainage. The nearest large surface waterbodies are Kink Arm located 1.7 west

and Ship Creek located 0.5 mile southeast. The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as within 15 miles downstream of this location.

3.4.2.5.6 Soil and Air Exposure Pathways and Targets

The C-17 debris storage yard has a gravel surface; a release of AFFF in this area would likely infiltrate to the subsurface. Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present, but unlikely because there is limited habitat in the area. No sensitive environments have been identified within 4 miles. The closest identified potential receptor to the C-17 debris storage yard is Denali Child Development Center, approximately 2,490 feet northeast. In addition, within 4 miles there are nine elementary schools, two child development centers, and numerous in-home day care facilities.

This area of the flightline has residents and workers within 1 mile and wetlands are within 4 miles of the C-17 debris storage yard. Because the area consists of a gravel surface, fugitive dust emissions and potential exposures are possible. Construction activities or other ground-disturbing activities could also result in potential worker exposure to dust.

3.4.2.6 Cherry Hill Ditch (SD052)

3.4.2.6.1 Description and Operational History

The Cherry Hill ditch (SD052) is an artificial drainage channel that flows westward from the east-west runway at JBER-E toward the Knik Arm of the Cook Inlet. The last 6,150 feet of the ditch has been designated as ERP site SD052. Historical contaminants at the site were pesticides and PCBs. Site closure occurred following an excavation/removal action conducted during the 1994 RI because the site no longer posed unacceptable risk (USAF, 2014g). (Documentation of the fate of the excavated soil was not available). As a whole, the drainage system is composed of a network of closed pipe and open ditch drainage pathways and is used to direct surface water runoff to the bluff above Knik Arm. From there, the network is combined into a single outflow, with a final surface sample point at the Port of Anchorage before the flow is directed to the subsurface until daylighting approximately 1,500 feet out into the Knik Arm (Haas, 2014, personal communication; Appendix C). The sources of the water carried in the drainage and ditch system include subsurface drains located in the flightline area along taxiways, runways, and from hangar locations, as well as throughout the main cantonment area on JBER-E (Figure 3.2). Until reaching the western end of the flightline area, the majority of the drainage system is subsurface, but stretches of open ditch are primarily along the western end of JBER-E. This drainage network runs adjacent to or near many of the hangars, training areas, and other locations where releases of AFFF may have occurred. The geographical coordinates are 61°14'7.73"N and -149°52'43.15"W.

3.4.2.6.2 Waste Characteristics

This drainage system receives runoff from areas surrounding hangars, fire stations, FTAs, AFFF test areas, and other suspected AFFF release areas. An oily sheen and “an emulsion that creates foam” have historically (date not specified) been observed on the water in the Cherry Hill ditch (SD052) (Battelle, 1991). Historical accounts also indicate that up to 2 feet of foam have been

observed in the ditch south of the west ramp in 1988 (Black & Veatch, Engineers-Architects, 1990), and in 2011, foam was observed in the drainage system of the west ramp, when AFFF testing was conducted in the former AFFF test area. A release from the west ramp through the stormwater drainage system via the Cherry Hill ditch (SD052) is suspected (Bakker, 2014b, personal communication; Appendix C). Quantities of AFFF reaching various portions of the drainage system are unknown. Figure 3.2 highlights the segments of the ditch most likely to be affected by potential AFFF release locations.

3.4.2.6.3 Pathway and Environmental Hazard Assessment

A complete exposure pathway typically includes the following components: a source of contamination (an environmental medium contaminated at the source or a release mechanism by which chemicals are released from a source medium and transported), an exposure medium by which a receptor comes into contact, and a route of intake for the contaminant into the receptor's body at the exposure point. If any of these elements are missing, the pathway is incomplete. Other release mechanisms resulting in exposure media for receptors may include the uptake of soil contaminants by plants and animals and the emission of soil contaminants into the air in association with dust particles.

For the Cherry Hill ditch (SD052) and drainage system, only limited drainage sections are likely to have a potential impact on human health or the environment. These sections meet two criteria: 1) they receive runoff from an area where releases of AFFF are suspected, and 2) they are open ditch sections that allows for access by potential receptors. The first section of potential concern runs from Fairchild Avenue south through a section of woods, and then continues south along Craw Avenue. Where Craw Avenue meets Fighter Drive, the system goes back underground. This flowpath gains additional drainage from other areas around the end of Fighter Drive and then resurfaces as an open ditch for the final 1,200 feet entering the Port of Anchorage. A third section along Fairchild Avenue likely receives runoff from the former AFFF test area on the West Ramp. These three sections are the most likely to have an environmental impact and will be the focus of further discussion (referred to hereafter as Cherry Hill ditch [SD052] sections of concern). Historical damage or unintentional overflows from other sections receiving runoff from areas of suspected releases of AFFF have not been identified.

Database research (EDR, 2015) shows 330 day care facilities, 2 nursing homes, 71 schools, 269 hospitals, 4 colleges, and 2 arenas within 8 miles of any given potential release location of PFCs. This large radius allowed the capture of all potential receptors within the 4-mile potential migration area of all identified locations, the farthest apart of which are approximately 4 miles distant in an east-west orientation. However, because most locations are within a roughly 2-mile range, many of the identified potential receptors are farther than 4 miles south of any identified locations (in a highly populated area of Anchorage) and beyond the potential migration area. The closest identified potential receptors to the Cherry Hill ditch (SD052) sections of concern are Aurora Elementary School, approximately 1,200 feet south-southwest of the southern end of Craw Avenue and 1,800 feet east of the section running to the Port of Anchorage, and Government Hill Elementary, 1,600 feet south of the section running to the Port of Anchorage.

3.4.2.6.4 Groundwater Pathway and Targets

The three Cherry Hill ditch (SD052) sections of concern are unlined, which would allow contaminants to infiltrate to the shallow groundwater. JBER-E is underlain by two aquifers: a shallow water table aquifer (generally between 20 and 45 feet bgs) and a deeper, confined aquifer (between 50 and 300 feet bgs) (USAF, 1994). These aquifers are separated by the Bootlegger Cove Formation, which functions as an aquitard separating the shallow water table aquifer from a deeper, confined aquifer across most of JBER-E, including the Cherry Hill ditch (SD052) area (Battelle, 1991). Water storage for JBER is provided by two underground reservoirs: a 2-million-gallon reservoir on JBER-E and a 2.5-million-gallon reservoir on JBER-R, but groundwater is not the primary source of drinking water. A network of supply wells in the deep aquifer provides backup for the primary drinking water source, which is surface water. The nearest standby water supply well (screened in the deep aquifer) is located approximately 1 mile southeast (upgradient) (from the section of ditch along Craw Avenue). The fact that JBER-E does not use the shallow aquifer as a supply of drinking water would render this exposure pathway incomplete for JBER-E workers and residents. Groundwater has been recorded at about 10 to 20 feet bgs in the Cherry Hill Ditch areas of concern (USAF, 1995), but the depth to groundwater near the bluff is unknown; therefore, dermal exposure to groundwater is considered a potentially complete pathway.

3.4.2.6.5 Surface Water Pathway and Targets

The Cherry Hill ditch (SD052) system is recognized as a surface waterbody on JBER. Although there are areas where flow is intermittent, there is always a steady flow exiting the base to the Knik Arm, even during very cold conditions (Haas, 2014, personal communication; personal communication). As previously noted, “an emulsion that creates foam” has historically been observed on the water in the Cherry Hill ditch (SD052) (Battelle, 1991). JBER drinking water does not come from surface water downgradient of the Cherry Hill ditch (SD052) system, so there is no exposure pathway for surface water to residents or workers through domestic drinking water. In the open sections of the ditch, there is potential for dermal contact exposure to contaminated water by workers and residents. Although there are no other surface waterbodies on JBER that are hydraulically connected to the Cherry Hill ditch, the outflow does have the potential for ecological impact on marine species in the Knik Arm of the Cook Inlet. Ingestion of affected marine species is a potential exposure pathway for ecological and human receptors.

Groundwater in the shallow aquifer has been shown to discharge to Ship Creek west of Boniface Parkway (USAF, 2014d). Depending on local groundwater flow direction (which is unknown), contaminants that reach the shallow aquifer therefore have the potential to impact Ship Creek, which is just more than 0.8 mile south of the site, indicating a potentially complete exposure pathway for non-ingestion exposures such as dermal exposure to humans. There is also a potential ecological impact to aquatic and marine species, including salmon, which are found in Ship Creek, and to humans and other species that ingest these fish and other aquatic or marine species.

The Knik Arm has been designated as part of the critical habitat for beluga whales (NOAA, 2011) and is the only sensitive environment identified as within 15 miles downstream of this location. No known exposed, eroding impacted soils are present.

3.4.2.6.6 Soil and Air Exposure Pathways and Targets

Workers, but no residents, are present within 200 feet and could potentially be exposed to contaminated soil in the area during excavations. The potential of exposure for burrowing animals would also be present. No sensitive environments have been identified within 4 miles. The population within 4 miles of the site includes JBER and Anchorage residents, with an estimated total population of 71,840. The closest identified potential receptors to the Cherry Hill ditch (SD052) sections of concern are Aurora Elementary School, approximately 1,200 feet south-southwest of the southern end of Craw Avenue and 1,800 feet east of the section running to the Port of Anchorage, Katmai Child Development Center, approximately 1,800 feet east-southeast of the southern end of Craw Avenue, and Government Hill Elementary, 1,600 feet south of the section running to the Port of Anchorage. The closest day care facility is Hillcrest Child Care (0.5 mile south of the section along Fighter Avenue), and the closest residential area is within 200 feet of the section along Fighter Avenue.

This area of the flightline has residents and workers within 1 mile, and wetlands are within 4 miles of the site. Because the area consists of vegetated areas and ditches, fugitive dust emissions and potential exposures should be minimal. Construction activities or other ground-disturbing activities could result in potential worker exposure to dust.

FIGURES

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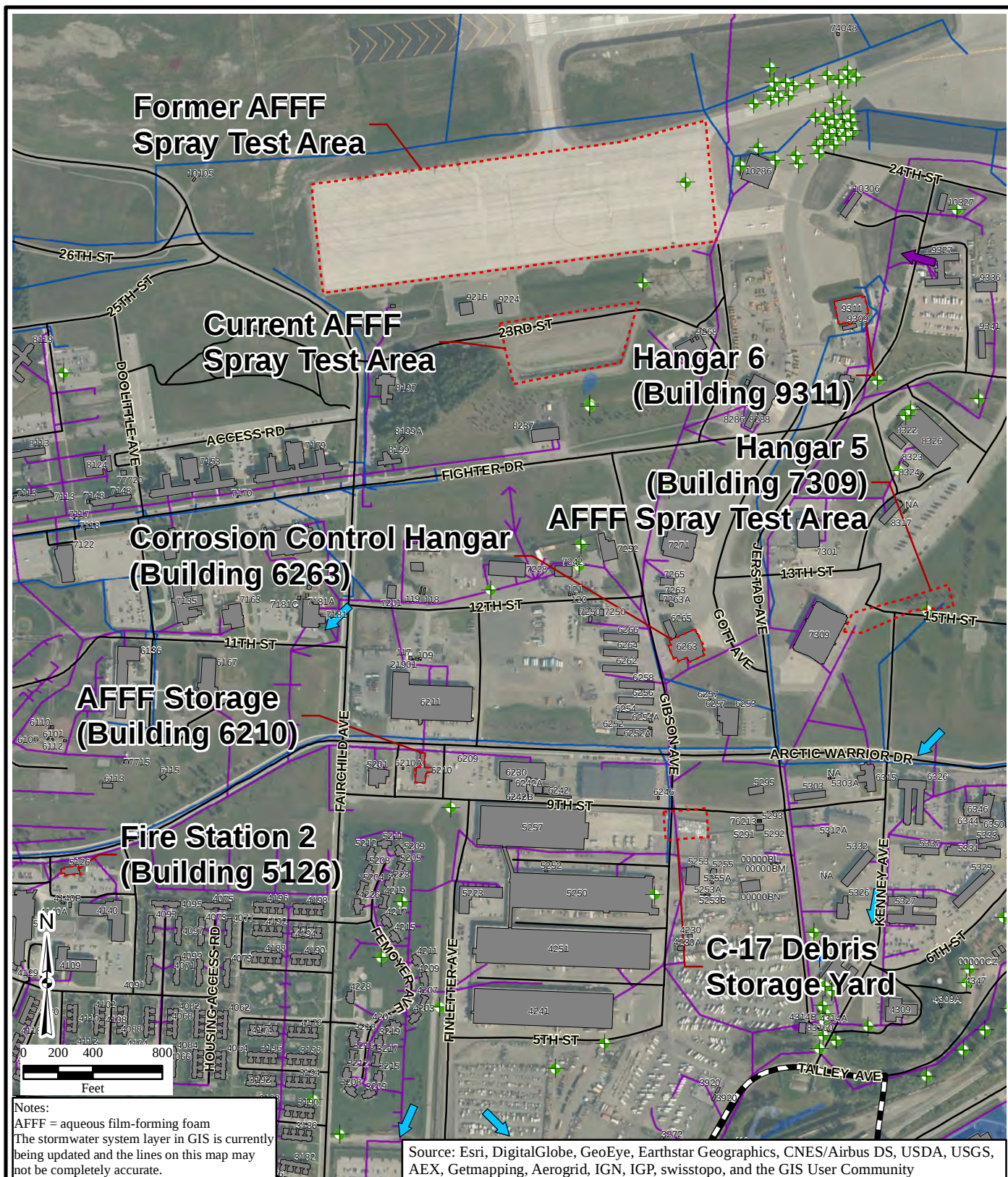


Figure 3.1
Locations Identified in the South-central Part of the Former Elmendorf Air Force Base Area of Joint Base Elmendorf-Richardson, Alaska

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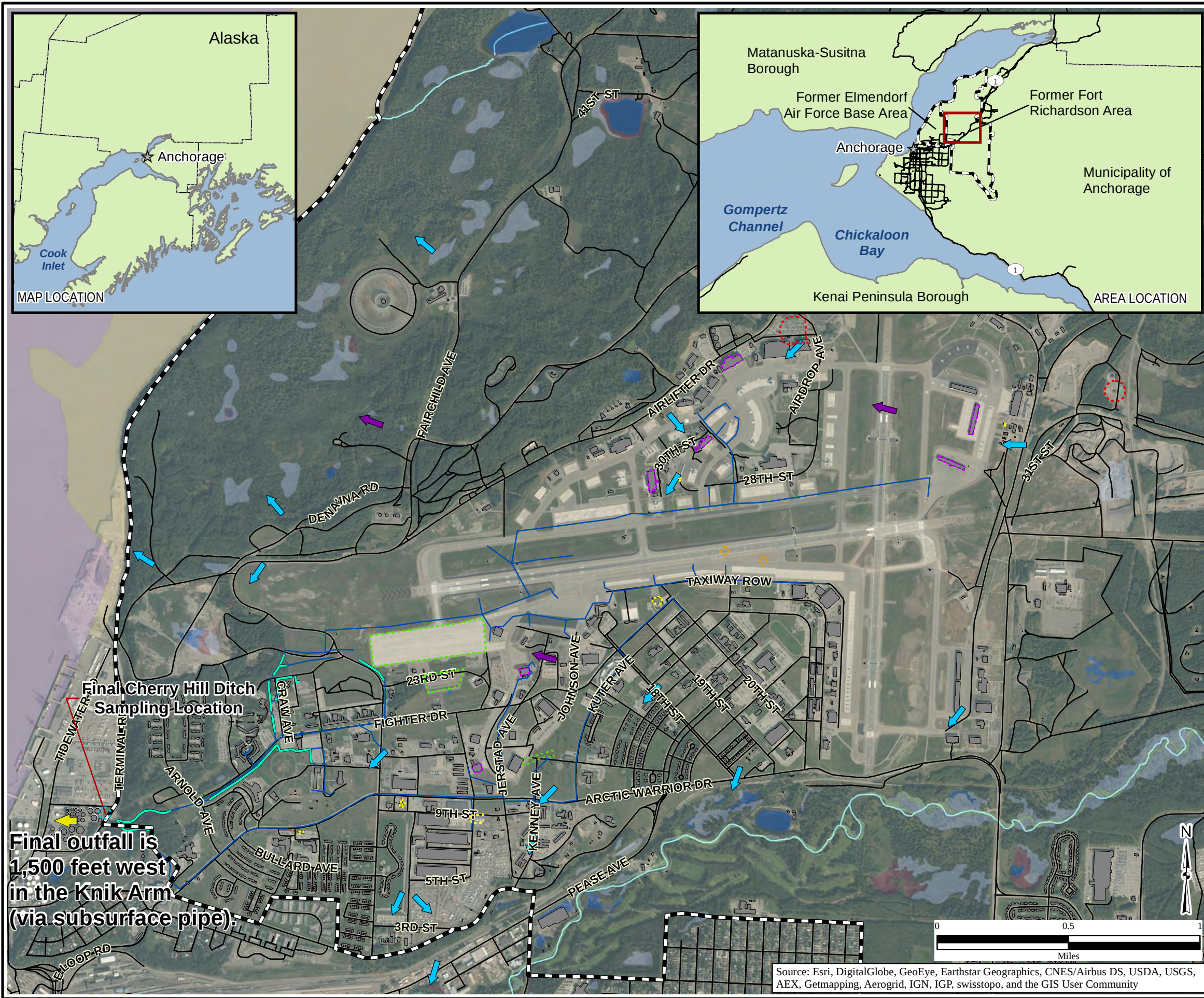


Figure 3.2
Location of Cherry Hill Ditch/Drainage
System in the Former Elmendorf Air
Force Base Area of Joint Base
Elmendorf-Richardson, Alaska

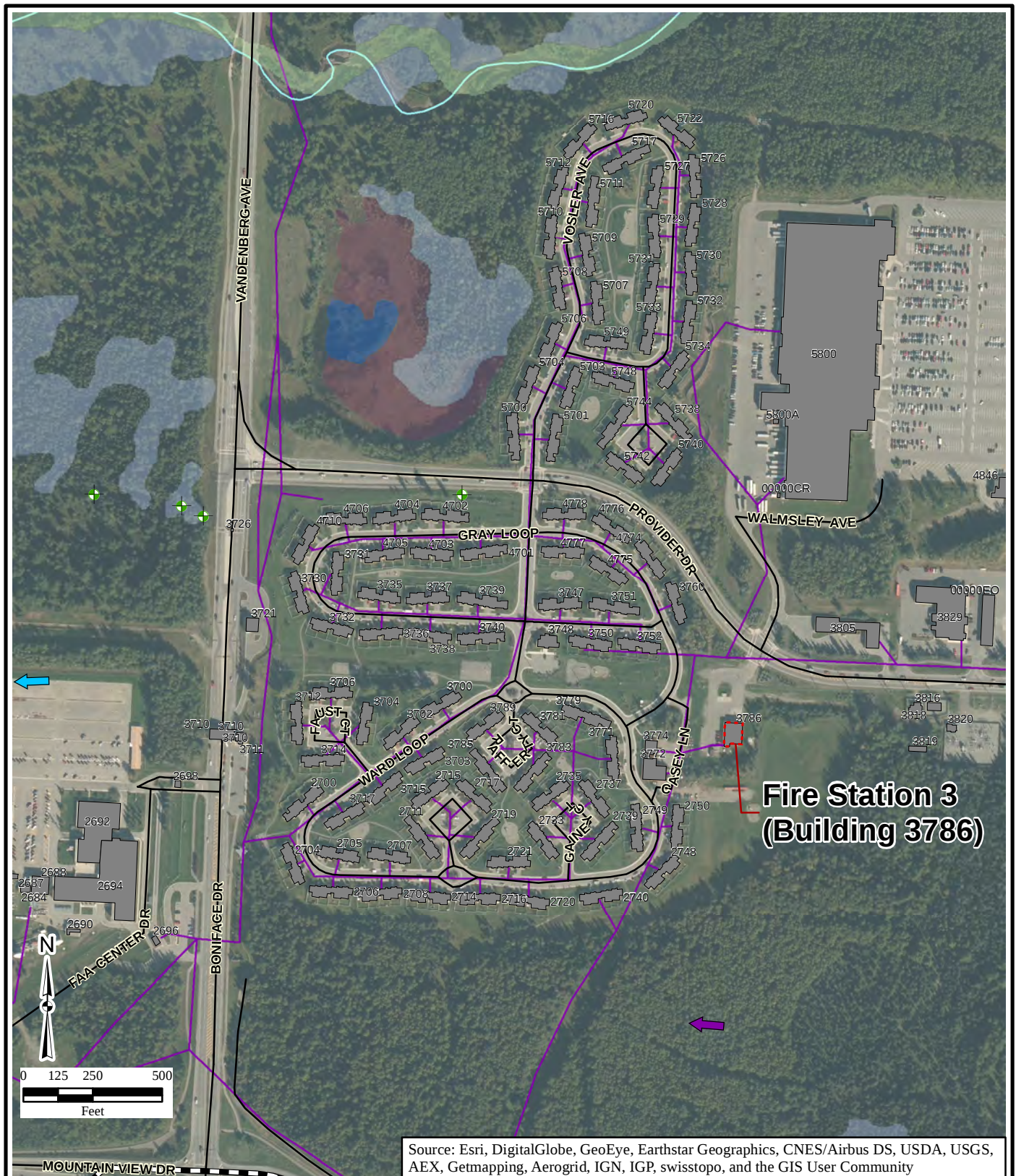
Legend

- Shallow Aquifer Groundwater Flow Direction
- Deep Aquifer Groundwater Flow Direction
- Stream/River
- Storm Sewer Open Channel
- Storm Sewer Closed Conduit
- Road
- Base Boundary
- Building
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine
- Approximate Locations
 - Crash Location
 - Fire Station/Foam Storage
 - Fire Training Area
 - Foam Test Area/Spray Test Area
 - Hangar

Note:
ROW = right-of-way

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4/22/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

CH2MHILL

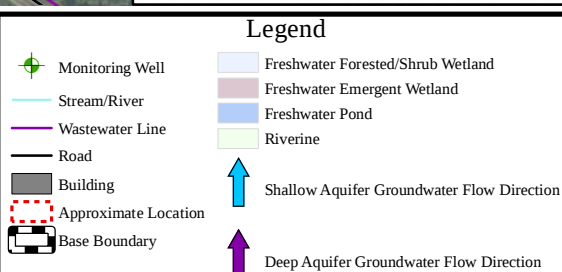
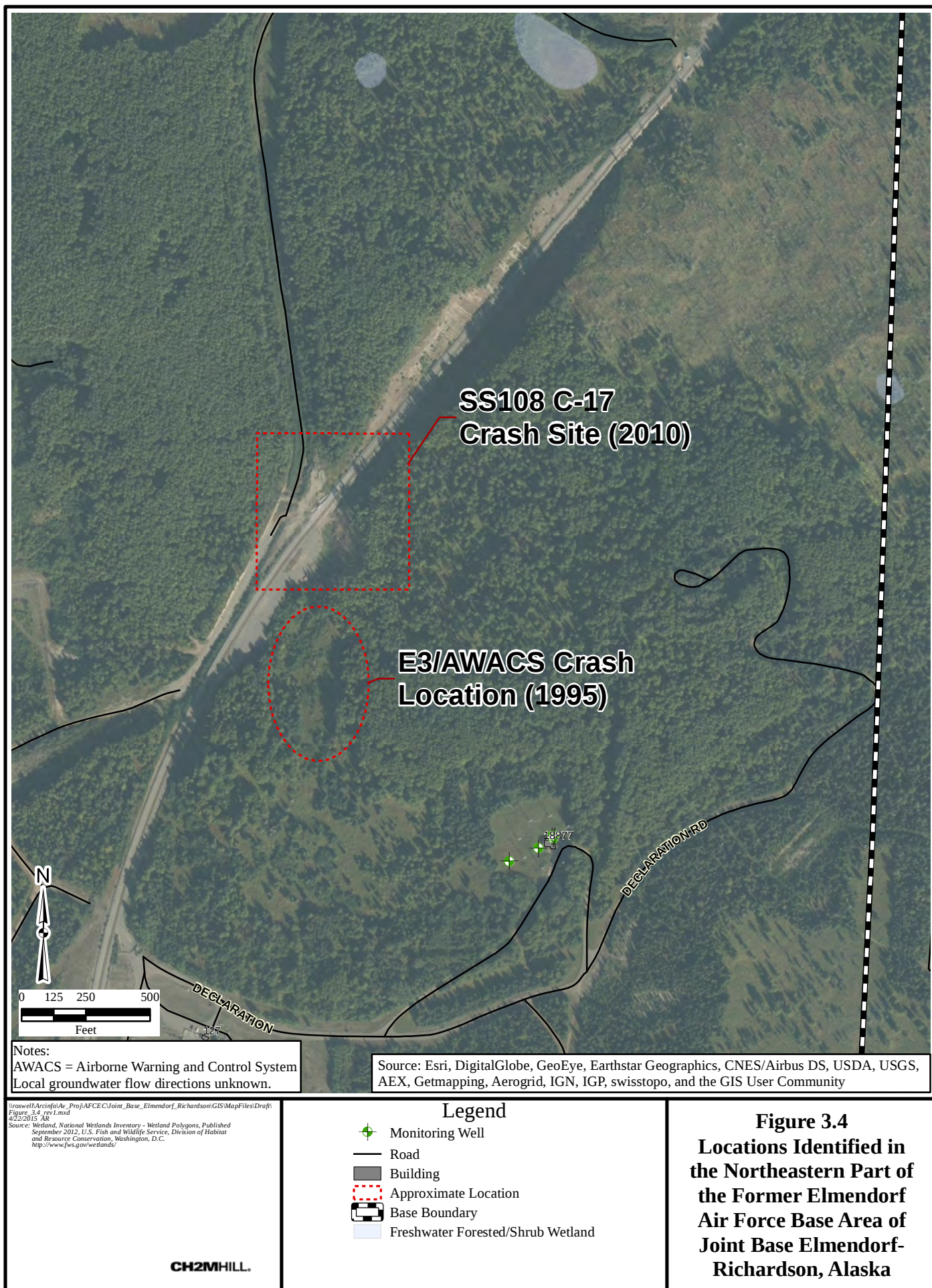
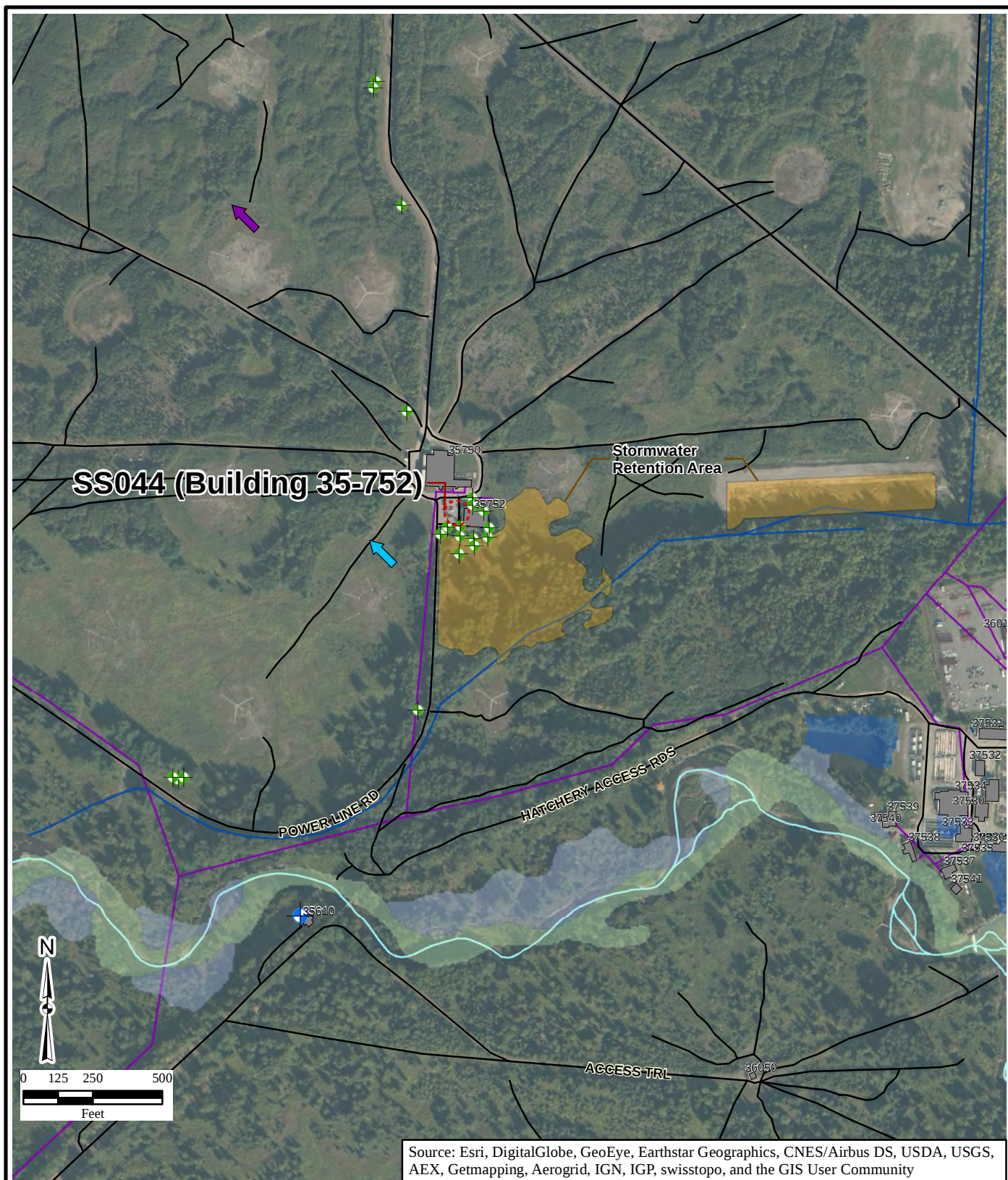


Figure 3.3
Location Identified in
the Southeastern Part of
the Former Elmendorf
Air Force Base Area of
Joint Base Elmendorf-
Richardson, Alaska

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Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C.
<http://www.fws.gov/wetlands/>

CH2MHILL

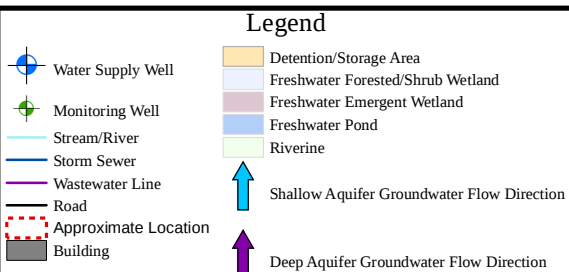


Figure 3.5
Location Identified in the
Southwestern Part of the
Former Fort Richardson
Area of Joint Base
Elmendorf-Richardson,
Alaska

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4.0 SUMMARY AND CONCLUSIONS

The sections below summarize the findings of the PA for AFFF on JBER and provide conclusions based on those findings.

4.1 SUMMARY

Based on background research and visits to JBER, a total of four FTAs, seven fire stations, seven hangars, five crash locations, four areas where AFFF spray testing has occurred, and three additional “miscellaneous” locations have been identified as being active during the timeframe when AFFF has been used by the USAF for fire suppression. The sections below summarize the PA findings for these 30 locations.

4.1.1 Fire Training Areas

JBER has one current operating FTA (on JBER-E), which was constructed with a double liner, a pump system, and a retention pond to recirculate water used in training. The current FTA uses only propane as a fuel source; however, anecdotal accounts indicate that the servicing of mobile AFFF units stationed at Hangar 6 (Building 9311) may have occurred at the current FTA (Green 2015, personal communication; Appendix C). Although the FTA is lined, on occasion excess water was disposed from the nearby retention pond by pumping the water to the adjacent ground surface. As a result, a small amount of AFFF may have been released to the environment.

The historical FTAs include AT052 Landfill FTA (JBER-R), AT029 Ruff Road FTA (JBER-R), and FT023 the FTA (JBER-E). All three of these FTAs were active until the 1980s. Records and interviews did not confirm that AFFF was used during fire training at any of these areas; however, not enough information was available to confirm that AFFF was never applied. It is likely that impacted media could occur at these locations.

4.1.2 Non-Fire Training Areas

The sections below summarize the potential occurrence of AFFF at non-FTA locations identified on JBER.

4.1.2.1 Fire Stations

Seven fire stations are on JBER: five on JBER-E and two on JBER-R. The fire stations are not equipped with AFFF fire suppression systems, but most have AFFF-equipped emergency vehicles associated with them; these are Fire Stations 1, 4, 5, 6, and 7. The remaining fire stations, 2 and 3, primarily respond to structural fires and do not have AFFF-equipped emergency vehicles. AFFF nozzle testing has generally been conducted at specified areas away from the stations; however, known nozzle testing has occurred outside of Fire Stations 1 and 6, and fire personnel indicated that small-scale AFFF nozzle testing could not be completely discounted at any fire stations.

4.1.2.2 Hangars

Seven hangars that have either had or currently have AFFF fire suppression systems were identified on JBER-E. Within the building, all seven have drainage systems that are connected to

the wastewater lines, but they are also believed to have had discharges of AFFF out of hangar doors during major activations or (in the case of Hangar 6 [Building 9311] mobile units) outside of the hangar. Although these releases were onto paved areas, runoff may have affected nearby grassy areas or been collected in the Cherry Hill surface drainage system.

4.1.2.3 Crash Locations

Five aircraft are known to have crashed on JBER since the 1970s. Responses to three of these crashes included the use of AFFF (the 2010 C-17 crash [SS108], the 2009 Cessna, and the 1995 E3/AWACS crash). All three responses involved allowing the applied foam to dissipate in place (two in an undeveloped area east of the runway and one on the pavement of the east-west runway). Of the two remaining crashes, the 1974 C-124 C crash is thought to most likely have had protein foam rather than AFFF used because it was around the time that AFFF was first approved for use. Generally, remaining stocks of former fire suppression material are used up before being replaced with newly approved material (Bakker, 2015, personal communication; Appendix C). The other crash remaining on the list, the Yak-54, did not catch fire.

4.1.2.4 Other Areas

Other identified areas include AFFF test areas, an AFFF storage building (Building 6210), an area where a one-time use of AFFF may have occurred during oily waste disposal SS044 (Building 35-752), and the Cherry Hill drainage ditch system.

Three AFFF test areas, two historical and one that is currently in use, were identified on JBER-E. The two historical AFFF test areas on the West Ramp of the flightline and on the pavement southeast of Hangar 5 had AFFF runoff to adjacent grassy areas. The current AFFF test area is at a snow dump, which is designed to contain snowmelt until it evaporates or infiltrates into the soil; as a result, AFFF discharged in this area has likely infiltrated into the local soils.

The fire suppression AFFF storage (Building 6210) is also a location on JBER-E where small-scale (estimated 5 to 10 gallons of concentrate per event) AFFF nozzle tests have been conducted. Although the AFFF has been said to pool in a low area of the pavement and had not been observed migrating offsite, it is possible that some runoff or infiltration through cracks has occurred.

Building 35-752 is the location on JBER-R where anecdotal observations indicated that PCB oil was disposed by burning it in a pit and then extinguishing the flames with AFFF. Although this would indicate a release to the soil beneath the unlined pit was likely, there are conflicting accounts of whether AFFF was used during the disposal process.

The C-17 debris storage yard has been used to store crash debris from the 2012 C-17 crash. The yard has a gravel surface and is fairly flat. Because the liners covering the debris are in disrepair, it is possible that some foam residue may have been rinsed off of the debris to the ground surface.

SD052, the Cherry Hill ditch, is the drainage system that services the majority of the JBER-E area south of the Elmendorf Moraine, including the flightline, fire station, and foam testing areas. Most of the drainage system is within enclosed culverts, but there are sections of open, unlined ditch (Cherry Hill ditch) toward the western end. As a result, runoff contaminated with AFFF likely has flowed through this system and may have contaminated soil in and around the open ditch portion before being discharged to the Knik Arm.

4.2 CONCLUSIONS

After assessing the available information, the identified potential locations have been divided into four groups to aid in guiding further action to address potential AFFF contamination on JBER. These four groups are based on the known or suspected quantity of the release as well as the potential to affect target receptors and are described as follows:

- Group 1 – High mass of AFFF released and probability of groundwater contamination.
- Group 2 – Unknown mass or medium mass of AFFF released.
- Group 3 – Low mass of AFFF released.
- Group 4 – No AFFF released.

Based on the group designation and rationale for each location, recommendations are provided in Table 4.1. In accordance with the USEPA and CERCLA Preliminary Assessment and Site Inspection (SI) Guidance documents, each identified location is recommended for one of the following: Implement removal action due to imminent threat; Close out of location due to no release; Initiate a Remedial Investigation (RI); or Initiate an SI.

- Removal action, as defined in CERCLA Section 104, are actions taken to eliminate, control, or otherwise mitigate a threat posed to public health or the environment due to a release or threatened release of hazardous substances (USEPA, 1991).
- Closeout or no further remedial action planned (NFRAP) is defined as a disposition decision that further response under the federal Superfund is not necessary (USEPA, 1991).
- RI is defined as a field investigation to characterize the nature and extent of contamination at a location. The RI supports development, evaluation, and selection of the appropriate response alternative (USEPA, 1991).
- SI is defined as an investigation to collect and analyze waste and environmental samples to support an evaluation (USEPA, 1992).

Table 4.1
Preliminary Assessment Report Summary and Findings
Joint Base Elmendorf-Richardson, Alaska

Locations	JBER-R/E	Group	Rationale	Recommendation
AT029 Ruff Road FTA	JBER-R	Group 2	- Active 1940s to 1980s. - Unknown if AFFF used for training.	Initiate SI.
AT052 Landfill FTA	JBER-R	Group 2	- Active 1985-1988. - Unknown if AFFF used for training.	Initiate SI.
FT023 FTA	JBER-E	Group 2	- Active early 1940s to 1983. - Unknown if AFFF used for training.	Initiate SI.
Current FTA	JBER-E	Group 2	- Active since mid-1990s. - Unknown if AFFF used for training (but not suspected). - Possible location of testing portable AFFF units from Hangar 6.	Initiate SI.
Bryant Army Airfield	JBER-R	Group 4	Has never had AFFF system; only water deluge.	NFRAP
Fire Station 4 (Building 654)	JBER-R	Group 3	- One response unit with 56 gallons AFFF concentrate onsite. - No confirmed releases. - Small-scale nozzle testing possible outside of building.	Initiate SI.
Fire Station 5 Building (48010)	JBER-R	Group 3	- One response unit with 210 gallons AFFF concentrate onsite. - No confirmed releases. - Small-scale nozzle testing possible outside of building.	Initiate SI.
Yak-54 Crash Location (1998)	JBER-E	Group 4	- In remote range area of Base (approximately 7 miles from the flightline area). - No fire from crash.	NFRAP.
SS044 (Building 35-752)	JBER-R	Group 3	- AFFF may have been used once to extinguish a waste oil disposal fire. - Conflicting accounts of whether AFFF used or not. - Volume of AFFF (if used) unknown.	Initiate SI.
SS047 Nike Site Summit	JBER-R	Group 4	No record of AFFF use or storage onsite.	NFRAP.
Corrosion Control Hangar (Building 6263)	JBER-E	Group 3	- Has AFFF system. - One system activation since 2000; some AFFF released outside hangar; some captured in drains. - Volume released outside unknown.	Initiate SI.

Table 4.1
Preliminary Assessment Report Summary and Findings
Joint Base Elmendorf-Richardson, Alaska

Locations	JBER-R/E	Group	Rationale	Recommendation
Hangar 6 (Building 9311)	JBER-E	Group 3	- Three mobile AFFF system units (trailers). - Tested annually (discharging full 3.5 gallons concentrate each unit). 2009-2012 units tested on pavement outside hangar.	Initiate SI.
Hangar 8 (Building 14410)	JBER-E	Group 3	- Current AFFF system. - Three known activations since 2000. - Total volume discharged 100 to 200 gallons AFFF concentrate each event. - AFFF captured by wastewater drain or released to pavement outside (unknown volume).	Initiate SI.
Hangar 10 (Building 15444)	JBER-E	Group 3	- Fire suppression system currently being converted to HEF from AFFF. - Five or six activations since 2000. - Total volume discharged 100 to 400 gallons AFFF concentrate each event. - AFFF captured by wastewater drain or released to pavement outside (unknown volume).	Initiate SI.
Hangar 16 (Building 15658)	JBER-E	Group 3	- Current AFFF system installed in mid-1990s. - Two activations since 2000. - Total volume discharged 325 gallons AFFF concentrate each event. - AFFF captured by wastewater drain or released to pavement outside (unknown volume).	Initiate SI.
Hangar 17 (Building 16670)	JBER-E	Group 3	- Current AFFF system installed in the mid-1990s. - Three or four activations since 2000. - Total volume discharged 5 gallons AFFF concentrate each event. - AFFF captured by wastewater drain or released to pavement outside (unknown volume).	Initiate SI.

Table 4.1
Preliminary Assessment Report Summary and Findings
Joint Base Elmendorf-Richardson, Alaska

Locations	JBER-R/E	Group	Rationale	Recommendation
Hangar 18 (Building 17470)	JBER-E	Group 2	- Current AFFF system installed in the mid-1990s. - Three to five activations since 2000. - Maximum volume discharged during one event was approximately 1,000 gallons AFFF concentrate. - AFFF captured by wastewater drain or released to pavement outside (unknown volume).	Initiate SI.
Fire Station 1 (Building 11415)	JBER-E	Group 2	- AFFF testing previously performed in grassy area outside station. - Annual testing of eight trucks estimates a total volume of 40 to 80 gallons of AFFF concentrate. - UST previously used for AFFF beneath truck bay; volume, contents, and condition unknown. 896 gallons of AFFF concentrate onsite among three vehicles.	Initiate SI.
Fire Station 2 (Building 5126)	JBER-E	Group 4	- Response units geared for structural fire. - No AFFF on vehicles or stored onsite.	NFRAP.
Fire Station 3 (Building 3786)	JBER-E	Group 4	- Response units geared for structural fire. - No AFFF on vehicles or stored onsite.	NFRAP.
Fire Station 6 (Building 16673)	JBER-E	Group 3	- One response unit with 500 gallons AFFF concentrate onsite. - Small-scale nozzle testing has been conducted outside the building.	Initiate SI.
Fire Station 7 (Building 14431)	JBER-E	Group 3	- One response unit with 210 gallons AFFF concentrate onsite. - No confirmed releases. - Small-scale nozzle testing possible outside of building.	Initiate SI.
SS108 C-17 Crash Location (2010)	JBER-E	Group 3	- Location is on both sides of railroad tracks in uninhabited area; 1,500 feet to nearest structure. 220 gallons of AFFF concentrate used during response action. - No attempt to contain or clean up AFFF following response. - Remedial action in 2012 included removal of 1,544 cubic yards of fuel-contaminated soil from the location.	Initiate SI.

Table 4.1
Preliminary Assessment Report Summary and Findings
Joint Base Elmendorf-Richardson, Alaska

Locations	JBER-R/E	Group	Rationale	Recommendation
C-124C Crash Location (1974)	JBER-E	Group 4	- Located on east-west runway. - Emergency response details unknown. - Type of fire suppressant foam use unknown, but likely protein foam (predecessor to AFFF). - Cannot eliminate the possibility that AFFF was used.	NFRAP.
Cessna UC-35A Crash Location (2009)	JBER-E	Group 3	- Located on east-west runway. - AFFF used as a precautionary measure (volume unknown). - AFFF was allowed to dissipate in place.	Initiate SI.
E3/AWACS Crash Location (1995)	JBER-E	Group 3	- Located in uninhabited area 2,000 feet northeast of the runway. - AFFF used during emergency response (volume unknown). - Fate of AFFF unknown, but likely was allowed to dissipate in place.	Initiate SI.
Current AFFF Spray Test Area	JBER-E	Group 3	- Nozzle testing area is unlined, gravel, bermed (snow dump). 40 to 80 gallons AFFF concentrate estimated to be discharged to this area annually during the testing of systems on eight emergency response vehicles. - Has been used since 2012.	Initiate SI.
Former AFFF Spray Test Area	JBER-E	Group 3	- Located on paved west ramp of flightline. - AFFF allowed to dissipate onsite. 40 to 80 gallons AFFF concentrate estimated to be discharged to this area annually (from pre-2000 to 2010) during the testing of systems on eight emergency response vehicles.	Initiate SI.
Fire Suppression Foam Storage (Building 6210)	JBER-E	Group 3	- Some nozzle testing conducted southeast of building (2010-2012); AFFF allowed to dissipate from low area on pavement. - Houses enough AFFF (in 55-gallon drums) to restock all emergency vehicles (current total 2,765 gallons AFFF concentrate). - Emergency vehicles re-stocked using hand pump from 55-gallon drum.	Initiate SI.

Table 4.1
Preliminary Assessment Report Summary and Findings
Joint Base Elmendorf-Richardson, Alaska

Locations	JBER-R/E	Group	Rationale	Recommendation
Hangar 5 (Building 7309) Former AFFF Test Area	JBER-E	Group 3	- On paved area southeast of Hangar 5. - Runoff observed to “foam” in ditch north of intersection of 9th and Kenney Avenue. - Used from 2010 to 2012.	Initiate SI.
C-17 Debris Storage Yard	JBER-E	Group 3	- Debris from C-17 Crash location stored in gravel yard. - All debris piles covered in liners, but liners are in disrepair. - Unknown if debris was cleaned prior to transfer to storage yard.	Initiate SI.
Cherry Hill Ditch (SD052)	JBER-E	Group 3	Receives stormwater runoff from flightline and majority of Elmendorf.	Initiate SI.

Notes:

Group 1 – High mass of AFFF released and probability of groundwater contamination.

Group 2 – Unknown mass or medium mass of AFFF released.

Group 3 – Low mass of AFFF released.

Group 4 – No AFFF released.

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APPENDIX A

PHOTO DOCUMENTATION

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PHOTOGRAPH LOG

Team: Joint Base Elmendorf Richardson			Date: 12/15/2014	1400
Project Number: 495516.03.42.01			Observation Period: Start: 1300	Stop: 1400
Weather: Overcast, low 30's to mid-teens. Snow/ice groundcover				
Photo No.	Time	View Direction	Location/Description	
0019	14:00	—	Hangar 18 - AFFF system tanks	
20	14:01	—	Hangar 18 - AFFF piping from tank	
21	14:01	—	Hangar 18 - L11	
22	14:01	—	Hangar 18 - L11	
23	14:02	—	Hangar 18 - L11 close up	
24	14:02	—	Hangar 18 - Ansul drum label	
25	14:05	—	Hangar 18 - 55 gal Ansul drums + system	
26	14:05	—	Hangar 18 - L11 close up	
27	14:10	—	Hangar 18 - Ansul canon inside hangar	
28	14:11	—	Hangar 18 - Ansul canon & piping inside hangar	
29	14:11	—	Hangar 18 - L11	
30	14:11	—	Hangar 18 - 2nd Ansul cannon on opposite	
31	14:15	—	Pump house 17456 - pump system	
32	14:20	S	Pump house 17456 - exterior view of Bldg.	
33	14:20	S	Pump house 17456 - L11 close up	
34	14:25	—	Hangar 12 - HEF system in place	
35	14:25	—	Hangar 12 - L11 close-up	
36	14:25	—	Hangar 12 - L11	
37	14:30	—	Hangar 12 supply room pump house - HEF	
38	14:30	—	Hangar 12 L11	

PC15

1) pump house
supply
room

PHOTOGRAPH LOG

Team: Joint Base Elmendorf-Richardson			Date: 12/17/2014
Project Number: 1495516.03.42, 01/03.41.01			Observation Period: Start: 12:44 Stop: 12:44
Weather: Overcast, hi-mid teens, icy snow ground cover			
Photo No.	Time	View Direction	Location/Description
PC 1 70043	09:59	E	Station 1 - looking out Station door
44	10:02	W	Station 1 - grassy area where spray tests/maintenance are performed
45	10:04	-	trucks in Station 1 bays
46	10:06	-	Station 1 foam UST - manhole to UST
47	10:08	-	Station 1 - overhead fill (decommissioned)
48	10:08	-	↳ "
49	10:24	E/NE	Hangar 5 - Washout Area 15 th St / Kenny drainage
50	10:24	W	Hangar 5 - vantage back toward Hangar 5 washout
51	10:39	-	Bldg. 6263 - Corrosion control Ansol 400 gal. Point tank
52	10:39	-	Bldg. 6263 - Ansol tank label
53	10:42	-	Bldg. 6263 - Cannon (#12) + pipes to cannon
54	10:43	-	Bldg. 6263 - pipes to Cannon
55	10:48	SW	Current foam test area / snow dump - overview
56	10:49	N	Former test pit area on West ramp
57	10:50	S	Current test pit area - overview
58	10:50	N	former test pit area - overview
59	11:01	-	Bldg. 6210 Truck Service Servicing / refill - 55 gal drums
60	11:02	-	Bldg. 6210 - 3 - 55 gal drums sulver + Ansol
61	11:05	SW	Bldg. 6210 - area where washout pools on hard-surface
62	11:23	W/SW	Station 3 - looking down - grade of Station
63	11:24	E	Station 3 - overview of Station 3
64	11:25	SE	front of Station 3 - Adjacent to JUP Adjacent to Playground
65	11:35	E	Bldg. 11673 Fire Station 6 on Flightline
66	11:38	-	Bldg. 16670 (90th) - Foam system, AFFF piping present
67	11:40	-	Bldg. 116670 - Mechanical room above
68	11:42	-	Bldg. 16670 - piping in lower room
69	12:02	-	Bldg. 15444 - overview
70	12:04	-	Bldg. 15444 - HEF tank
71	12:05	-	Bldg. 15444 - 55 gal drums g. Ansol + HEF
72	12:06	-	+ 1000 Bldg. 15444 - 1,000 - 1,500 gal tank
73	12:08	-	Totes w/ foam Bldg. 15444 - totes w/ foam from 1500 gal tank
74	12:09	-	↳ "
75	12:10	-	Bldg. 15444 - looking into top of full tank AFFF
76	12:27	-	Fire Station 4 - overview
77	12:29	-	Fire Station 4 - renovation
78	12:31	-	Trucks in Fire Station 4
79	12:32	-	Fire Station 4 - Unit w/ Class A foam used
80	12:33	S/SW	Fire Station 4 - view out bay doors (main)
81	12:41	-	Fire Station 5 - trucks
82	12:42	-	Fire Station 5 - drains
83	12:44	E	Fire Station 5 - outside overview

PHOTOGRAPH LOG

1000

Team: Joint Base Elmendorf-Richardson Date: 12/15/2014 - 12/19/2014
 Project Number: 495516.03.41.01/03.42.01 Observation Period: Start: 12/15/2014 Stop: 12/27/2014
 Weather: Mostly cloudy, low 20's to single digits. Snow/ice on ground

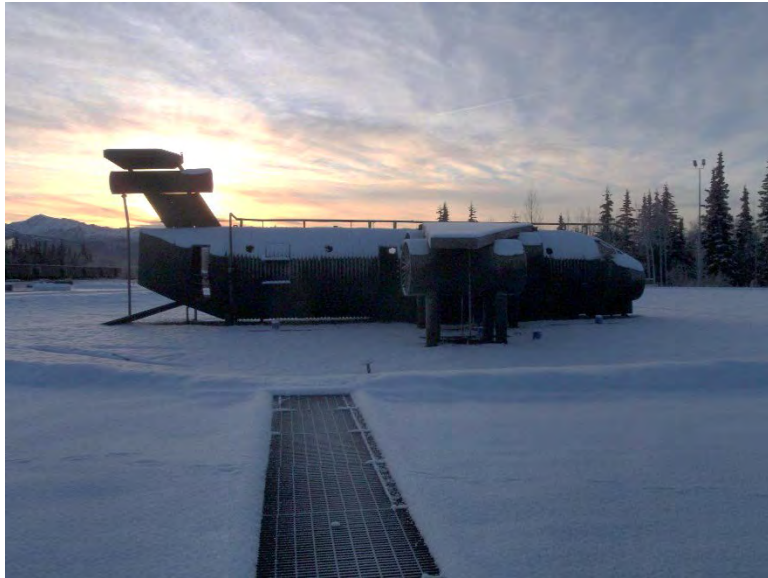
Photo No.	Time	View Direction	Location/Description
PC150019			
PC180084	10:00	N/NE	FA Rough Road (AT029) - site overview
85	10:00	NW	AT029 - close up of area used for fire training
86	10:49	N	FA JUP AT052 (Landfill FTA) - site overview
87	10:47	NE	AT052 - overview
88	10:47	N	AT052 - overview
89	10:47	NE	AT052 - overview
90	11:25	E	Current FTA - training in hermed area → plane
91	11:25	SE	Current FTA - " "
92	11:25	W	Current FTA - Sign on environmental area
93	11:25	W	Current FTA - drain to environmental area
94	11:25	E	Current FTA - bldg. used for fire training
101	11:40	W	AT023 - fire training area overview
102	11:40	SW	AT023 FTA - overview
103	11:40	S	AT023 FTA - overview
104	14:40	E/NE	Cherry Hill outfall - above grade ditch
105	14:40	W	Cherry Hill outfall - ER shut off valve
106	14:40	W	Cherry Hill outfall - close-up
107	14:50	E	Cherry Hill/Housing outfall merge
108	14:50	NW	Cherry Hill/Housing outfall - drainage ditch; final
109	14:50	-	Cherry Hill outfall - Sign at Port Sample point
110	14:50	E/NE	Cherry Hill outfall - area where other underground
↓	↓	↓	"F" pipe storm water drain comes from base
111	14:57	NW	Sample point @ housing area by Gov't Hill gate
112	14:57	N	Sample point for storm water exiting near Boniface
113	15:00	W	Sample point near Muldoon Gate
114	15:05	E/SE	JBERR outfall ditch - overview
115	15:05	W	JBERR outfall retention pond - final outfall goes through here.
↓	↓	↓	Ship creek outfall at far end - left side
116	15:07	E/NE	Additional drainage ditch leading to
↓	↓	↓	retention pond
PC190117	09:52	E	C-17 crash site - Debris yard overview
PC190118	09:55	W	↳ " close up
119	09:56	W	↳ " further out
125	10:54	NNE	Moose near trail to C-17/AWACs crash sites
126	12:56	S	AWACs crash area: note cut in trees along ridge
127	12:57	S	" further out
128	12:58	-	AWACs Memorial
129	12:59	SE	" further out, looking up center trees
130	13:02	-	Memorial at C-17 crash site
131	13:03	N	C-17 Crash area (east of tracks)
132	13:04	N	" (looking more down tracks)
133	13:24	N	" (west of tracks)
134	13:24	NNE	"
135	13:24	N	" (looking down old rail bed)
136	13:27	NNW	"

PHOTOGRAPH LOG

Team: Joint Base Elmendorf-Richardson		Date: 1/12/15 - 1/13/15	
Project Number: 495516.09.42.01		Observation Period: Start: 1/12 14:00 Stop: 1/13 10:52	
Weather:			
Photo No.	Time	View Direction	Location/Description
Photo 1	14:01	S	ATO52 Landfill Fire Training Area
1/12			
120138	14:21	NA	Hangar 17 Fighter Cells/Bays (individual systems)
139	14:21		Hangar 17 Foam pumps connection to water
140	14:23		Hangar 17 Bay ceiling - no cannons, just overhead spr.
142	14:26		Sprinklerhead (replacement part)
143	14:42		Hangar 16 Foam tank
144	14:43		Hangar 16 cell systems
145	14:43		Hangar 16 cell systems (2nd half)
146	14:49		Hangar 16 fixed nozzles
147	14:50		Hangar 16 close-up of one fixed nozzle
148	14:51		Hangar 16 ceiling foam piping to add'l hangars
149	15:20		Hangar 8 foam tank
150	15:26		Hangar 8 drums of additional LEF (25 total)
151	15:23		Hangar 8 4-cannon system
152	15:29		Hangar 8 drain to waste water system
153	15:42	N	Fire Station 7 overview
154	15:42	SE	Fire Station 7 overview
1/13			
155	10:51	S	SS044 Overview
156	10:52	E	SS044 Overview
Miscellaneous - Photo obtained from external source			
9	-	SE →	Cessna UC-35A - Cessna 560 Citation V Ultra-98-0008 Copyright Senior Airman Matt Coleman-Foster US Obtained from Aviation Safety Network aviationsafety.net

APPENDIX A.1
JBER-ELMENDORF

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01PC180096



02PC180097



03PC180098



04PC180099



05P1120149



06P1120151



07P1120152



08PC170069



09PC170070



10PC170071



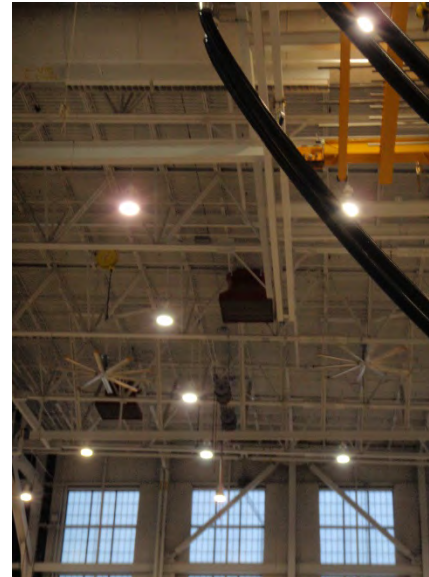
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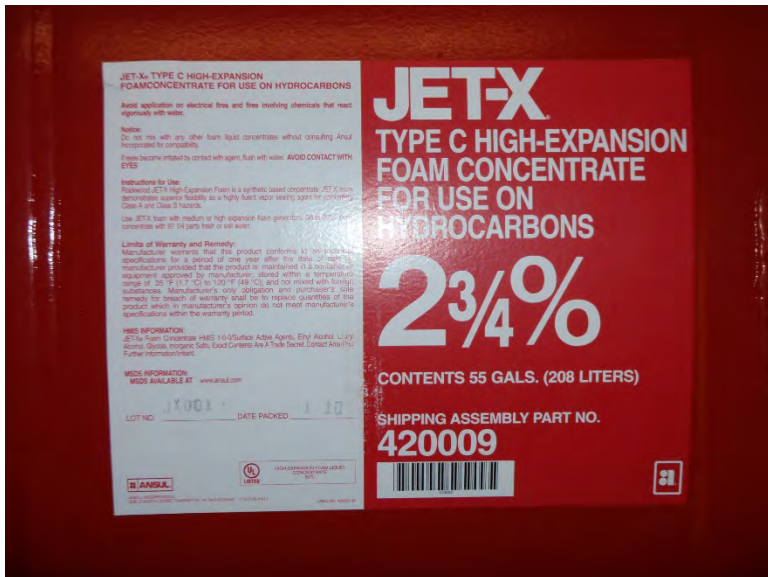
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13PC150035



14PC150036



15PC150037



16P1120143



17P1120144



18P1120147



19P1120138



20PC170066



21PC170067



22PC150022



23PC150025



24PC150028



25PC170044



26PC170046



27PC170048



28PC170062



29PC170063



30PC170064



31PC170065



32P1120153



33P1120154



34PC190127



35PC190129



36PC190132



37PC190135



38PC190117



39PC190118



40PC180101



41PC180102

Photo not shown.

42PC180111

Photo not shown.

Photo not shown.

43PC180112

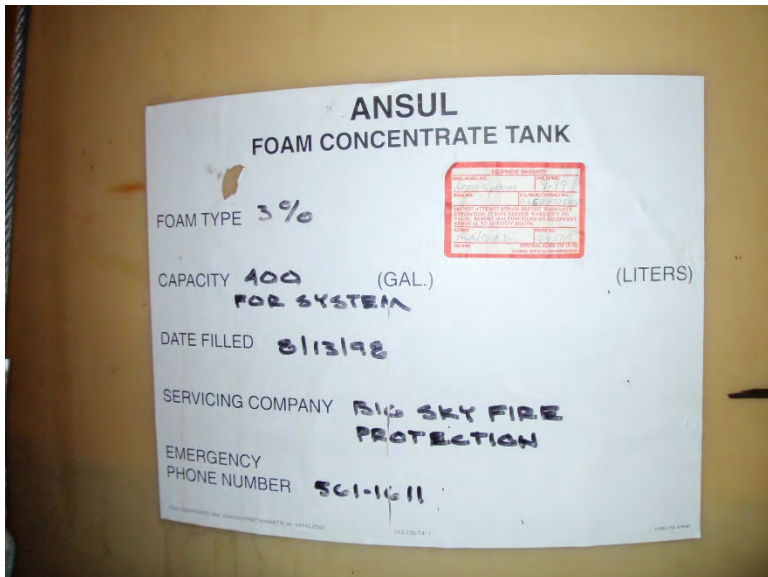
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46PC170061



47PC170052



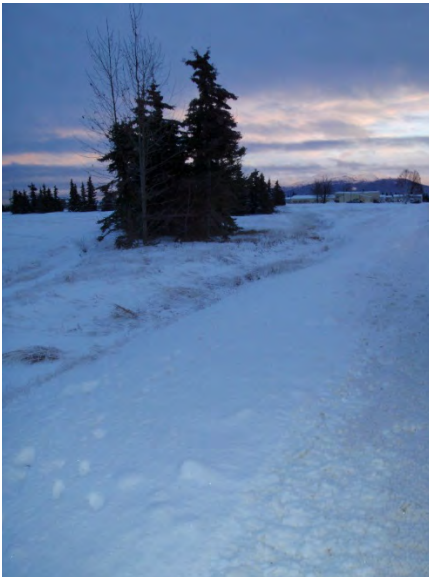
48PC170054



49PC170055



50PC170057



51PC170049



52PC170050



53PC170056



54PC170058



55PC180104



56PC180110

APPENDIX A.2
JBER-RICHARDSON

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01PC180084



02PC180085



03LandfillFTA- Looking S



04PC180086



05PC170078



06PC170079



07PC170080



08PC170082



09PC170083



10P1130155



11P1130156

APPENDIX B

FIELD DOCUMENTATION

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APPENDIX B.1

POTENTIAL HAZARDOUS WASTE SITE FORMS

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Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 6214522157
						CERCLIS Discovery Date: 3/12/91	
1. General Site Information							
Name: AT052 Landfill Fire Training Area			Street Address:				
City: JBER		State: AK	Zip Code: 99505	County:	Co. Code:	Cong. Dist:	
Latitude: 61° 16' 31.29"	Longitude: 149°41' 22. 84"	Approximate Area of Site: 2 _____ Acres _____ Square Ft		Status of Site: ☐ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.)			
Site Name: AT052 Landfill Fire Training Area							
Site Description: Fire Training Area							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99505	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☒ Federal Agency Name: <u>DOD</u> ☐ State ☐ Indian			Type of Ownership: ☐ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian				
☐ County ☐ Municipal ☐ Not Specified ☐ Other _____			☐ County ☐ Municipal ☐ Not Specified ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☒ Commercial ☐ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI Other Federal Facility: ☐ Other _____		Site Setting: ☐ Urban ☐ Suburban ☒ Rural		Years of Operation: Beginning Year 1940s Ending Year 1980s ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals			☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☒ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☒ Yes ☐ No Distance to Nearest Dwelling, School, or Workplace: ____ 1,500 ____ Feet	
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:			
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☒ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>							
Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-50___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.7___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☒ None
☐ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 10,730

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 6214522157
						CERCLIS Discovery Date: 3/12/91	
1. General Site Information							
Name: AT029 Ruff Road Fire Training Area			Street Address:				
City: JBER			State: AK	Zip Code: 99505	County:	Co. Code:	Cong. Dist:
Latitude: 61° 16' 11.04"	Longitude: 149°38' 45. 06"	Approximate Area of Site: _____ Acres _____250 Square Ft		Status of Site:			
				☐ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.)			
Site Name: AT029 Ruff Road Fire Training Area							
Site Description: Fire Training Area							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99505	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership:			Type of Ownership:				
☐ Private ☒ Federal Agency Name: <u>DOD</u> ☐ State ☐ Indian			☐ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian				
☐ County ☐ Municipal ☐ Not Specified ☐ Other _____			☐ County ☐ Municipal ☐ Not Specified ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'			Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015	
Street Address: 949 E. 36th Avenue			City: Anchorage			State: AK	
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation:			CERCLIS Recommendation:			Signature:	
☐ Yes ☐ No Date: _____			☐ Higher Priority SI ☒ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Name (typed):	
						Position:	

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☐ Commercial ☐ Mining ☐ Other Federal ☐ Residential ☒ DOD ☐ Facility: ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☐ Suburban ☒ Rural	Years of Operation: Beginning Year 1940 Ending Year 1980s ☐ Unknown
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____ ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
		Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
		Waste Accessible to the Public: ☒ Yes ☐ No	
		Distance to Nearest Dwelling, School, or Workplace: ____550____Feet	

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste
(check all that apply)	(include unit)		(check all that apply):
☐ Landfill	_____	_____	☐ Metals
☐ Surface Impoundment	_____	_____	☐ Organics
☐ Drums	_____	_____	☐ Inorganics
☐ Tanks and Non-Dum Containers	_____	_____	☒ Solvents
☐ Chemical Waste Pile	_____	_____	☐ Paints/Pigments
☐ Scrap Metal or Junk Pile	_____	_____	☐ Laboratory/Hospital Waste
☐ Tailings Pile	_____	_____	☐ Radioactive Waste
☐ Trash Pile (open drum)	_____	_____	☐ Construction/Demolition Waste
☐ Land Treatment	_____	_____	
☐ Contaminated GW Plume	_____	_____	
(unidentified source)			
☐ Contaminated SW/Sediment	_____	_____	
(unidentified source)			
☒ Contaminated Soil	_____	_____	
☐ Other _____	_____	_____	
☐ No Sources	_____	_____	

*C=Constituent, W=Wastestream, V=Volume, A=Area

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: _____ 140-153 ___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ 0.75 ___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ __8,196__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: FT023 Fire Training Area			Street Address:				
City: JBER		State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:	
Latitude: 61° 14' 50.18"	Longitude: 149°43' 20. 12"	Approximate Area of Site: _____ Acres _____ 1,000 Square Ft		Status of Site: ☐ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.)			
Site Name: FT023 Fire Training Area							
Site Description: Fire Training Area							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☒ Federal Agency Name: <u>DOD</u> ☐ State ☐ Indian			Type of Ownership: ☐ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian				
☐ County ☐ Municipal ☐ Not Specified ☐ Other _____			☐ County ☐ Municipal ☐ Not Specified ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☒ Commercial ☐ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1940 Ending Year 1983 ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals			☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ____100____ Feet	
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:			
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>							
Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___40-100___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___0.5___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☐ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ __36,400__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Current Foam Test Area			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 37.28"	Longitude: 149°50' 32. 28"	Approximate Area of Site: 5.5 Acres		Status of Site:			
				☒ Active ☐ Not Specified			
				☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Current Foam Test Area							
Site Description: Current Foam spray testing area.							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership:			Type of Ownership:				
☐ Private			☐ County				
☒ Federal Agency			☐ Municipal				
Name: DOD			Name:				
☐ State			☐ Not Specified				
☐ Indian			☐ Other				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation:			CERCLIS Recommendation:			Signature:	
☐ Yes			☐ Higher Priority SI			Name (typed):	
☐ No			☐ Lower Priority SI			Position:	
Date:			☐ NFRAP				
			☐ RCRA				
			☐ Other:				
			Date:				

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 2012 Ending Year present ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☒ Yes ☐ No Distance to Nearest Dwelling, School, or Workplace: ____400____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___25___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☒ Other <u>drainage/stormwater</u>		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.2___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 74,550

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Corrosion Control Hangar (Bldg. 6263)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 20.28"	Longitude: 149°50' 17. 08"	Approximate Area of Site: _____1_____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Corrosion Control Hangar (Bldg. 6263)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DoD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 2/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics					
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal Facility: ☒ Residential ☒ DOD ☐ DOE ☐ Forest/Fields ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1944 Ending Year present_ ☐ Unknown	
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☒ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite		
			Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown		
			Waste Accessible to the Public: ☒ Yes ☐ No		
			Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet		
6. Waste Characteristics Information					
(Refer to PA Table 1 for WC Score)					
Source Type: (check all that apply)		Source Waste Quantity: (include unit)	Tier*:	General Type of Waste (check all that apply):	
☐ Landfill ☐ Surface Impoundment ☐ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other _____	
				Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☒ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___0.63___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☒ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 93,320

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 6 (Bldg. 9311)			Street Address: Jerstadt Ave.				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 39.74"	Longitude: 149°49' 59. 30"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 6 (Bldg. 9311)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DoD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural	Years of Operation: Beginning Year 1944 Ending Year present_ ☐ Unknown
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite
		Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
		Waste Accessible to the Public: ☐ Yes ☒ No	
		Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet	

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

[illegible]

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.9 ____ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☒ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 77,880 _____

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 8 (Bldg. 14410)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 18.56"	Longitude: 149°49' 10. 56"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 8 (Bldg. 14410)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: Joint Base Elmendorf-Richardson				Operator: DoD			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DoD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics					
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI Other Federal Facility: _____ ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1957 Ending Year present_ ☐ Unknown	
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals				Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet	
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)					
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:	
☐ Landfill ☐ Surface Impoundment ☒ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other _____					
Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas					
*C=Constituent, W=Wastestream, V=Volume, A=Area					

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 1.3 Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☒ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 61,890

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form					Identification	
					State: AK	CERCLIS #: 8570028649
					CERCLIS Discovery Date: 3/1/81	
1. General Site Information						
Name: Hangar 10 (Bldg. 15444)		Street Address:				
City: JBER		State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 26.48"	Longitude: 149°48' 49. 75"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)		
Site Name: Hangar 10 (Bldg. 15444)						
Site Description: Hangar						
2. Owner/Operator Information						
Owner: Air National Guard			Operator: Air National Guard			
Street Address:			Street Address:			
City: JBER			City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:	
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>ANG</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			
3. Site Evaluator Information						
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015	
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK	
Name of EPA or State Agency Contact:			Street Address:			
City:		State:		Telephone:		
4. Site Disposition (for EPA use only)						
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:	
					Name (typed):	
					Position:	

5. General Site Characteristics			
Predominant Land Use Within 1 Mile of Site (check all that apply):		Site Setting:	Years of Operation:
☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☐ DOD ☐ DOE ☐ DOI ☐ Other Federal ☒ Facility: <u>ANG</u> ☐ Other _____		☐ Urban ☒ Suburban ☐ Rural	Beginning Year 1957 Ending Year present_ ☐ Unknown
Type of Site Operations (check all that apply):		Waste Generated:	
☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☐ DOD ☐ DOE ☐ DOI ☒ Other Federal Facility <u>ANG</u> ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	
		Waste Generated:	
		☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
		Waste Deposition Authorized By:	
		☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
		Waste Accessible to the Public:	
		☐ Yes ☒ No	
		Distance to Nearest Dwelling, School, or Workplace:	
		<u> 0 </u> Feet	
6. Waste Characteristics Information			
(Refer to PA Table 1 for WC Score)			
Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste
(check all that apply)	(include unit)		(check all that apply):
☐ Landfill ☐ Surface Impoundment ☒ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>
			Physical State of Waste as Deposited (check all that apply):
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas
*C=Constituent, W=Wastestream, V=Volume, A=Area			

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 1.4 Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☒ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 53,140

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 16 (Bldg. 15658)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 24.57"	Longitude: 149°47' 80. 10"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 16 (Bldg. 15658)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL				Date Prepared: 1/23/2015	
Street Address: 949 E. 36th Avenue			City: Anchorage			State: AK	
Name of EPA or State Agency Contact:			Street Address:				
City:		State:			Telephone:		
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural	Years of Operation: Beginning Year 1954 Ending Year present_ ☐ Unknown
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ___ 0 ___ Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste
(check all that apply)	(include unit)		(check all that apply):
☐ Landfill	_____	_____	☐ Metals
☐ Surface Impoundment	_____	_____	☐ Organics
☒ Drums	_____	_____	☐ Inorganics
☒ Tanks and Non-Dum Containers	_____	_____	☐ Solvents
☐ Chemical Waste Pile	_____	_____	☐ Paints/Pigments
☐ Scrap Metal or Junk Pile	_____	_____	☐ Laboratory/Hospital Waste
☐ Tailings Pile	_____	_____	☐ Radioactive Waste
☐ Trash Pile (open drum)	_____	_____	☐ Construction/Demolition Waste
☐ Land Treatment	_____	_____	☐ Pesticides/Herbicides
☐ Contaminated GW Plume	_____	_____	☐ Acids/Bases
(unidentified source)			☐ Oily Waste
☐ Contaminated SW/Sediment	_____	_____	☐ Municipal Waste
(unidentified source)			☐ Mining Waste
☒ Contaminated Soil	_____	_____	☐ Explosives
☐ Other _____	_____	_____	☒ Other _____ PFC
☐ No Sources	_____	_____	
*C=Constituent, W=Wastestream, V=Volume, A=Area			Physical State of Waste as Deposited (check all that apply):
			☐ Solid
			☐ Sludge
			☐ Powder
			☒ Liquid
			☐ Gas

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45_ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☒ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.3___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 53,890

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 17 (Bldg. 16670)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 33.40"	Longitude: 149°46' 59. 40"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 17 (Bldg. 16670)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics				
Predominant Land Use Within 1 Mile of Site (check all that apply):		Site Setting:	Years of Operation:	
☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		☐ Urban ☒ Suburban ☐ Rural	Beginning Year 1996 Ending Year present_ ☐ Unknown	
Type of Site Operations (check all that apply):		Waste Generated:		
☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____		☒ Onsite ☐ Offsite ☐ Onsite and Offsite
		Waste Deposition Authorized By:		
		☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown		
		Waste Accessible to the Public:		
		☐ Yes ☒ No		
		Distance to Nearest Dwelling, School, or Workplace:		
		____0____ Feet		
6. Waste Characteristics Information				
(Refer to PA Table 1 for WC Score)				
Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste	
(check all that apply)	(include unit)		(check all that apply):	
☐ Landfill ☒ Surface Impoundment ☒ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>	
			Physical State of Waste as Deposited (check all that apply):	
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area				

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 1.5 Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 53,890

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 18 (Bldg. 17470)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 42.66"	Longitude: 149°48' 39. 80"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 18 (Bldg. 17470)							
Site Description: Hangar							
2. Owner/Operator Information							
Owner: Air National Guard				Operator: Air National Guard			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ State ☐ Not Specified ☐ Indian ☒ Other <u>ANG</u>			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ State ☐ Not Specified ☐ Indian ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics					
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☐ DOD ☒ Facility: <u>ANG</u> ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1999 Ending Year present_ ☐ Unknown	
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☐ DOD ☐ DOE ☐ DOI ☒ Other Federal Facility <u>ANG</u> ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite		
			Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown		
			Waste Accessible to the Public: ☐ Yes ☒ No		
			Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet		
6. Waste Characteristics Information					
(Refer to PA Table 1 for WC Score)					
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:	
☐ Landfill ☐ Surface Impoundment ☒ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
				General Type of Waste (check all that apply): ☐ Metals☐ Organics☐ Inorganics☐ Solvents☐ Paints/Pigments☐ Laboratory/Hospital Waste☐ Radioactive Waste☐ Construction/Demolition Waste ☐ Pesticides/Herbicides☐ Acids/Bases☐ Oily Waste☐ Municipal Waste☐ Mining Waste☐ Explosives☒ Other <u>PFC</u>	
				Physical State of Waste as Deposited (check all that apply): ☐ Solid☐ Sludge☐ Powder☒ Liquid☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area					

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45_ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.6___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 58,060

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Fire Station 1			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 54.89"	Longitude: 149°49' 60. 16"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Fire Station 1							
Site Description: Fire Station							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year Unknown Ending Year present ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☒ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☐ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.9 ____ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knik Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☒ Yes
☐ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☐ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 47,640

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 6214522157
						CERCLIS Discovery Date: 3/12/91	
1. General Site Information							
Name: Fire Station 4			Street Address:				
City: JBER			State:	Zip Code:	County:	Co. Code:	Cong. Dist:
Latitude: 61°15'15.07"	Longitude: - 149°41'5.13"	Approximate Area of Site: _____ 1 _____ Acres _____ Square Ft			Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)		
Site Name:							
Site Description: Fire Station - primarily for structural fire response in main cantonment area of JBER-R							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City:			
State: AK	Zip Code: 99505	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL				Date Prepared: 1/23/2015	
Street Address: 949 E. 36th Avenue			City: Anchorage			State: AK	
Name of EPA or State Agency Contact:			Street Address:				
City:		State:			Telephone:		
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year _____ Ending Year _____ ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: _____0___ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☒ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other _PFC_ Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: _____ Feet __Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: _____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☐ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☒ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ 0.7 _____ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knik Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ _____ 24,681__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 6214522157
						CERCLIS Discovery Date: 3/12/91	
1. General Site Information							
Name: Fire Station 5			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 46.05"	Longitude: 149°39' 36. 79"	Approximate Area of Site: _____ 1 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Fire Station 5							
Site Description: Fire Station							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/24/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature: Name (typed): Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal Facility: ☒ Residential ☒ DOD ☐ _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year Unknown Ending Year present ☒ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☒ Yes ☐ No Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☐ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.4 ____ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ _____ 29,140__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Fire Station 6			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 32.61"	Longitude: 149°46' 46. 76"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Fire Station 6							
Site Description: Fire Station							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year Unknown Ending Year present ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ____0____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☐ Drums ☒ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.5___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles³⁻⁵ 53,090

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Fire Station 7			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 18.96"	Longitude: 149°48' 59. 14"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Fire Station 7							
Site Description: Fire Station							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'			Agency/Organization: CH2M HILL			Date Prepared: 1/29/2015	
Street Address: 949 E. 36th Avenue				City: Anchorage		State: AK	
Name of EPA or State Agency Contact:				Street Address:			
City:			State:		Telephone:		
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____				CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics			
Predominant Land Use Within 1 Mile of Site (check all that apply):		Site Setting:	Years of Operation:
☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		☐ Urban ☒ Suburban ☐ Rural	Beginning Year Unknown Ending Year present ☐ Unknown
Type of Site Operations (check all that apply):		Waste Generated:	
☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	
		Waste Generated:	
		☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
		Waste Deposition Authorized By:	
		☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
		Waste Accessible to the Public:	
		☐ Yes ☒ No	
		Distance to Nearest Dwelling, School, or Workplace:	
		____0____ Feet	
6. Waste Characteristics Information			
(Refer to PA Table 1 for WC Score)			
Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste
(check all that apply)	(include unit)		(check all that apply):
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>
			Physical State of Waste as Deposited (check all that apply):
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas
*C=Constituent, W=Wastestream, V=Volume, A=Area			

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.4 ____ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 46,810

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: C-17 Crash Site - SS108			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 16' 50.90"	Longitude: 149°45' 38. 54"	Approximate Area of Site: _____ 5.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: C-17 Crash Site - SS108							
Site Description: Emergency Response							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Commercial ☐ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 2010 Ending Year 2010 ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals			☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
			Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown				
			Waste Accessible to the Public: ☐ Yes ☒ No				
			Distance to Nearest Dwelling, School, or Workplace: _____1,500_____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:			
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
				General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>			
				Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas			

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___40-50___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☒ None
☐ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ ____35,050__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: C-124 Crash Site			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 03.68"	Longitude: 149°48' 23. 42"	Approximate Area of Site: _____ 2 _____ Acres _____ Square Ft		Status of Site: ☐ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.)			
Site Name: C-124 Crash Site							
Site Description: Emergency Response							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1974 Ending Year 1974 ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☒ Yes ☐ No Distance to Nearest Dwelling, School, or Workplace: ____750____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___0.8___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ ____38,050_

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Cessna UC-35A Crash Site (2009)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 50.31"	Longitude: 149°48' 39. 31"	Approximate Area of Site: _____ 0.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Cessna UC-35A Crash Site (2009)							
Site Description: Emergency Response							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature:	
						Name (typed):	
						Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal ☒ Residential ☒ DOD ☐ Facility: _____ ☐ Forest/Fields ☐ DOE ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year 1944 Ending Year present ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ____700____ Feet				
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply) ☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		Source Waste Quantity: (include unit) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		Tier*: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u> Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___40-50___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☒ Other <u>drainage</u>/stormwater		Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ 1 _____ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ <u>Knick Arm</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ ____38,050_

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: E3 Crash Site/AWAC 1995			Street Address:				
City: JBER		State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:	
Latitude: 61° 15' 59.38"	Longitude: 149°45' 38. 54"	Approximate Area of Site: _____ 3.5 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: E3 Crash Site/AWAC 1995							
Site Description: Emergency Response							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics

Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Commercial ☐ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: _____ ☐ Other _____		Site Setting: ☐ Urban ☐ Suburban ☒ Rural	Years of Operation: Beginning Year 1995 Ending Year 1995 ☐ Unknown
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown Waste Accessible to the Public: ☐ Yes ☒ No Distance to Nearest Dwelling, School, or Workplace: ___ 2,000 ___ Feet

6. Waste Characteristics Information

(Refer to PA Table 1 for WC Score)

Source Type: (check all that apply)	Source Waste Quantity: (include unit)	Tier*:	General Type of Waste (check all that apply):
☐ Landfill	_____	_____	☐ Metals
☐ Surface Impoundment	_____	_____	☐ Organics
☐ Drums	_____	_____	☐ Inorganics
☐ Tanks and Non-Dum Containers	_____	_____	☐ Solvents
☐ Chemical Waste Pile	_____	_____	☐ Paints/Pigments
☐ Scrap Metal or Junk Pile	_____	_____	☐ Laboratory/Hospital Waste
☐ Tailings Pile	_____	_____	☐ Radioactive Waste
☐ Trash Pile (open drum)	_____	_____	☐ Construction/Demolition Waste
☐ Land Treatment	_____	_____	☐ Pesticides/Herbicides
☐ Contaminated GW Plume	_____	_____	☐ Acids/Bases
(unidentified source)			☐ Oily Waste
☐ Contaminated SW/Sediment	_____	_____	☐ Municipal Waste
(unidentified source)			☐ Mining Waste
☒ Contaminated Soil	_____	_____	☐ Explosives
☐ Other _____	_____	_____	☒ Other _____ PFC
☐ No Sources	_____	_____	

*C=Constituent, W=Wastestream, V=Volume, A=Area

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___40-50___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☒ None
☐ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ _____ 35,050 _____

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 6214522157
						CERCLIS Discovery Date: 3/12/91	
1. General Site Information							
Name: SS044 Bldg. 35-752			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 50.18"	Longitude: 149°43' 20. 12"	Approximate Area of Site: _____ Acres _____ 1,000 Square Ft		Status of Site:			
				☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: SS044 Bldg. 35-752							
Site Description: SS044 Bldg. 35-752 burn pit.							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership:			Type of Ownership:				
☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics			
Predominant Land Use Within 1 Mile of Site (check all that apply):		Site Setting:	Years of Operation:
☒ Industrial ☐ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		☐ Urban ☐ Suburban ☒ Rural	Beginning Year 1982 Ending Year 1982 ☐ Unknown
Type of Site Operations (check all that apply):		Waste Generated:	
☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____	
		Waste Generated:	
		☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
		Waste Deposition Authorized By:	
		☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
		Waste Accessible to the Public:	
		☒ Yes ☐ No	
		Distance to Nearest Dwelling, School, or Workplace:	
		____50____ Feet	
6. Waste Characteristics Information			
(Refer to PA Table 1 for WC Score)			
Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste
(check all that apply)	(include unit)		(check all that apply):
☐ Landfill ☒ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☐ Contaminated SW/Sediment ☐ (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>
			Physical State of Waste as Deposited (check all that apply):
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas
*C=Constituent, W=Wastestream, V=Volume, A=Area			

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___13-38___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet _____ 0.25 _____ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ _____ 54,690__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Current Fire Training Area			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 15' 40.20"	Longitude: 149°46' 20. 15"	Approximate Area of Site: 1 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Foam Training Area							
Site Description: Foam Training Area							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☒ Federal Agency Name: <u>DOD</u> ☐ State ☐ Indian			Type of Ownership: ☐ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian				
☐ County ☐ Municipal ☐ Not Specified ☐ Other _____			☐ County ☐ Municipal ☐ Not Specified ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'			Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015	
Street Address: 949 E. 36th Avenue			City: Anchorage			State: AK	
Name of EPA or State Agency Contact:			Street Address:				
City:		State:			Telephone:		
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____			Signature: Name (typed): Position:	

5. General Site Characteristics							
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Commercial ☐ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		Site Setting: ☐ Urban ☐ Suburban ☒ Rural		Years of Operation: Beginning Year mid-1990s Ending Year present ☐ Unknown			
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals			☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____			Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
			Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown				
			Waste Accessible to the Public: ☒ Yes ☐ No				
			Distance to Nearest Dwelling, School, or Workplace: _____370_____ Feet				
6. Waste Characteristics Information							
(Refer to PA Table 1 for WC Score)							
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:			
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____			
General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>							
Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas							

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___20-45___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.5___ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☐ Yes ☒ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ _____ _____
Have Primary Target Fisheries Been Identified: ☐ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100 *periodic trainings
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ __44,660__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Former Foam Test Area			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 44.34"	Longitude: 149°50' 39. 76"	Approximate Area of Site: _____ 50 _____ Acres _____ Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Former Foam Test Area							
Site Description: Former AFFF spray testing area.							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics					
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI Other Federal Facility: ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural		Years of Operation: Beginning Year unknown Ending Year 2012 ☐ Unknown	
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____				Waste Generated: ☒ Onsite ☐ Offsite ☐ Onsite and Offsite	
				Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	
				Waste Accessible to the Public: ☐ Yes ☒ No	
				Distance to Nearest Dwelling, School, or Workplace: _____1,500____ Feet	
6. Waste Characteristics Information					
(Refer to PA Table 1 for WC Score)					
Source Type: (check all that apply)		Source Waste Quantity: (include unit)		Tier*:	
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume (unidentified source) ☐ Contaminated SW/Sediment (unidentified source) ☒ Contaminated Soil ☐ Other _____ ☐ No Sources		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____		_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	
				General Type of Waste (check all that apply): ☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other <u>PFC</u>	
				Physical State of Waste as Deposited (check all that apply): ☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area					

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ___25___ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☒ Other <u>drainage</u>/stormwater		Shortest Overland Distance From Any Source to Surface Water: _____ Feet ___1.3___ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ <u>Knick Arm</u> _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 74,550

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Fire Suppression Foam Storage Bldg. (6210)			Street Address:				
City: JBER			State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 12.65"	Longitude: 149°50' 47. 51"	Approximate Area of Site: _____ Acres _____9,000 Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Fire Suppression Foam Storage Bldg. (6210)							
Site Description: Fire Suppression Foam Storage Building							
2. Owner/Operator Information							
Owner: Joint Base Elmendorf-Richardson				Operator: DoD			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DoD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/22/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics				
Predominant Land Use Within 1 Mile of Site (check all that apply):		Site Setting:	Years of Operation:	
☒ Industrial ☒ Commercial ☒ Residential ☐ Forest/Fields ☐ Agriculture ☐ Mining ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility: ☐ Other _____		☐ Urban ☒ Suburban ☐ Rural	Beginning Year Unknown Ending Year present_ ☐ Unknown	
Type of Site Operations (check all that apply):		Waste Generated:		
☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals		☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____		☒ Onsite ☐ Offsite ☐ Onsite and Offsite
		Waste Deposition Authorized By:		
		☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown		
		Waste Accessible to the Public:		
		☒ Yes ☐ No		
		Distance to Nearest Dwelling, School, or Workplace:		
		____0____ Feet		
6. Waste Characteristics Information				
(Refer to PA Table 1 for WC Score)				
Source Type:	Source Waste Quantity:	Tier*:	General Type of Waste	
(check all that apply)	(include unit)		(check all that apply):	
☐ Landfill ☒ Surface Impoundment ☒ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ Contaminated SW/Sediment ☐ Contaminated Soil ☐ Other _____ ☐ No Sources	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other _____	
			Physical State of Waste as Deposited (check all that apply):	
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas	
*C=Constituent, W=Wastestream, V=Volume, A=Area				

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☐ Municipal ☐ Private ☒ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☒ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.8 ____ Miles
Is There a Suspected Release to Surface Water¹: ☐ Yes ☒ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ _____ 93,320__

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: 8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Hangar 5 Foam Test Area			Street Address:				
City: JBER		State: AK	Zip Code: 99506	County:	Co. Code:	Cong. Dist:	
Latitude: 61° 14' 22.93"	Longitude: 149°49' 52. 48"	Approximate Area of Site: _____ Acres _____ 1,000 Square Ft		Status of Site:			
				☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Hangar 5 Foam Test Area							
Site Description: Spray testing area.							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99506	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership:			Type of Ownership:				
☐ Private ☒ Federal Agency Name: <u>DOD</u> ☐ State ☐ Indian			☐ Private ☐ Federal Agency Name: _____ ☐ State ☐ Indian				
☐ County ☐ Municipal ☐ Not Specified ☐ Other _____			☐ County ☐ Municipal ☐ Not Specified ☐ Other _____				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re'		Agency/Organization: CH2M HILL			Date Prepared: 1/23/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation:			CERCLIS Recommendation:		Signature:		
☐ Yes ☐ No Date: _____			☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Name (typed):		
					Position:		

[illegible]

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ____ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☒ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☐ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: ____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☐ Stream ☐ River ☐ Pond ☐ Lake ☐ Bay ☒ Ocean ☒ Other <u>drainage/stormwater</u>		Shortest Overland Distance From Any Source to Surface Water: ____ Feet ____ 0.5 Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☒ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☐ No If Yes, Enter Population Served by Target Intake: ____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> ____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☐ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☐ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, Enter Total Residential Population:

_____ People²

Number of Workers Onsite⁴:

☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ 93,320 _____

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

Potential Hazardous Waste Site Preliminary Assessment Form						Identification	
						State: AK	CERCLIS #: AK8570028649
						CERCLIS Discovery Date: 3/1/81	
1. General Site Information							
Name: Cherry Hill Ditch			Street Address:				
City: JBER			State: AK	Zip Code: 99505	County:	Co. Code:	Cong. Dist:
Latitude: 61° 14' 7.13"	Longitude: 149°52' 43. 15"	Approximate Area of Site: _____ Acres _____ 61,500 Square Ft		Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)			
Site Name: Cherry Hill Ditch							
Site Description: The Cherry Hill ditch is an artificial drainage channel that flows westward from the east-west runway at JBER-E toward the Knik Arm of the Cook Inlet. .							
2. Owner/Operator Information							
Owner: USAF				Operator: USAF			
Street Address:				Street Address:			
City: JBER				City: AK			
State: AK	Zip Code: 99505	Telephone:	State:	Zip Code:	Telephone:		
Type of Ownership: ☐ Private ☐ County ☒ Federal Agency ☐ Municipal Name: <u>DOD</u> ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian			Type of Ownership: ☐ Private ☐ County ☐ Federal Agency ☐ Municipal Name: _____ ☐ Not Specified ☐ State ☐ Other _____ ☐ Indian				
3. Site Evaluator Information							
Name of Evaluator: Stacey Re´		Agency/Organization: CH2M HILL			Date Prepared: 1/22/2015		
Street Address: 949 E. 36th Avenue			City: Anchorage		State: AK		
Name of EPA or State Agency Contact:			Street Address:				
City:		State:		Telephone:			
4. Site Disposition (for EPA use only)							
Emergency Response/Removal Assessment Recommendation: ☐ Yes ☐ No Date: _____			CERCLIS Recommendation: ☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other: _____ Date: _____		Signature:		
					Name (typed):		
					Position:		

5. General Site Characteristics					
Predominant Land Use Within 1 Mile of Site (check all that apply): ☒ Industrial ☐ Agriculture ☐ DOI ☒ Commercial ☐ Mining ☐ Other Federal Facility: ☒ Residential ☒ DOD ☐ DOE ☐ Forest/Fields ☐ Other _____		Site Setting: ☐ Urban ☒ Suburban ☐ Rural	Years of Operation: Beginning Year _1994_ Ending Year present_ ☐ Unknown		
Type of Site Operations (check all that apply): ☐ Manufacturing (must check subcategory) ☐ Lumber and Wood Products ☐ Inorganic Chemicals ☐ Plastic and/or Rubber Products ☐ Paints, Varnishes ☐ Industrial Organic Chemicals ☐ Agricultural Chemicals ☐ Miscellaneous Chemical Products ☐ Primary Metals ☐ Metal Coating, Plating, Engraving ☐ Metal Forging, Stamping ☐ Fabricated Structural Metal Products ☐ Electronic Equipment ☐ Other Manufacturing ☐ Mining ☐ Metals ☐ Coal ☐ Oil and Gas ☐ Non-metallic Minerals ☐ Retail ☐ Recycling ☐ Junk/Salvage Yard ☐ Municipal Landfill ☐ Other Landfill ☒ DOD ☐ DOE ☐ DOI ☐ Other Federal Facility _____ ☐ RCRA ☐ Treatment, Storage, or Disposal ☐ Large Quantity Generator ☐ Small Quantity Generator ☐ Subtitle D ☐ Municipal ☐ Industrial ☐ "Converter" ☐ "Protective Filer" ☐ "Non-or Late Filer" ☐ Note Specified ☐ Other _____		Waste Generated: ☐ Onsite ☒ Offsite ☐ Onsite and Offsite	Waste Deposition Authorized By: ☒ Present Owner ☐ Former Owner ☐ Present & Former Owner ☐ Unauthorized ☐ Unknown	Waste Accessible to the Public: ☒ Yes ☐ No	Distance to Nearest Dwelling, School, or Workplace: _____150_____ Feet
6. Waste Characteristics Information (Refer to PA Table 1 for WC Score)					
Source Type: (check all that apply)	Source Waste Quantity: (include unit)	Tier*:	General Type of Waste (check all that apply):		
☐ Landfill ☐ Surface Impoundment ☐ Drums ☐ Tanks and Non-Dum Containers ☐ Chemical Waste Pile ☐ Scrap Metal or Junk Pile ☐ Tailings Pile ☐ Trash Pile (open drum) ☐ Land Treatment ☐ Contaminated GW Plume ☐ (unidentified source) ☒ Contaminated SW/Sediment ☐ (unidentified source) ☐ Contaminated Soil ☐ Other _____ ☐ No Sources	_____	_____	☐ Metals ☐ Organics ☐ Inorganics ☐ Solvents ☐ Paints/Pigments ☐ Laboratory/Hospital Waste ☐ Radioactive Waste ☐ Construction/Demolition Waste ☐ Pesticides/Herbicides ☐ Acids/Bases ☐ Oily Waste ☐ Municipal Waste ☐ Mining Waste ☐ Explosives ☒ Other _____		
			Physical State of Waste as Deposited (check all that apply):		
			☐ Solid ☐ Sludge ☐ Powder ☒ Liquid ☐ Gas		

7. Ground Water Pathway		
Is Ground Water Used for Drinking Within 4 Miles: ☒ Yes ☐ No If Yes, Distance to nearest Drinking Well: ___ Drinking water from the deep aquifer only. No known communication between deep and shallow aquifers in this area. Type of Drinking Water Wells Within 4 Miles (check all that apply): ☐ Municipal ☐ Private ☐ None	Is There a Suspected Release to Ground Water¹: ☐ Yes ☒ No Have Primary Target Drinking Water Wells Been Identified: ☐ Yes ☒ No If Yes, Enter Primary Target Population: _____ People³	List Secondary Target Population Served by Ground Water Withdrawn From: 0 - 1/4 Mile _____ >1/4 - 1/2 Mile _____ >1/2 - 1 Mile _____ >1 - 2 Mile _____ >2 - 3 Mile _____ >3 - 4 Mile _____ Total Within 4 Miles⁴ _____ * Use population #s for PA Table 2 * Note nearest well for #5 on GW Pathway Scoresheet
Depth to Shallowest Aquifer: _____ Feet Karst Terrain/Aquifer Present: ☐ Yes ☒ No	Nearest Designated Wellhead Protection Area⁶: ☐ Underlies Site ☐ >0-4 Miles ☐ None Within 4 Miles	
8. Surface Water Pathway		
Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply): ☒ Stream ☐ River ☐ Pond ☐ Lake ☒ Bay ☐ Ocean ☐ Other _____		Shortest Overland Distance From Any Source to Surface Water: _____ 0 _____ Feet _____ Miles
Is There a Suspected Release to Surface Water¹: ☒ Yes ☐ No		Site is Located in: ☐ Annual - 10 yr Floodplain ☐ >10yr - 100yr Floodplain ☐ >100yr - 500yr Floodplain ☐ >500yr Floodplain
Drinking Water Intake Located Along the Surface Water Migration Path: ☐ Yes ☒ No Have Primary Target Drinking Water Intakes Been Identified: ☐ Yes If Yes, Distance to Nearest Drinking Water Intake : _____ Miles⁶ ☒ No If Yes, Enter Population Served by Target Intake: _____ People⁴		List All Secondary Target Drinking Water Intakes: <u>Name:</u> <u>Water Body:</u> <u>Flow (cfs):</u> <u>Population Served:</u> _____ _____ _____ _____ Total within 15 Miles ⁴ _____
Fisheries Located Along the Surface Water Migration Path: ☒ Yes ☐ No If Yes, Distance to Nearest Fishery: _____ Miles		List All Secondary Target Fisheries¹⁰: <u>Water Body/ Fishery Name :</u> <u>Flow (cfs):</u> _____ Knick Arm _____ _____ _____ _____
Have Primary Target Fisheries Been Identified: ☒ Yes ☐ No		

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:

☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:

☐ Yes
☒ No

List All Wetlands:

Water Body : Flow (cfs): Frontage miles:

Other Sensitive Environments Located Along the Surface Water Migration Path:

☐ Yes
☒ No

If Yes, Distance to Nearest Sensitive Environment: _____ Miles

Have Primary Target Sensitive Environments Been Identified:

☐ Yes
☒ No

List All Sensitive Environments¹¹:

Water Body : Flow (cfs): Sensitive Environment Type:

9. Soil Exposure Pathway

Are People Occupying Residence or Attending School or Daycare on or Within 200 Feet of Area of Known or Suspected Contamination:

☐ Yes
☐ No

If Yes, Enter Total Residential Population:

___~200___ People²

Number of Workers Onsite⁴:

☐ None
☐ 1 - 100
☒ 101 - 1,000
☐ > 1,000

Population Within 1 Mile:

_____ People⁷

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination:

☐ Yes
☒ No

If Yes, List Each Terrestrial Sensitive Environment⁵:

*Refer to PA Table 7 for environment types

10. Air Pathway

Is there a Suspected Release to Air¹:

☐ Yes
☒ No

Enter Total Population on or Within:

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

>1/2-1 Mile _____

>1-2 Miles _____

>2-3 Miles _____

>3-4 Miles _____

Total Within 4 Miles ³⁻⁵ ___71,840___

Wetlands Located Within 4 Miles of the Site⁶:

☒ Yes
☐ No

If Yes, How Many Acres: _____ Acres

Other Sensitive Environments Located Within 4 Miles of the Site:

☐ Yes
☒ No

List All Sensitive Environments Within 1/2 Mile of the Site⁶:

Distance: Sensitive Environment Type/Wetlands Area (acres):

Onsite _____

0-1/4 Mile _____

>1/4-1/2 Mile _____

*Refer to PA Table 10 for calculations on air pathway exposures

¹⁻¹¹ Refers to question number on the PA scoresheet for each particular pathway

APPENDIX B.2

LOGBOOK

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JBEP FC meeting @ Bldg 704

12/15/14

Attendees

Steve Ellis	former utility
Ron Nobles	→ Contracted by AF from San Antonio (PACAF)
Rosanne Galvey	JBEP Spill/response National Guard
Joe Jeff Casey	utility
Kenny Boucher	Ast. Fire Chief
Chip Whitman ^{ton SR 12/15}	DEC (J) San Antonio Office (PACAF) ^{AFCEC}
Schott Morley	Harry
Don Aide	AFCEC
Gary Fink	AFCEC

H/S Topics

- over eating during holidays
- "Emerging contam..." → largely looking @ PFOS/PFOA, but others on board
 - chip whitman
 - ↳ working w/ AK/EPA → has drinking water provisions
 - Minnesota has regulation place or alcohol
 - Alaska has been most active
 - ↳ requesting testing of drinking water
 - definitely in works for compliance
 - Ron
 - ↳ product in food wrappers (McDonald's, etc), between sheets of paper
 - ↳ regulation of PFCS definitely in near future
- Photos
 - will need letter from Public Affairs → send request thru PA
 - Hangar 8
 - GATE KEEPER → Basewide; can provide details, assistance
 - ↳ may not be applicable for out contract purposes

2) JBER PFC-PA kickoff meeting notes

→ found in organic sediments & biomass

12/15/14

RON's Additions → Pump & treat

• 2007 PFOS/PFOA interest

↳ request for sampling knowing reg. down the pipe
- very low hits

↳ ID each FTA

• when used

↳ came onboard ~1975

↳ convince regulators have looked at each site
& proceed or not w/ further

★ ↳ only rationale is timescale

↳ all sites ID'd today will need to be sampled

↳ 3M main focus for now due to breakdown
of compounds

- other manufacturers may also be
investigated down the road

• Kerry indicates - 25 yrs ago, received info. He
has removed from shelves

• focus w/ today's interviewers is to ID other, less obvious
potential sites

• ER responses

• storage

↳ follow-up w/ potential routes & exposure

• Bldg. mngt: interview to know if piped w/

APFF → recent transition to HEP

↳ ID the bldg. waste management process

• waste water treatment

• testing areas

□ VISIT #3 → if ID other questions, reserve the right to
return

• likely w/in 18 months, sampling sites

• States w/ interest, depending to APFFC, no scoping from
PA, but will share w/ regulators on air today.com

JBER* PFC-PA - kickoff meeting notes

JBER = Joint Base Emmerich Richardson (3)
(6263) - F15 metal/corrosion (Polar Surface)

INTERVIEWEE SITES

D29 (Test Cell)

12/15/14

- Guard (Galvey)

17 - (16670)

- Hangars 10 - in process
or be converted

8 -

CAC (15658)

Accidental

dumps at
rock @
one point

(17470)

18 AFFF current

4 monitors

- AFFF in trucks

- 3 frange/breaks
- 2 p12

avail

tomorrow

after 1000,

Weds all

day

6 miles @

- Fire Chief ID a person close to retirement who
would be good to interview - JEFF Reynolds

- Army / Guard -> completely separate entity, a Tenant
of JBER -> Rotary (Camp Carroll) - 12 bldgs w/ foam

-> Galvey to provide contact info to D. Aide

- Tim Roy

0900 @ Station 1
11415 (Fritter Dr (20th))

-> Need to pull in history of F15 FV rationale not to
suspect AFFF
- motor pools since 50's

- 7 fire stations

-> 4 dedicated to runway

- UST - foam still

* ESOM/SS (not sure of acronym) - Scott

-> ~16 yrs. order info to ID what's come in

- All AFFF has been disposed of thru Waste mgmt.

- Inlet release during vehicle testing on west ramp

- upwards of 12 ft thick

- 90's started using dbl lined

- TIA current is water / propane

- Foam testing is on approved, permed, hard surface
location

-> Access to flight line sites will require escort - Don contact Joe

- 220,000 gal foam used on crash site

- AWAX crash

-> 2 hangars will not be able to access - just need description

- AS-bulbs can be helpful

JBER PFC-PA - meeting notes / site visit with ANG

12/15/11

SITE VISITS

- Schedule access / permission for site

3) Eldg. Mnr

2) L-PA

1) Gate keeper

→ after approval contact Joe / Steve

& will provide escort

* NEW SITE TYPE IDd *

617 Crack debris

(9m / Gibson)

→ Fire dept. practices for cleaning / washing debris

• Stacy to provide Don w/ list of all other IDd during this meeting

* 3 outfalls sites

1) Ship creek

2) Eagle

3) Port

• AWWD - Pete Jenkins (?)

• Summary for PA ~12-14 yrs. → ESOMISS

↳ inventory coming on Base

1400 Hanger 18 - Air National Guard Site Visit

AFFF - stainless pipe

H, EF is Steel

drain to AWWU

Cannon - water driven

activated by 2 sensors or pull

Pump house 17450
1700gpm

loss of water pressure activates water pump

Hanger 12 HEF System - non corrosive

JBER PFC-PA - Site Visit

Jerry Wallon Army Natl Guard
428-6678

12/15/14 ⑤

12+18 have had significant releases

2012 -

minimal release outside (had to open door) (HEF)
Off Site

14:55

PFC-PA Stacey Re, Chip Whitton, Kerry Bakker-Fire 12/17/14

09:30 Station 1 Meet at 09:30 with Jeff Reynolds (long-time fire person)

150g on site at Station 1

Indoor wash outs to drain

Truck ⁴²⁸ 550 g each

09:59 Photo 1 looking out Station Door Looking ~~W~~ ^{SR 12/17/14} E

10:02 Photo 2 grassy area - spray tests + maintenance Looking W

* Check storm drainage from area

10:04 Photo 3 trucks in station 1

* Check where station drains go

Foam UST

10:06 Photo 4 - manhole to UST size + contents
unknown - (held AFFF)

10:08 Photo 5 - overhead f. 11 (decommissioned)

10:08 Photo 6 " "

Way point 4 - test/maintenance area

Hangar 5 Washout area

10:24 Photo 7 15th St / Kenny drainage Looking ENE

10:24 Photo 8 Looking back at Hangar 5 Washout point
from 15th + Kenny Looking W

552-2180

Bldg 6263 Corrosion Control Jamie 315-5206

10:39 Photo 9 Ansol - 400 gal tank

10:39 10 Label

recent release - 2 month drains to ows

10:42 11 - cannon 10:43 12 - pipes to cannon

⑥ JBER PFC-PA Site Visits

12/17/14

Current Form test Area / Snow dump

Waypoint 006 - Current test area

10:48 13 Current test area Looking SW

10:49 14 former test area on West ramp Looking N

10:50 15 Current test area Looking S

10:50 16 former test area Looking N

Fire Station 2

Structural Fire Stations

50 gal team in one structural fire truck

Believes drains tied in to wastewater O/W separator
(no photos) $\rightarrow$ wastewater

Building 6210 Truck^{ref} Servicing - refilling

Waypoint 007

required to stock 990 gallons required total inventory
enough to refill all tanks.

11:01 Photo 17 55 gal drums

11:02 Photo 18 3-55 gal drums +

All structural fire trucks have 25g each sylver + ansul
wild fire 20 gal Sylver

Aircraft

11:05 Photo 19 Area where washst says mostly poils
on hard surface Looking ^{occurs, Kerry} SW
Waypoint 008

C-17 debris yard - drive by - Building 6210 personnel
can access.

Station 3

Has OWS

Structural trucks - 50 gal team one truck

3 bays - one OWS

JBER PFC -PA Site visits

7

Possible small scale tests at stations prior to 2011 decree.

11:23 Photo 20 looking downgrad of Station 3 Looking WSW

11:24 Photo 21 looking at Station 3 Looking WSW ^{SR 12/17/14} Looking E

11:25 Photo 22 front of Station 3 Looking E ^{SR 12/17/14}
Adjacent to play ground (check drainage) Looking SE

New FTA 176th

1 truck w 130 gal foam

Bldg 16673 Fire Station 6 ^{SR 12/17/14}

11:35 Photo 23 - Fire Station Looking E

Bldg 16670 90th

11:38 Photo 24 System (no tanks) AFFF piping present

11:40 Photo 25 - mech room above - possible location of foam tanks?

11:42 Photo 26 - piping in lower room

* Ask CE about current system / capacity

Did not access hangar (no line badges)

* Discharges? Find out who to talk to

Waypoint 0009 outside mech room

Type system currently?

Bldg 15444

High expansion

1202 Photo 27 Bldg 15444

1204 Photo 28 - HEF tank

In process of upgrading

Services hangars 8 + 10 - Guard

1205 255 gal drums of Ansul + HEF

Photo 29

1206 Photo 30 1,000 - 1,500 gal tank

1209 Photo 31 totes with foam from } Total 6 totes, 5 full, 1 ^{12/13/14}

1209 Photo 32 "

1210 Photo 33 looking into open top of full tank of AFFF

JBER PFC-PA Site Visits

12/17/14

Remaining Stations

- 4 - Ft. Rich main station, under renovation - no tank wastewater
- 5 - Bryant
- 7 - Just like 6, single bay/truck

2002 - Fire services combined

Fire Station 4

Structural Station

no more than ≈ 120 gal foam

1227 Photo 34 Fire Station 4 drains/bay

1229 Photo 35 Fire Station 4 renovation
Drains to ? no OWS

Wyeptoll

1231 Photo 36 trucks at FS 4

1232 Photo 37 Squad Unit w Class A Foam used
during fire fighting season

1233 Photo 38 looking out from main bay doors SSW

Fire Station 5

50 gal + 210 gal on 2 trucks

(3 Bays)

1241 Photo 39 trucks

floor drains (small, round, under each truck)

1242 Photo 40 - drain

1244 Photo 41 - outside Fire Station 5, Looking E

1400 Meet Don Aide to plan tomorrow's visits

* Ask Jeff Reynolds about crash site along Davis Hwy

Stacy Me

JBER PFC-PA Site visits

12/18/14

Stacey Re, Don Aide, Chip Whitten

Objective - visit crash sites, FTAs, and Outfalls
(Outfalls in PM with Don Haas)

10:00 Ruff Road FTA ATD29

Photo 1 Looking towards buildings (NNE)

Photo 2 Closer view of area used for fire training (NW)

1047 Landfill FTA ATD52

Photo 3-6 (N, NE, N, NE)

Crash sites - determined too cold to access (30°F).

Will return later (with proper clothing)

Safety discussion - proper clothing for conditions.

1125 Current FTA

Photo 7 Training plane in bermed area (not drain) E

Photo 8 " " SE

Photo 9 - Sign on environmental area W

Photo 10 drain to environmental area W

Photo 11 building used for fire training E

Drain appears to go to treatment/containment areas

1140 ATD23

Photo 12 - fire training area W

Photo 13 - fire training area SW

Photo 14 - fire training area S

Talk to Wade Gilpin about treatment center at current FTA

1345 Don Haas arrives at Building 700, discuss stormwater/sanitary systems

OWS are tied into sanitary system

Confirms no foam at Bryant he knows of.

2 outfalls on Elmendorf potentially go by
foam use/discharge areas

Airfield (2-New, 1 old) + Cherry Hill

10

JBER PFC-PA

12/18/14

Outfalls - Cherry Hill land 2, one above ground, one below ground

1440 Photo 15 - Cherry Hill above ground ditch ENE

Photo 16 + 17 - emergency shutoff valve in foreground water zig-zags underground to ports (W and W)

1450 Photo 18 outfall where base boundary goes through port - outfalls from Cherry Hill and housing meet here to exit base (E)

Photo 19 Drainage ditch from combined flow from Cherry Hill and housing entering combined point (final sampling location from Base (NW))

Don Haas indicated all runoff from flightline as well as hangar 5 area and fire stations for Elmendorf all exit to Port of Anchorage. After final sample point, drain passes under the Port into the inlet and finally moonlights ≈ 1500 feet out.

Don noted there has always been outflow, even in extreme temperatures

Photo 20 Sign at Port sampling point

Photo 21 Looking back up where the other underground (ENE) stormwater drain comes from base (see "J" pipe)

^{SR 12/17}
~~00~~ 1457 Photo 22 Sample point at housing area by Gov't Hill gate (from there water goes into ditch shown in Photos 18 + 19 (NW))

^{SR DM}
~~1310~~ Photo 23 Sample point for storm water exiting near Benface Gate at Lyons/Mt. View Park (N)

~~1320~~ Photo 24 Sample point near Muldoon gate (W)

~~1330~~ Photo 25 Fort Rich (JBERR) Outfall ditch (ESE)

Don indicated only one outfall for all of JBERR drainage ends up at the same outfall. Most-all of drainage on JBERR is overland flow system of ditches + swales. Final out fall goes through large

JBER PFC-PA

12/18/14

retention area (Photo 26) and during periods of extremely high flow (which Don Haas indicated he had only seen a couple of times) to Ship Creek

Photo 26 - Retention Pond - Ship Creek outfall at far end, left side. (W)

Photo 27 - Additional drainage ditch leading to retention pond. (ENE)

Sh. Ri
12/18/14

12

JBER PFC-PA

12/19/14

Stacey Ré + Don Aide

Site Visits - Crash sites + debris yard

09:30 Meet at Don's office

09:45 C-17 Crash debris yard

09:52 Photo 1 - Debris yard Looking E

09:55 Photo 2 - Debris yard Looking W

09:56 Photo 3 - " "

2:20 Arrive at walk-in point for crash sites. Male + female moose in area and head down our intended path of travel. Decide to return later after they have a chance to move on. Safety discussion - wildlife

2:54 Moose near trail to crash sites looking NNE

30 Meet and head back out to Crash Sites

2:56 Photo 4 AWACs crash area: note cut in trees along ridge line - S facing

2:57 Photo 5 AWACs crash area S facing

2:58 Photo 6 Memorial at foot of hill in AWACs crash area

2:59 Photo 7 Memorial at foot of hill in AWACs crash area, looking SE

3:02 Photo 8 Memorial at C-17 crash area

3:03 Photo 9 C-17 crash area Looking N (east of tracks)

3:04 Photo 10 C-17 crash area Looking N (east of tracks)

3:24 Photo 11 C-17 crash area Looking N (west of tracks)

3:24 Photo 12 C-17 crash area Looking NNE (west of tracks)

3:24 Photo 13 C-17 crash area Looking N (west of tracks)

3:27 Photo 14 C-17 crash area Looking NNW (west of tracks)

Stacey Ré
12/19/14

JBER PFC-PA

(13)

Meeting and Site Visits with Stephen Ellis + Stacey Re 1/12/5

Building 6263

Annually tripped - activated use 5-10 gal concentrated
Every 2 years

At Bldg 6263, foam washed out bay door on N side runoff likely
along Jrrstad

Required every year to test system (as if a fire) (no foam)
Every 3 years with foam (5-10 gallons)

Building 6263 contd

~2001 or 2002 major release (likely emptied tank ~400 gal)

Systems designed to run 15 min (enough to drain tank)

Hangar 8 / Building 14410 AWACS

Has 1500 gal tank on site maint Taxiway J (Toter) ^{B (Brump)}

3 monitors/canons launch Taxiway M (Mike)

Same test schedule - every 2 years 5-10 gal

Issues - N canon has frozen/broken 3 times

(causes foam activation) in early 2000 (pre-2001)

No records. (Could be more not known) ~100 gal - 200 gal
each release. Some went through drains, some out front door

Sieve indicated fire systems prior to his taking over
in 2001 were not well-maintained; Previously maintained
by military.

not sure how much may have escaped front
door

- 8 has overhead + canons with LEF
- Mechanical room at south end - drain in room
and door at NW end of building (w side) where
foam went after activation.

Against code to have foam concentrate underground

Building 15444 / Hangar 10

(4)

JBER PFC-PA

11/12/15

3 monitors with overhead sprinkler system with foam.

black icon for AFFF (still needs rinse after test or pitting occurs)

In process of being converted



Accidental activations - 100-200g down each corner
drain or outside

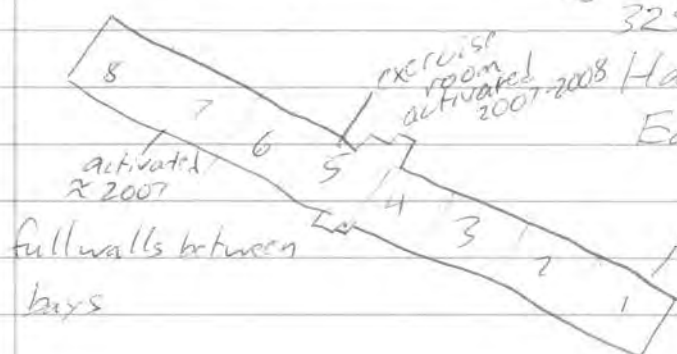
Estimates 5-6 activations since 2000, sometimes one, some times two at once.

CAC Hangar 16 Bldg 15658

325 gal tank

Has 8 cells/bays

Each has system - fixed foam spray nozzles to hit brakes/engine of F-16 (?) still works for F-22s



Cell 7 had actual fire. Airman activated system ~ 2007 put out fire. Used all ~ 325 gallons concentrate. Outside of 7 - opened door to pull out aircraft, foam exited -, Air field sweepers came out and spread foam to bay 4 (approx) left to evaporate (quick process)

Cell 5 inactive because system activated, became exercise room because too close to sleeping quarters lighter activated

JBER PFC-PA

(15)
1/12/15

System by IR sensor, ≈ 2007 or 2008 emptied 325g tank
Most was drained out front bay door same through floor drains.

Building 16670 90th Hangar 17



Has closed head sprinkler system.
Requires pressure, solution, + oxygen to activate.

Drains out

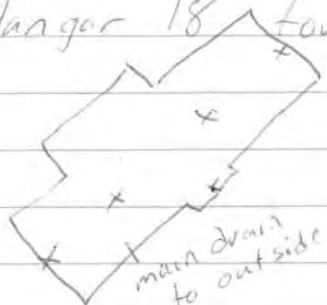
in this area

in asphalt

goes to N-S indentation and runs along depression
 ≈ 30 meters in front

Approx 3-11 activations in addition to biennial tests

Hangar 18 four canons (x's)



Once saw all 4 at once

Most volume in one release ≈ 1000 gal

West end each canons at least twice

East end each once around 2005

3M is being phased out - replaced by ansul when used. Thinks 3M remains at all hangars

Some hangars never had

Hangar 15 had oldest system (water)

Site visit >

(16)

JBER PFC-PA

Hangar 17

11/12/15

14:21 Photo 1 - Cell/Bay systems

14:21 Photo 2 - foam pumps connection to water
(Tank of AFFF above)

14:23 photo 3 - bay ceiling - has foam sprinkler system (not visible)

14:26 photo 4 - Sprinkler head

Hangar 16 Fire systems are date stamped - can tell approx when built

CAC 14:42 Photo 5 Foam Tank

14:43 Photo 6 Cell systems

14:43 Photo 7 "

1992 System installed

14:49 Photo 8 - Fixed nozzles (2 each side) Cell 5

14:50 Photo 9 - One closer fixed nozzles

14:51 Photo 10 - Foam system piping to add'l bays

TSGT King escorted at CAC

AWACS Hangar 8

Aircraft present in hangar - no photos
canon slightly b.f than

drain just outside door where foam has been
washed out.

15:20 Photo 11 - tank of concentrate

15:20 Photo 12 drums of add'l (25 total)

15:23 Photo 13 - 4 canon systems

15:25 Photo 14 - drain to waste water system.

Fire Station 7

15:42 Photo 15 Looking N

15:42 Photo 16 Looking SE

Steve noted anywhere that has housed C-130

likely to have had (numerous) releases - Hangar 10, 18, Bldg 6263

TBER PFC-PA

Stacey Re + Donna Baumler
Site Visit to SSO44

(17)
11/13/15

10:30 Meet Donna and Don Aide at Building 700.

Update Don on site visits with Steve Ellis 11/12/15.

10:45 Donna takes Stacey to SSO44, shows location
of former (potential) burn pit.

10:51 Photo 1 Area of possible "burn pit" Looking S

10:53 Photo 2 " " Looking E

Steve
11/13/15

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APPENDIX C

RECORDS OF COMMUNICATION

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Date: 10/27/14
Time: 0900

COMMUNICATION RECORD

Name of Base, State: Tyndall, FL

Interviewer: Hayslip, Cary, Jennings,

Organization: CH2M Hill

Phone:

Position/role on this project: Team leader

Email:

Interviewee: Judy Bidle Fred Terry Kevin Matlack John Hawk

Organization:

Phone:

Position/Job Title:

Email:

How Long in this Position?

How long at this Base in current and previous positions?

Have you held similar positions at other bases?

Which bases?

How long?

Discussion:

CL - FTA's easy to identify - need to understand AFFF use in AF - current usage

FT - inconsistencies among the bases -

Acquisition is by the base - Shop stock is by the base

Foam used off base at paper company

Trace amounts of AFFF in all water usage

Mr. Hugo - Query Database for
AFFF usage

National Fire Security System

32-2001 AFI

Hazmat guy

Fake Foam for training - No fake foam but they do use a dye

3% vs 6%

understand products - AF acquire date

Facilities + uses/Equipment

local practices

Excess AFFF will be disposed of as Haz waste through DLA

70's 80's JP trainers - used lots of foam

updated copy of inventory

Propane foam late 60's or 70's

Typical usage - 50-75 gallons per fire

Currently Semi Annual live Fire fighting - 4 times per year per base

LPG FTA - late 80's 5-JP trainers

FRED Walker commission pits

Foam covered fuel release is not current practice

AF standard is 3% foam

No Air Force program to change existing facility foam

Identify every facility that has or had AFFF

Elsworth
Dias

SAC designed liner system
Single liner w/ Secondary Bentonite liner

Tully

Tyndall Silver Flag R&D

matam have
Grand Forks

Fire Prevention Office at local facility
UHP trucks take lower quantity of foam which will help reduce the amount of foam that is stored on base
All foam was designed to work the same. No record will exist that says what was used
DLA has always done the acquisition
Base credit cards caused loss of control
Are Hangers the only facility w/ AFFF?
NO PDL facilities or fuel truck maintenance
Reserve requirements are the same as AF Guard can follow whatever criteria they want desire, they are state run
Locals train on fire training areas? yes will they use their own vehicles? yes
Legacy facility should have been captured in the PDL facilities
80% of LPG FTA's are not on top of JP FTA's
FRED - Missing one FTA on Tyndall
CE Shop looking at old reports
AFFF represents <1% of Substances manufactured
Local env. responsibility to dispose of facility dump
Old outfall from plant to bay - ponds
Advanced WWTP ~95 - Bay County - Sludge
FRED - AFFF was not used prior to MILSPEC
AFFF will be PFOS/PFOA free prior to end of 2015
2005 would be End date CFTA after 2005 no PFOS/PFOA

Whole Building
Design guide
ETL-86-6

Sign in sheet

name	Title	Contact Information
Fred Terry	Fire Program Manager	
Judy Biddle	Fire Protection Engineer	
John Hawk	TEE Engineer	
Kevin Matlock	Fire Protection Manager	
Chris Hart Hayslip	Sik lead	
JAMES CLARY	Project Manager - CH2M HILL	
Laune Jennings	Project Manager H&H	
Craig Mellerski	Division Chief RDT&I	
Tracey Ramsey	H&L	
Fred Walker	AFCBC / COSM	
Mark H. Young	AFCBC / C30E	
RON PORTER	NOBLIS	
Correll Long	AFEL I&ME	

Interview Questions

Fire Chief / fire chief designee / fire suppression system manager

AFFF

1. What type of AFFF was used on this installation (i.e. 3%, 6%, High Expansion Foam)?
- 3%
2. What manufacturer's AFFF products are used on this installation (i.e. 3M, Ansul, Chemguard)?
- Ansul
3. Where has the AFFF solution been handled (mixed, contained, transferred, etc.)?
- Bldg 6210 (55 gal drums)

Hangars and Buildings

4. Are your automated fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?
5. Do you have an inventory of the amount of AFFF stored on the installation or present in automated fire suppression systems?
6. Can you describe the procedure on how the suppression systems are supplied with AFFF?
7. Have there been inadvertent releases of AFFF from hangar fire suppression systems?
When?
8. How are releases handled (i.e. when the suppression system goes off)?

Trucks and Trailers

9. Provide a list of trucks and trailers currently carrying AFFF and where they are parked/stored?
- Attachment 1
 10. How much AFFF (gallons) is carried/stored in the specified trucks and trailers?
- Attachment 1
-

11. Do you test the trucks for spray patterns to make sure equipment is working properly?

- Yes

12. How often are these spray tests performed and can you provide the locations of these tests?

- Annually, see attachemet 2

13. Can you describe the procedure on how trucks and trailers are supplied with AFFF? Where does this resupply occur? Is there secondary containment in this area?

- The foam is stored in our warehouse (6210). The vehicles park on the south east corner and use hand pump from 55 gallon drums to pump the foam into the vehicle holding tanks. The is no containment system.

14. Can you provide the procedures on how these vehicles are cleaned/decontaminated and where vehicle cleaning is performed currently as well as in the past?

- The vehicles are rinsed inside their respective fire stations.

15. When AFFF was used during a fire training exercise, how was the AFFF cleaned up and disposed of?

- AFFF is not used during training.

Records, Spill logs, Historical Information

16. Do you have recollection or records of AFFF being used in response to:

- a. Fuel releases to prevent fires
- b. Historical emergency response sites (i.e. crash sites and fires)
- c. Emergency runway landings where foam might have been used as a precaution

-Yes, (b) 220 gallons

17. If not written records or incomplete written records, do you have anecdotal/verbal information and locations of spills or other emergency response incidents where AFFF was used?

- None

18. What are the non-FTA locations where:

- a. AFFF release systems are installed (i.e. Hangars, Wastewater Treatment Plants, and Fire Stations)
- b. Where are these locations that currently contain or have contained AFFF (Building numbers)

- c. If converted from AFFF, when did they convert the system to high expansion foam

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

- We used to test vehicles in the grass north west of fire station 1

- Hqr 5

- West Ramp

- Fire Sta 6

- ~~ETA~~ ~~ORANGE~~

- STA- 1 Tank

Environmental Manager

FTAs

20. Confirm all FTAs identified during research are correct, and list FTAs identified during site visit.

21. What are the years of operation for each FTA?

22. How many FTAs are active versus inactive?

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

24. For inactive FTAs, when was the last time that fire training using AFFF was conducted at each one?

25. Can we have a baswide map of monitoring well locations?

26. Is there anyone else or other base organization personnel that you would recommend we interview? Name, organization, position, phone number, e-mail.

27. Do you have a chrome plating shop on base? Years of operation?

28. Where does your water supply come from?

AGENT SUPPLY WORKSHEET: Updated Oct 14

ELMENDORF FIRE	AFFF (gallons)	Status	PKP (lbs)	Status	Class A (gallons)	Status
Engine 1 (11415)	0	N/A	N/A	N/A	25	Silv-ex
Engine 2 (5126)	0	N/A	N/A	N/A	25	Silv-ex
Engine 3 (3786)	0	N/A	N/A	N/A	25	Silv-ex
Engine 4 (TBK-1/654)	0	N/A	N/A	N/A	25	Silv-ex
Engine 5 (48010)	0	N/A	N/A	N/A	25	Silv-ex
Engine 6 (654)	0	N/A	N/A	N/A	25	Silv-ex
Engine 35 (654)	0	N/A	N/A	N/A	25	Silv-ex
Crash 8 (11415)	56	Ansul	N/A	N/A	N/A	N/A
Crash 9 (654)	56	Ansul	N/A	N/A	N/A	N/A
Crash 10 (48010)	210	Ansul	500	Full	N/A	N/A
Crash 11 (16673)	500	Ansul	500	Full	N/A	N/A
Crash 13 (14431)	210	Ansul	500	Full	N/A	N/A
Crash 14 (11415)	420	Ansul	450	Full	N/A	N/A
Crash 16 (11415)	420	Ansul	500	Full	N/A	N/A
Crash 18 (6210)	130	Ansul	500	Full	N/A	N/A
Trailer (11309)	1000	Ansul				
Onboard Agent	1872	100%	2450	100%	170	100%
Required Back-up	1872		2450		170	
Agent on Hand (not including Base Supply)	2485		1150		105	
SURPLUS/DEFICIENCIES	613	132.75%	-100	46.94%	-65	61.76%

BASE STORAGE	AFFF Required	AFFF Available
Hazmat (Ansul)	2765	2765

*Note: negative numbers represent amount needed, positive represent surplus

FMI Foam Quantities
 AFFF 990 gal (18 Barrels)
 Trailer 1000 gals
 HAZMAT 2765 gals (553 Pails)
 Class A 170 gal (34 Pails)
 Dry Chem 2450 (49, 50 lb pails)

AT #1



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 673D AIR BASE WING
JOINT BASE ELMENDORF-RICHARDSON ALASKA

10 Jan 2012

MEMORANDUM FOR 673 CES/CEF

FROM: 673 CES/CEANQ
6326 Arctic Warrior Drive
JBER, AK 99506-3240

SUBJECT: Update on approved conditions for the discharge of aqueous film-forming foam (AFFF) during testing of vehicle firefighting equipment.

1. AFFF discharged into the environment can have potential adverse effects on certain plant and animal life. To minimize the potential for harm, all intentional discharges associated with outdoor testing of AFFF pumping systems on JBER firefighting vehicles shall only be conducted in the following area:
 - On the gravelled surface area which is surrounded by gravel berms south of 23rd Street.
 - 23rd Street north of the berm when snow or soft soil conditions prevent operations within the berm area.
2. To prevent contact with either the storm drainage system or the sanitary sewer system, testing shall be conducted only during dry weather during periods of nominal wind speeds, during daylight hours to facilitate degradation.
3. Notification to the 673 CES/CEANQ – NPDES Program Manager must occur 48 hours prior to any outdoor discharge of AFFF. Additionally, a copy of the MSDS for the specific type of AFFF that is being discharged must be sent.
4. As a reminder, the directing of non-emergency released AFFF discharge toward either storm or sanitary sewer drains is specifically prohibited per our existing permits with both EPA /ADEC and AWWU and can result in enforcement actions by the regulatory agencies.
5. Accidental discharges to either the storm or sanitary sewer system should be reported to the 673CES/CEANQ

Don Haas
673 CES/CEANQ
NPDES Program Manager

AFF Discharge Area 2011

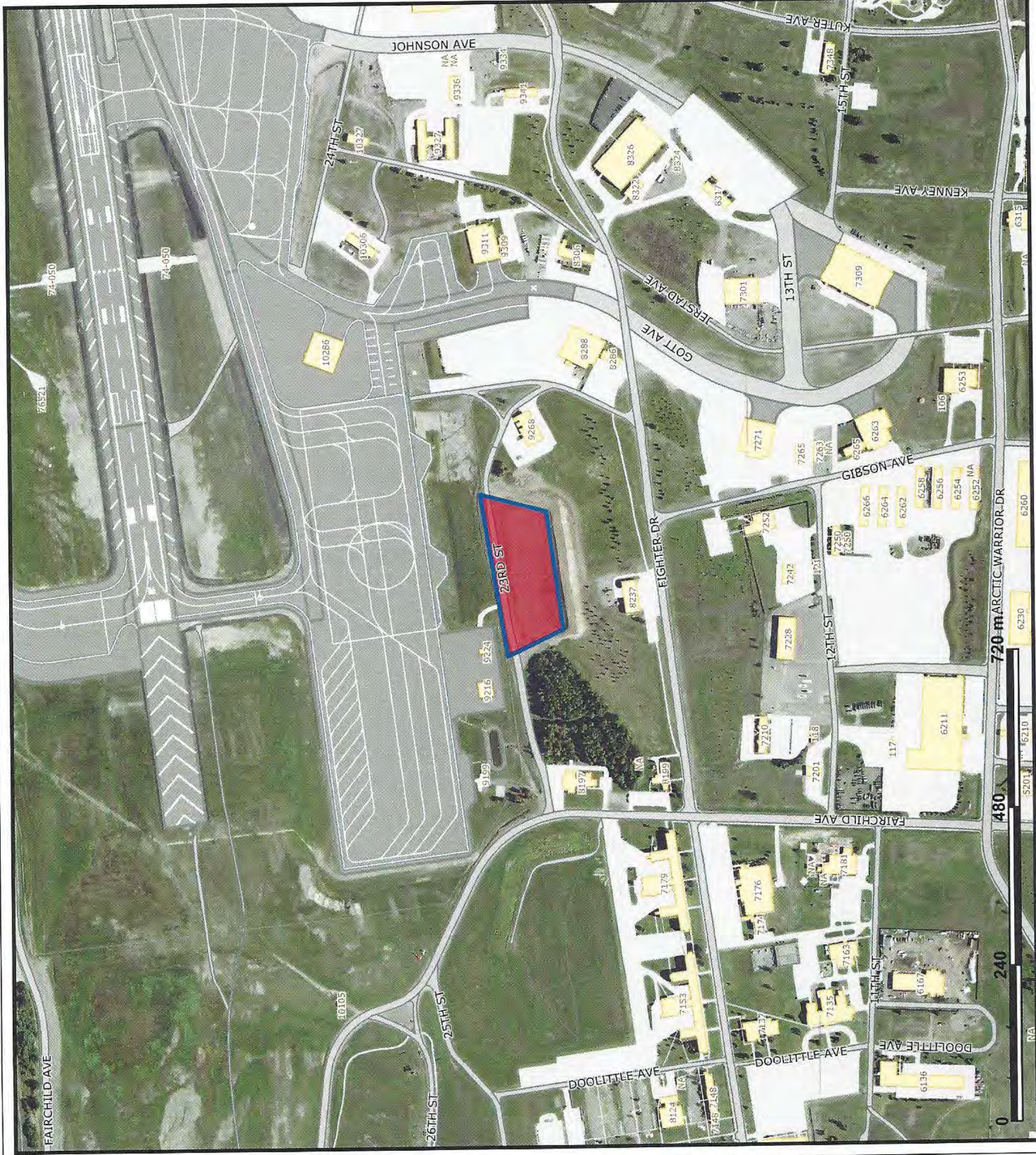


- INSTALLATION AREA
- BUILDINGS
- STATIC DISPLAY AIRCRAFT
- AIRFIELD MARKING LINES
- ROAD AREAS
- ROAD CENTERLINES
- RAILROADS
- AIRFIELD AREA
- RUNNING TRACK
- SIDEWALKS
- PARKING LOTS
- DRIVEWAYS
- WATERBODIES
- STREAMS
- GOLF COURSE AREA
- JBER 2009 30CM
- LAND



Scale: 1:8,109

PACAF 2006.
DISCLAIMER: This map is for general reference only. Information on this map is not guaranteed to be accurate or current. Maps produced by this internet mapping site are for ELMENDORF OFFICIAL USE ONLY. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



Stephen Ellis

12/15/2014

Interview Questions

Fire Chief / fire chief designee / fire suppression system manager

AFFF

1. What type of AFFF was used on this installation (i.e. 3%, 6%, High Expansion Foam)?

3% AFFF and 2 3/4% HEX

2. What manufacturer's AFFF products are used on this installation (i.e. 3M, Ansul, Chemguard)?

3M & Ansul

3. Where has the AFFF solution been handled (mixed, contained, transferred, etc.)?

6263, 14410, 15658, 16670

Hangars and Buildings

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

4 have AFFF

5. Do you have an inventory of the amount of AFFF stored on the installation or present in automated fire suppression systems?

yes

6. Can you describe the procedure on how the suppression systems are supplied with AFFF?

7. Have there been inadvertent releases of AFFF from hangar fire suppression systems?

When? No

8. How are releases handled (i.e. when the suppression system goes off)?

Trucks and Trailers

9. Provide a list of trucks and trailers currently carrying AFFF and where they are parked/stored?

10. How much AFFF (gallons) is carried/stored in the specified trucks and trailers?

11. Do you test the trucks for spray patterns to make sure equipment is working properly?

12. How often are these spray tests performed and can you provide the locations of these tests?

13. Can you describe the procedure on how trucks and trailers are supplied with AFFF?

Where does this resupply occur? Is there secondary containment in this area?

13. Can you describe the procedure on how trucks and trailers are supplied with AFFF?
Where does this resupply occur? Is there secondary containment in this area? **N/A**
14. Can you provide the procedures on how these vehicles are cleaned/decontaminated and where vehicle cleaning is performed currently as well as in the past? **N/A**
15. When AFFF was used during a fire training exercise, how was the AFFF cleaned up and disposed of? **N/A**

Records, Spill logs, Historical Information

16. Do you have recollection or records of AFFF being used in response to:
- a. Fuel releases to prevent fires **No**
 - b. Historical emergency response sites (i.e. crash sites and fires)
 - c. Emergency runway landings where foam might have been used as a precaution
17. If not written records or incomplete written records, do you have anecdotal/verbal information and locations of spills or other emergency response incidents where AFFF was used? **Verbal**
18. What are the non-FTA locations where:
- a. AFFF release systems are installed (i.e. Hangars, Wastewater Treatment Plants, and Fire Stations)
 - b. Where are these locations that currently contain or have contained AFFF (Building numbers)
 - c. If converted from AFFF, when did they convert the system to high expansion foam **Hanger 10 / 2012 Hanger 11 / being converted now**
19. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds/lagoons)? **No**

Environmental Manager

FTAs

20. Confirm all FTAs identified during research are correct, and list FTAs identified during site visit.
21. What are the years of operation for each FTA?
22. How many FTAs are active versus inactive?
23. What types of fuels/flammables were used at the FTAs?
24. For inactive FTAs, when was the last time that fire training using AFFF was conducted at each one?
25. Can we have a baswide map of monitoring well locations?
26. Is there anyone else or other base organization personnel that you would recommend we interview? Name, organization, position, phone number, e-mail.
27. Do you have a chrome plating shop on base? Years of operation?
28. Where does your water supply come from?

Building #	Tank Size	solution %	# 5 Gal containers	# 55 Gal Containers
6263	AFFF 400 Gal	Ansal		
8681	500 gal	2.75%		
8698	300 gal	2.75%		
9563	150 gal	2.75%	4	
9684	200 gal	2.75%		
9694	600 gal	2.75%	4	
9696	200 gal x 3	2.75%		
10682	200 gal	2.75%		
11551	700 gal	2.75%		
14410	AFFF 1500 gal AFFF			29 1/2 containers
*15444	AFFF 1500 gal/400 gal	AFFF/2.75%	29 ea 2.75%	6 ea 2.75%
15658	AFFF 325 gal	AFFF 3M	1	
16670	AFFF 300 gal	AFFF 3M	3	
16716	400 gal X 2	2.75%		2 containers
17508	700 gal X 2	2.75%		
17534	700 gal	2.75%		
17660	200 gal	2.75%	4	

	Date: 1/21/15 Time: 15:46	COMMUNICATION RECORD
Name of Base, State: JBER, AK		
Interviewer: Stacey Ke		
Organization: CH2M Hill	Phone: 907-762-1519	
Position/role on this project: Team Lead	Email: sre@ch2m.com	
Interviewee: Kerry Bahner		
Organization: Fire dept	Phone:	
Position/Job Title:	Email:	
How Long in this Position?		
How long at this Base in current and previous positions?		
Have you held similar positions at other bases?		
Which bases?		
How long?		
Discussion: Filling in gaps in procedure information for report		
General Fire Training Procedures - Frequency? Volumes?		
Grady 18,500 ^{lb} propane-liquid, 139 people go through 2x yr group ³² time		
at least 9 trainings for fire personnel		
When was new ETA built? mid 1990's → 20		
Lined runline - lined → retention pond / 176th also - 2 fires/yr		
Treatment system - no treatment - extra volume to ground outside pond runs toward rr		
Building 6210 - Storage/refill for all JBER? - yes		
Emergency Response - ^{pot fuel} describe general: coat all visible fuel with foam blanket		
to isolate vapors		
Flush on scene? - Usually not - w		
Small scale nozzle tests - outdoors? How often		
Foam Test Areas - when used Station 1 generally 5-10 gallon tests bring 1,000 gallon/day		
Confirm - can't rule out small scale tests of foam nozzles at any stations - Correct Station 6 for sure 16673 in front of station		

Re, Stacey/ANC

To: Re, Stacey/ANC
Subject: FW: JBER- Nike Site Summit

From: Diguisseppi, Bill/DEN
Sent: Monday, March 30, 2015 8:47 AM
To: Re, Stacey/ANC; Clary, James/AUS
Subject: RE: JBER- Nike Site Summit

Yup.

From: Re, Stacey/ANC
Sent: Monday, March 30, 2015 10:45 AM
To: Diguisseppi, Bill/DEN; Clary, James/AUS
Subject: RE: JBER- Nike Site Summit

Thanks Bill,
LF = launch facilities?

Stacey K. Ré

Environmental Scientist
CH2M HILL
949 E. 36th Avenue
Anchorage, AK 99508
Direct 907.762.1519
Cell 907.440.7662
Fax 907.257.2000
www.ch2mhill.com

From: Diguisseppi, Bill/DEN
Sent: Friday, March 27, 2015 1:21 PM
To: Re, Stacey/ANC; Clary, James/AUS
Subject: RE: JBER- Nike Site Summit

Here is what a got:

We have no AFFF fire suppression systems inside our LF's

//Signed//

Mark A. Frank, P.E.
90th Civil Engineer Squadron
FE Warren AFB, Wy

And the other guy was Airman First Class (Sep.) Jim Widlar. His website is here: <http://static.dma.mil/usaf/veterans/40widlar.html> (the "Sep." means he left the military before retirement, under his own terms. He was only in for a couple of years, but obviously loved it since he started that website and group.)

From: Re, Stacey/ANC
Sent: Friday, March 27, 2015 2:12 PM
To: Diguisseppi, Bill/DEN; Clary, James/AUS
Subject: RE: JBER- Nike Site Summit

Cool! Would be great to get a little more information to put in the citation as far as what positions they held and why they are a good authority on this topic, but that's very helpful (and hopeful)!

-S

Stacey K. Ré

Environmental Scientist

CH2M HILL

949 E. 36th Avenue
Anchorage, AK 99508
Direct 907.762.1519
Cell 907.440.7662
Fax 907.257.2000
www.ch2mhill.com

From: Diguisseppi, Bill/DEN
Sent: Friday, March 27, 2015 9:52 AM
To: Re, Stacey/ANC; Clary, James/AUS
Subject: RE: JBER- Nike Site Summit

OK. from 2 different sources, one present USAF at Warren AFB and one former AF (51 years!! – Great missile site resource), they never used AFFF at launch facilities of any generation (Nike, MX, Atlas, Titan, etc.). The only systems they had were water deluge systems.

Re, Stacey/ANC

To: Re, Stacey/ANC
Subject: FW: PFOA/PFOS is being sampled at JBER and is one order of magnitude below PHA

-----Original Message-----

From: WRIGHT, DANICA L TSgt USAF PACAF 673 AMDS/SGPB [mailto:danica.wright@us.af.mil]
Sent: Thursday, April 16, 2015 12:03 PM
To: Re, Stacey/ANC; GEISER, PHILICIA 1st Lt USAF PACAF 673 MDG/AMDS
Cc: AIDE, DONALD R GS-12 USAF AFCEC 673 CES/CZOP
Subject: RE: PFOA/PFOS is being sampled at JBER and is one order of magnitude below PHA

Ma'am,

The Bio office started sampling in September of 2014 on a quarterly basis. There are three sampling sites, Ship Creek (EP) at the water treatment plant, Pit 18 (EP) which is where Richardson/Doyon water system becomes Elmendorf water system, and building 38760 (DSMRT) which is the farthest point. Is there anything else I can help you with?

Very respectfully,

Danica L. Wright, TSgt, USAF
NCOIC, Environmental Protection
673 Bioenvironmental Engineering
Joint Base Elmendorf-Richardson, AK 99506
DSN: 384-0424/552-3985
Comm:

-----Original Message-----

From: Stacey.Re@CH2M.com [mailto:Stacey.Re@CH2M.com]
Sent: Thursday, April 16, 2015 9:50 AM
To: GEISER, PHILICIA 1st Lt USAF PACAF 673 MDG/AMDS; WRIGHT, DANICA L TSgt USAF PACAF 673 AMDS/SGPB
Cc: AIDE, DONALD R GS-12 USAF AFCEC 673 CES/CZOP
Subject: RE: PFOA/PFOS is being sampled at JBER and is one order of magnitude below PHA

Thanks Kathleen, and hello Philicia and Danica!

I'd also like to clarify the locations; it sounds like one sample was from Ship Creek at the water treatment plant (Building 28-008?) but I'm not sure where Pit 18 might be?

If I can make a more comprehensive statement to the effect that "PFOS and PFOA have been sampled quarterly (right?) since September 2014 (or whenever) at the water treatment plant on Ship Creek (Building 28-008) and have not been detected above their respective practical quantitation limits of 0.04 ug/L and 0.02 ug/L, respectively." That would be ideal!

Thanks for your help!
-Stacey

Stacey K. Ré

Environmental Scientist
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-----Original Message-----

From: Kathleen Hook [mailto:khook@doyonutilities.com]

Sent: Thursday, April 16, 2015 9:28 AM

To: GEISER, PHILICIA 2d Lt USAF PACAF 673 MDG/AMDS; WRIGHT, DANICA L TSgt ; Re, Stacey/ANC

Subject: RE: PFOA/PFOS is being sampled at JBER and is one order of magnitude below PHA

Stacey- it looks like these were JBER-E drinking water samples. I don't believe DU samples at a location called Pit 18. Plus the results refer JBER-E PWS # AK2211423.

Philicia/Danica- Stacey is writing a JBER contaminated site report and wants to state that "PFOA & PFOS was sampled on xx date, and were found to be non-detect". Can you help her out on providing the date information?

Kathleen

PWS: AK2211423 / USAF Elmendorf AFB Facility: 32229 / Ship Creek TP Sample Point: 34516 / Ship Creek DS EP
Monitoring Type: Assessment Monitoring (List 1) Facility Type: treatment plant

Analyte

Method

SE1

SE2

SE3

SE4

chromium (total)

EPA 200.8

.4 µg/L

.6 µg/L

cobalt

EPA 200.8

< 1 µg/L

< 1 µg/L

molybdenum

EPA 200.8

< 1 µg/L

< 1 µg/L

strontium

EPA 200.8

200 µg/L

200 µg/L

vanadium

EPA 200.8

< 0.2 µg/L

.2 µg/L

chromium-6

EPA 218.7

.33 µg/L

.5 µg/L

chlorate

EPA 300.1

1600 µg/L

< 20 µg/L

1,4-dioxane

EPA 522

< 0.07 µg/L

< 0.07 µg/L

1,1-dichloroethane

EPA 524.3

< 0.03 µg/L

< 0.03 µg/L

1,2,3-trichloropropane

EPA 524.3

< 0.03 µg/L

< 0.03 µg/L

1,3-butadiene

EPA 524.3

< 0.1 µg/L

< 0.1 µg/L

bromochloromethane

EPA 524.3

< 0.06 µg/L

< 0.06 µg/L

bromomethane

EPA 524.3

< 0.2 µg/L

< 0.2 µg/L

chlorodifluoromethane

EPA 524.3

< 0.08 µg/L

< 0.08 µg/L

chloromethane

EPA 524.3

< 0.2 µg/L

< 0.2 µg/L

PFBS

EPA 537

< 0.09 µg/L

< 0.09 µg/L

PFHpA

EPA 537

< 0.01 µg/L

< 0.01 µg/L

PFHxS

EPA 537

< 0.03 µg/L

< 0.03 µg/L

PFNA

EPA 537

< 0.02 µg/L

< 0.02 µg/L

PFOA

EPA 537

< 0.02 µg/L

< 0.02 µg/L

PFOS

EPA 537

< 0.04 µg/L

< 0.04 µg/L

PWS: AK2211423 / USAF Elmendorf AFB Facility: 45005 / Pit 18 Sample Point: PIT18 / Pit 18 Monitoring Type:
Assessment Monitoring (List 1) Facility Type: consecutive connection

Analyte

Method

SE1

SE2

SE3

SE4

chromium (total)

EPA 200.8

.3 µg/L

.5 µg/L

cobalt

EPA 200.8

< 1 µg/L

< 1 µg/L

molybdenum

EPA 200.8

< 1 µg/L

< 1 µg/L

strontium

EPA 200.8

210 µg/L

200 µg/L

vanadium

EPA 200.8

.2 µg/L

.2 µg/L

chromium-6

EPA 218.7

.26 µg/L

.42 µg/L

chlorate

EPA 300.1

< 20 µg/L

< 20 µg/L

1,4-dioxane

EPA 522

< 0.07 µg/L

< 0.07 µg/L

1,1-dichloroethane

EPA 524.3

< 0.03 µg/L

< 0.03 µg/L

1,2,3-trichloropropane

EPA 524.3

< 0.03 µg/L

< 0.03 µg/L

1,3-butadiene

EPA 524.3

< 0.1 µg/L

< 0.1 µg/L

bromochloromethane

EPA 524.3

< 0.06 µg/L

< 0.06 µg/L

bromomethane

EPA 524.3

< 0.2 µg/L

< 0.2 µg/L

chlorodifluoromethane

EPA 524.3

< 0.08 µg/L

< 0.08 µg/L

chloromethane

EPA 524.3

< 0.2 µg/L

< 0.2 µg/L

PFBS

EPA 537

< 0.09 µg/L

< 0.09 µg/L

PFHpA

EPA 537

< 0.01 µg/L

< 0.01 µg/L

PFHxS

EPA 537

< 0.03 µg/L

< 0.03 µg/L

PFNA

EPA 537

< 0.02 µg/L

< 0.02 µg/L

PFOA

EPA 537

< 0.02 µg/L

< 0.02 µg/L

PFOS

EPA 537

< 0.04 µg/L

< 0.04 µg/L
