FINAL
PRELIMINARY ASSESSMENT REPORT FOR PERFLUORINATED COMPOUNDS AT MALMSTROM AIR FORCE BASE GREAT FALLS, MONTANA

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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LIST OF ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film-forming foam
Air Force	U.S. Air Force
ANG	Air National Guard
AST	aboveground storage tank
Base	Malmstrom Air Force Base
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CE	Civil Engineering
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CES	Civil Engineering Squadron
EDR	Environmental Data Resources, Inc.
FTA	Fire Training Area
HDPE	high-density polyethylene
HGL	HydroGeoLogic, Inc.
mg/kg	milligram(s) per kilogram
NTL	NTL Engineering and Geoscience, Inc.
OWS	oil-water separator
PA	preliminary assessment
PFC	perfluorinated compound
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
RCAF	Royal Canadian Air Force
RI	Remedial Investigation
SI	Site Inspection
TSDF	treatment, storage, and disposal facility
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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FINAL
PRELIMINARY ASSESSMENT REPORT FOR PERFLUORINATED COMPOUNDS MALMSTROM AIR FORCE BASE GREAT FALLS, MONTANA

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 Malmstrom Air Force Base (AFB or Base) during the week of February 2, 2015. Malmstrom AFB is an active Air Force installation in Cascade County, Montana. The location of Malmstrom AFB and the locations identified on Malmstrom AFB during this PA visit are shown on Figure 1.1.

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, 2012).

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, issued authorization in 1970 for the Air Force to procure AFFF. No usage 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 Malmstrom AFB 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. According to the real property records, the first of these engineered FTAs, the Silver Flag FTA, was constructed at Tyndall AFB in 1991. The new, engineered FTAs include a surrounding berm, a double-lined 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 the known FTAs as well as additional locations where AFFF may have been released into the environment at Malmstrom AFB (Table 1.1). 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
Identified Fire Training Areas and Non-Fire Training Areas
Malmstrom Air Force Base, Montana

Fire Training Areas
FT01 (Historical FTA)
Current FTA
Non-Fire Training Areas
Hangar 1440
Hangar 1464
Fire Station (Building 349)
Canadian Snowbirds CT-117 Crash
Building 1845 (Missile Handling)
Building 434 (90-Day Storage)
Building 1467 (Fuel Truck Storage)
Building 1535 (Treatment, Storage, and Disposal Facility [TSDF])
Building 410 (Base Supply)
Aboveground Storage Tanks
Outfall 1
Outfall 3

1.3 BASEWIDE ENVIRONMENTAL SETTING

The city of Great Falls, Montana, bordering Malmstrom AFB to the west, has a population estimated at more than 59,000 residents, according to the 2013 U.S. Census (U.S. Census Bureau, 2015), which represents the majority of the population in the surrounding area. The areas north, east, and south of the city are primarily used for agriculture.

1.3.1 Geology

Malmstrom AFB lies within a glaciated region that extends from the Rocky Mountains in the west to the Dakotas. Several episodes of glaciation deposited layers of till material as the glaciers retreated, and these layers buried much of the landscape. Underlying most of the glaciated area is sedimentary rock. Rivers, such as the Missouri River, have cut through the glaciated till to other exposed sedimentary rock (Montana State Library, 2015).

The lower cretaceous bedrock ranges from 20 and more than 100 feet below ground surface (bgs) from south to north (Brown, 2015, personal communication; Appendix C). The bedrock dates to the Mesozoic era and is primarily overlain with silty clay material down to an average of 5 feet bgs (Environmental Data Resources, Inc. [EDR], 2015).

1.3.2 Hydrogeologic Setting

The uppermost shallow groundwater beneath the Base ranges in depth from 40 feet bgs along the southern boundary of the Base to 12 feet bgs along the northern boundary of the Base (Montana Bureau of Mines and Geology, 2015).

Clay lenses occur throughout the subsurface, starting at about 5 feet bgs. Thin layers of perched groundwater may be present on top of these clay layers. The depth to the clay lenses and the areal extent of the clay lenses vary throughout the Base. Flow is estimated to be to the north based on surface topography and the assumption that shallow groundwater flow is typically toward the Missouri River.

1.3.3 Hydrologic Setting

Malmstrom AFB has nine drainage watersheds on Base and six stormwater outfalls along the northern Base boundary (Figure 1.2) as provided by 341 CES Geographical Information System Analyst Mr. Jason Underwood (2015). All six outfall drainages combine prior to discharging into the Missouri River north of the Base, but with varying lengths of travel. Discharges from Outfalls 1 and 2 (watersheds 1 and 2, respectively) travel approximately 1.6 miles to reach the Missouri River. The distance from Outfalls 3 and 4 (watersheds 3 and 4, respectively) to the Missouri River is slightly less, at approximately 1.5 miles, while discharges from Outfalls 5 and 6 (watersheds 5 and 6, respectively) travel the longest distance to reach the Missouri River, at approximately 2.9 miles. Watersheds 7, 8, and 9 have no natural drainages (water either evaporates or infiltrates into the ground). Each of the six outfalls is equipped with a control device that can block the flow of surface water (Appendix A). The retention capacity is limited in each area by the geographic layout.

A number of groundwater monitoring wells are reported to be on Malmstrom AFB; however, the Base does not maintain accurate records of current and decommissioned wells (Brown, 2015, personal communication; Appendix C). There are currently no drinking water wells at Malmstrom

AFB (primary or contingency), with the Missouri River serving as the drinking water source for both Great Falls and Malmstrom AFB. The river intake is located approximately 8 miles upstream from the Base. There are approximately 450 private water supply wells located off-Base within a 4-mile radius of Malmstrom AFB. No information for these wells, however, is readily available regarding the depths of these wells, although they are likely used for domestic drinking water, drinking water for livestock, and irrigation water for agriculture. Drinkable groundwater for the Great Falls area is generally at least 180 feet bgs.

Two small wetlands are identified near the southern boundary but within the boundary of Malmstrom AFB. Additional wetlands are south of the southern boundary (within 1 mile of the southern boundary). The nearest 500-year floodplain lies approximately 2 miles south of the southern Malmstrom AFB boundary (EDR, 2015).

Malmstrom AFB has a manufactured recreational pond (Pow Wow Pond) located in Watershed 6 that is frequently used by on-Base residents for recreational fishing (Brown, 2015, personal communication; Appendix C).

1.3.4 Ecological Receptors

U.S. Fish and Wildlife Service (USFWS) on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are located within 15 miles downstream of Malmstrom AFB. The bald eagle is the only endangered species known to inhabit Cascade County, and it is possible it may be found within the boundaries of the Base.

The nearest wetland is located at Outfall 5 on the northeast corner of the Base, approximately 4,100 feet downgradient from Pow Wow Pond. A second wetland is located an additional 4,200 feet downgradient from Outfall 5. A third wetland is located at confluence of the Base surface water drainage pathway and the Missouri River. Additional wetlands are found downstream on the Missouri River (EDR, 2015).

1.4 PRELIMINARY ASSESSMENT METHODS

This PA Report was prepared in accordance with the following:

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

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 3-day visit to Malmstrom AFB, Montana.
- Conducting interviews with government personnel in:
    - Fire Fighting – Daniel Dodson
    - Water Fuel System Maintenance – Curtis Hester and Stephanie Groux

  - Environmental Engineering – Leo Semana
  - Geographic Information Systems – Jason Underwood
  - Restoration Program Manager – Robert Brown
  - Deputy CE – William McLaughlin
- Visiting and photographing locations where AFFF has been 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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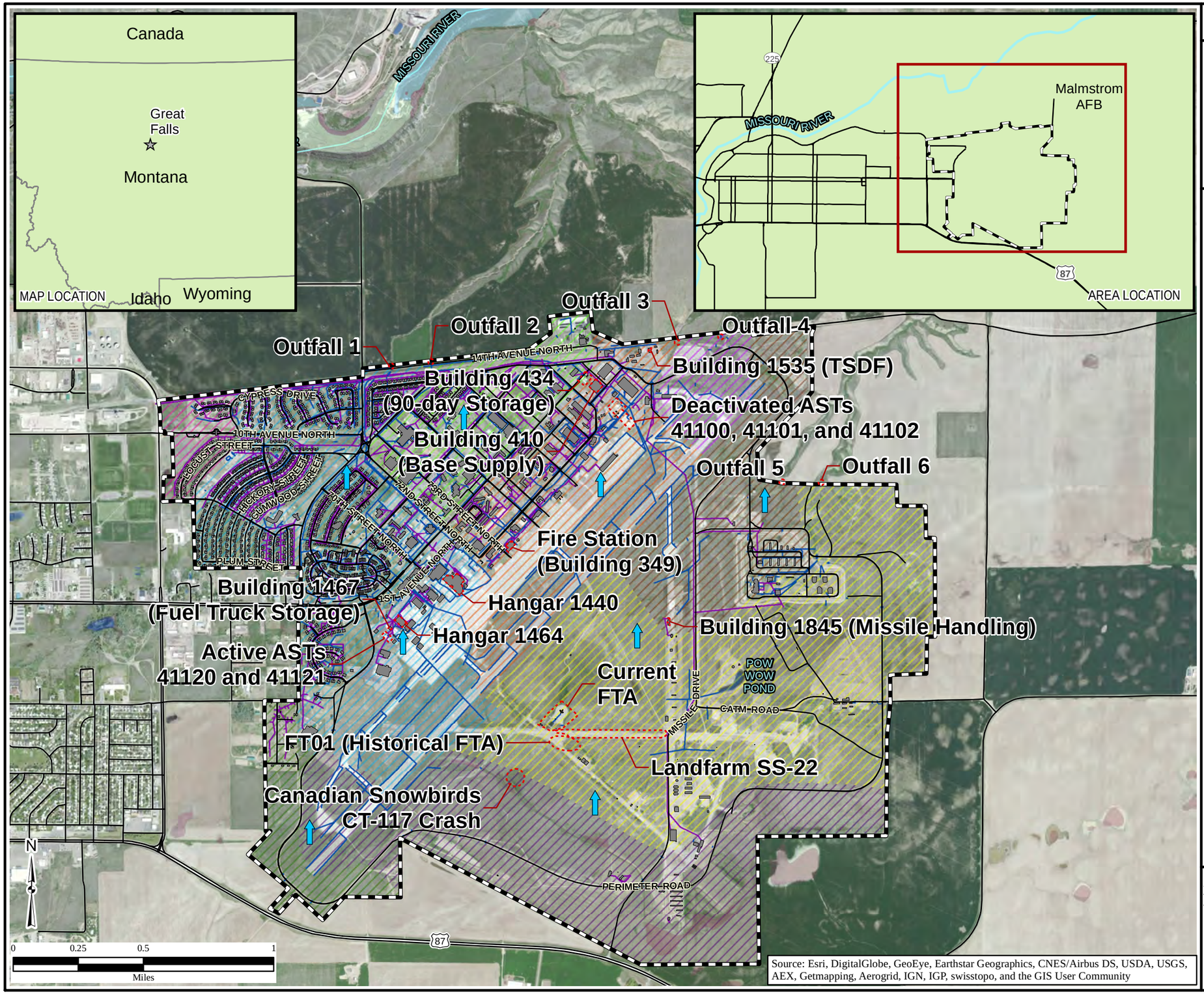
Figure 1.1
All Identified Locations
Malmstrom AFB, Montana



Legend

- Approximate Uppermost, Shallow Groundwater Flow Direction
- Stream/River
- Stormwater Drainage Line
- Wastewater Line
- Industrial Wastewater Line
- Road
- Building
- Approximate Location
- Base Boundary

Wetland

- Freshwater Emergent Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

Watershed

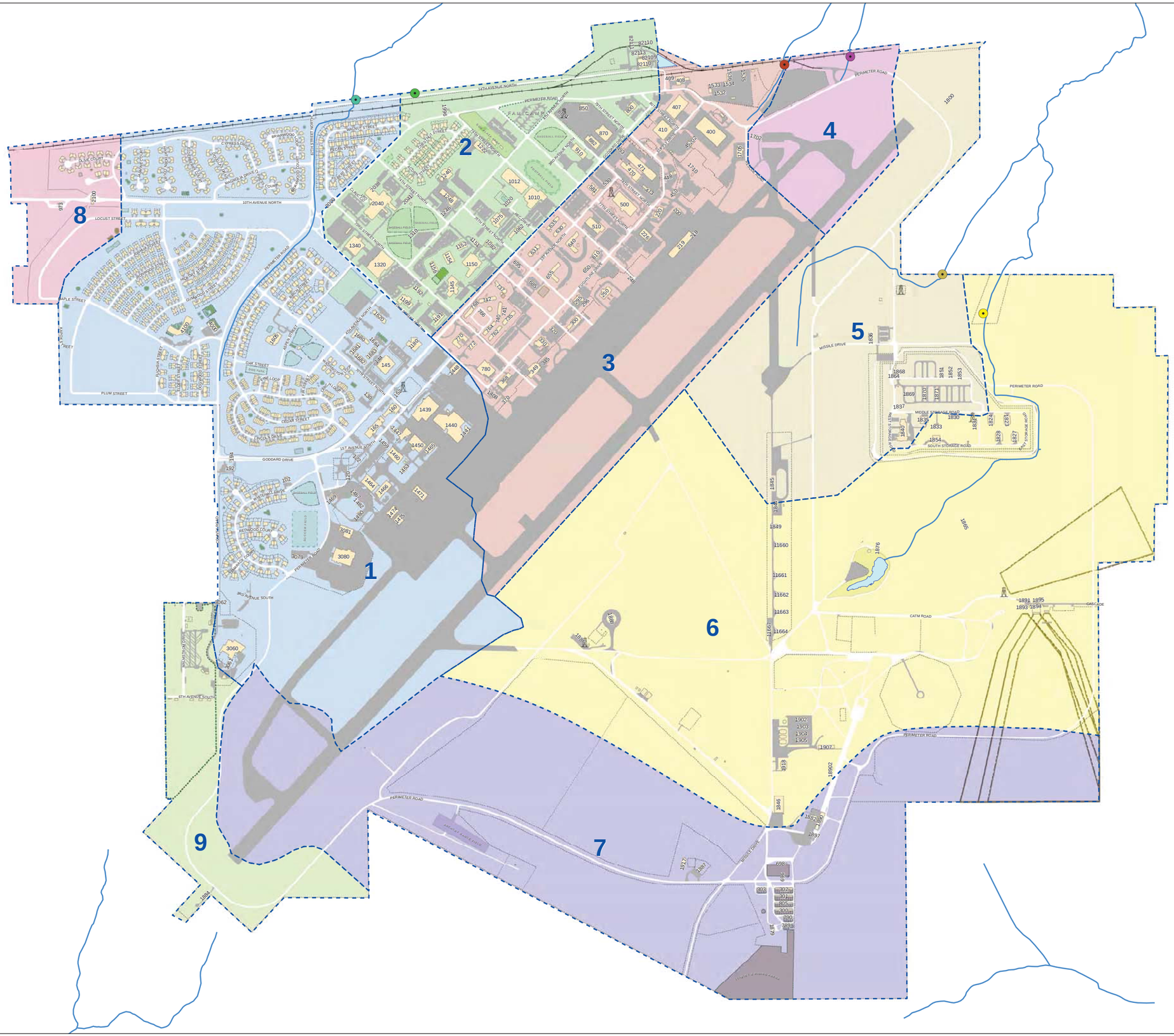
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Notes:
ASTs = aboveground storage tanks
FTA = fire training area
OF = outfall
TSDF = treament, storage, and disposal facility

\\roswell\Arcinfo\Av_Proj\AFCEC\Malmstrom\GIS\MapFiles\Final\Figure_1.1_rev1.mxd
4/27/2015 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/

CH2MHILL

Malmstrom AFB
Watersheds and Outflows



Legend

Outfall	Drainage Area
1	1
2	2
3	3
4	4
5	5
6	6
	7
	8
	9

- Drainage Boundary
- Stream/River
- Pond
- Installation
- Building
- Fence
- Railroad
- Firing Range

1:7,800

0 500 1,000 2,000
Feet

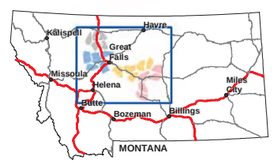
0 100 200 300 400 500
Meters

MAP EQUIVALENTS

1 inch = 650 feet
1 centimeter = 78 meters

N

December, 2014



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2.0 FIRE TRAINING AREAS

2.1 FT01 AND SOIL FARM

2.1.1 Description and Operational History

The historical FTA (FT01) is located immediately southeast of the current FTA. FT01 was in operation for approximately 30 years and was deactivated in 1990. Final closure of the location occurred during a 1997 remedial action (Figure 2.1). The geographic coordinates are 47°29'58.38"N and 111°10'57.88"W.

Throughout the years of operation, training exercises included setting fire to leaded fuel and aircraft fuels, and then extinguishing the fires with fire suppression fluids that routinely included AFFF (Dodson, 2015, personal communication; Appendix C). In 1997, a remedial action removed 2,000 cubic yards of soil, of which 147 cubic yards were hauled offsite for disposal. The remaining 1,853 cubic yards were taken to a soil farm located on an old paved taxiway 300 feet to the east, and have since been removed from the installation and disposed of offsite (Brown, 2015, personal communication; Appendix C). Soils were identified for removal from FT01 based on lead content in the soil as well as petroleum concentrations. Clean soils from a local soil borrow area were used as backfill, and reseeding restored FT01 to match the immediate surroundings. Based on the review of the 1997 FT01 corrective action, at no time during the events leading up to the remedial action, or during the remedial action, were soils in the FT01 sampled for the constituents of AFFF (USEPA, 1997).

2.1.2 Waste Characteristics

AFFF and other fire suppression materials were used to extinguish fuel fires during training activities, leading to a direct release of AFFF to the unlined FTA. During the 1997 remedial action, soils removed from FT01 were sampled for lead and petroleum hydrocarbon concentrations. Soils with concentrations of lead greater than 100 milligrams per kilogram (mg/kg), concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX) exceeding 10 mg/kg, or concentrations of benzene greater than 1 mg/kg were removed from FT01 and treated in a soil farm located on a runway. Releases from this soil farm could have occurred in drainage ditches adjacent to the runway. At no time during the remedial action or since have soils in FT01 been sampled for AFFF constituents (USEPA, 1997).

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 (USEPA, 1989).

Database research (EDR, 2015) shows 53 day care facilities, 2 nursing homes, 8 schools, 50 hospitals, and 2 colleges within the potential migration area of 4 miles from any potential PFC release location. Not included in the EDR report is one on-Base child care center and one on-Base

youth center. The on-Base child care center is located approximately 7,200 feet hydrologically upgradient of FT01, and the on-Base child development center is located approximately 5,300 feet hydrologically downgradient of FT01.

2.1.3.1 Groundwater Pathway and Targets

Drinking water for Malmstrom AFB is supplied by the City of Great Falls (Brown, 2015, personal communication; Appendix C). Malmstrom AFB has no water supply wells on-Base, with the nearest domestic well located within 1 mile downgradient of FT01, but no information about the population served by this well is readily available (EDR, 2015). Perched groundwater is routinely encountered during excavations within 3 to 5 feet of the ground surface (Brown, 2015, personal communication; Appendix C). Therefore, dermal contact to contaminated shallow groundwater by workers in shallow excavations is a potential pathway. Approximately 25,320 people live within a 4-mile radius of Malmstrom AFB (EDR, 2015), most of whom receive drinking water from the City of Great Falls, which has an intake on the Missouri River approximately 8 miles upstream of the Base.

2.1.3.2 Surface Water Pathway and Targets

FT01 is located in Watershed 6 (Figure 1.2). From FT01, surface water drains approximately 3,300 feet east toward the retention pond (Pow Wow Pond), which drains to the north through Outfall 6. Once beyond the perimeter of the Base, the drainage flows north approximately 2.9 miles toward the Missouri River. Potential pathways include both human dermal contact from recreational contact with waters downgradient including both Pow Wow Pond and the Missouri River and ecological ingestion exposures downgradient of FT01.

The City of Great Falls drinking water intake is approximately 8 miles upstream of Malmstrom AFB. The Missouri River is a source of municipal drinking water, drinking water for livestock, and irrigation water for agriculture downstream of Malmstrom AFB.

Rainbow Dam is located on the Missouri River approximately 1.2 miles upstream from the Malmstrom AFB outfall (Google Earth, 2015). Cochrane Dam is located approximately 2 miles downstream from Malmstrom AFB on the Missouri River (Google Earth 2015). Local waterways are used for recreational fishing by residents of nearby communities. There are no environmentally sensitive areas between Outfall 6 and the Missouri River, and the entire open channel flow path is through agricultural land.

FT01 is located outside of a 500-year flood zone. The nearest body of water is Pow Wow Pond, located 3,300 feet east of the location. The pond is commonly used by on-Base residents for recreational fishing (Brown, 2015, personal communication; Appendix C), and is within the drainage pathway from FT01. USFWS on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are within 15 miles downstream from Malmstrom AFB. Approximately 4,300 feet downgradient from Outfall 6 is a wetland. Approximately 10,600 feet further downgradient is a second wetland near the confluence with the Missouri River (EDR, 2015).

2.1.3.3 Soil and Air Exposure Pathways and Targets

As part of the 1997 remediation action at FT01, approximately 1,853 cubic yards of soils (excavation up to 5 feet in depth) were removed from the FT01 area based on lead and petroleum content, and distributed over a newly created soil farm located immediately east of FT01 on an old taxiway (Figure 1.1) (USEPA, 1997). In addition, 147 cubic yards of soil were hauled offsite for disposal. During the remedial action, no samples were collected and analyzed for the presence of PFCs. However, based on historical photographs and an interview with Daniel Dodson, Malmstrom AFB's current Deputy Fire Chief, fire training activities (including the use of AFFF) date back to the 1960s (Dodson, 2015, personal communication; Appendix C; USEPA, 1997). Migration of AFFF through the unlined FT01 could have exceeded the depth of the soils that were removed during the 1997 remedial action, and could remain within the deeper soils. FT01 was backfilled with clean soils from a Base soil borrow area and seeded with native vegetation as part of the restoration activities. The on-Base child care center is located approximately 7,200 feet northwest of FT01, and the on-Base child development center is approximately 5,300 feet north of FT01.

FT01 was located in a remote part of the Base, and there are no residents or other facilities within 200 feet of the location.

2.2 FIRE TRAINING AREA AND RETENTION POND

2.2.1 Description and Operational History

Constructed in the early 1990s, the current FTA is a high-density polyethylene (HDPE)-lined pit with a fighter jet mockup constructed on top of the pit for firefighting training (Dodson, 2015, personal communication; Appendix C). The FTA and associated retention pond are located in a remote area in the south-central portion of Malmstrom AFB, approximately 1,300 feet southeast of the main runway (Figure 2.1). The geographic coordinates are 47°30'04.06"N and 111°10'57.46"W.

The lined pit is covered with river rock to allow for drainage. Drains within the fire training pit collect and convey fluids (mostly water) to a concrete-lined retention pond approximately 230 feet to the west to allow evaporation. The retention pond also serves as a holding area for water that is pumped into the fire training pit to partially submerge the river rock. The entire retention pond and fire pit act as an enclosed system with no external drainage.

Originally, JP-4 and JP-8 jet fuel were used in the fire training pit during training exercises, but the pit was converted to propane by 1998 (Dodson, 2015, personal communication; Appendix C). AFFF has been routinely used during training exercises throughout the history of the current FTA (Dodson, 2015, personal communication; Appendix C). Propane is pumped throughout the fire training pit through a series of buried pipes. When released, the propane bubbles up through the partially submerged river rock and, when ignited, it closely resembles an aircraft fire.

2.2.2 Waste Characteristics

No uncontrolled releases of AFFF have been recorded for the current FTA. The fire training pit is connected to the lined retention/evaporation pond to the east in a closed system. Since 1998, propane has been used to simulate fires. However, AFFF is still employed for some of the training

exercises (Dodson, 2015, personal communication; Appendix C). When used, the buoyant foam collects on the water surface in the retention/evaporation pond. Water is allowed to evaporate (both water from the fire training pit and water that make up 99 percent of the foam); however, the remaining 1 percent of PFCs in the foam settles to the bottom of the retention pond.

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 (USEPA, 1989).

Database research (EDR, 2015) shows 53 day care facilities, 2 nursing home, 8 schools, 50 hospitals, and 2 colleges within the potential migration area of 4 miles from any potential PFC release location. Not included in the EDR report is one on-Base child care center and one on-Base youth center. The on-Base child care center is located approximately 6,900 feet hydrologically upgradient of the current FTA. The on-Base child development center is located approximately 5,200 feet hydrologically downgradient of the current FTA.

2.2.3.1 Groundwater Pathway and Targets

Drinking water for Malmstrom AFB is supplied by the City of Great Falls (Brown, 2015, personal communication; Appendix C). Malmstrom AFB has no water supply wells on-Base, with the nearest domestic well located within 1 mile downgradient of the current FTA but no information is readily available about the population served by this well (EDR, 2015). Perched groundwater is routinely encountered during excavations within 3 to 5 feet of the ground surface (Brown, 2015, personal communication; Appendix C). Approximately 25,320 people live within a 4-mile radius of Malmstrom AFB (EDR, 2015), most of whom receive drinking water from the City of Great Falls, which has an intake on the Missouri River approximately 8 miles upstream of the Base.

A potential pathway for groundwater contamination is overspraying the AFFF during training exercises, which could then migrate beyond the HDPE-lined fire training pit and infiltrate into the shallow groundwater. Additionally, if the retention pond was ever overtopped (for instance, if it rained shortly after an FTA exercise), AFFF-impacted water could have been released to the area around the pond. Therefore, dermal contact to contaminated shallow groundwater by workers in shallow excavations is a potential pathway.

2.2.3.2 Surface Water Pathway and Targets

The current FTA is located in Watershed 6 (Figure 1.2). From the current FTA, surface water drains approximately 3,300 feet east toward the retention pond (Pow Wow Pond), which drains to the north through Outfall 6. Once beyond the perimeter of the Base, the drainage flows north approximately 2.9 miles toward the Missouri River. Therefore, human dermal contact to contaminated surface water and ingestion by ecological receptors are potential pathways.

The City of Great Falls drinking water intake is approximately 8 miles upstream of Malmstrom AFB. The Missouri River is a source of municipal drinking water, drinking water for livestock, and irrigation water for agriculture downstream of Malmstrom AFB.

Rainbow Dam is located on the Missouri River approximately 1.2 miles upstream from the Malmstrom AFB outfall (Google Earth, 2015). Cochrane Dam is located approximately 2 miles downstream from Malmstrom AFB on the Missouri River (Google Earth, 2015). Local waterways are used for recreational fishing by residents of nearby communities. There are no environmentally sensitive areas between Outfall 6 and the Missouri River, and the entire open channel flow path is through agricultural land.

This location is outside of a 500-year flood zone. The nearest body of water is Pow Wow Pond, located 3,300 feet east of the location. The pond is commonly used by on-Base residents for recreational fishing (Brown, 2015, personal communication; Appendix C), and is within the drainage pathway from FT01. USFWS on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are within 15 miles downstream from Malmstrom AFB. Approximately 4,300 feet downgradient from Outfall 6 is a wetland. Approximately 10,600 feet further downgradient is a second wetland near the confluence with the Missouri River (EDR, 2015).

2.2.3.3 Soil and Air Exposure Pathways and Targets

AFFF is routinely used in firefighting training exercises at Malmstrom AFB. Overspray is the primary exposure pathways to surface soils surrounding the fire training pit. Because the current FTA is located in a remote location on Base, no residents are within 200 feet of the location, and no other facilities are within 200 feet of the location. The on-Base child care center is located approximately 6,900 feet northwest of FT01. The on-Base child development center is located approximately 5,200 feet north of FT01.

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FIGURE

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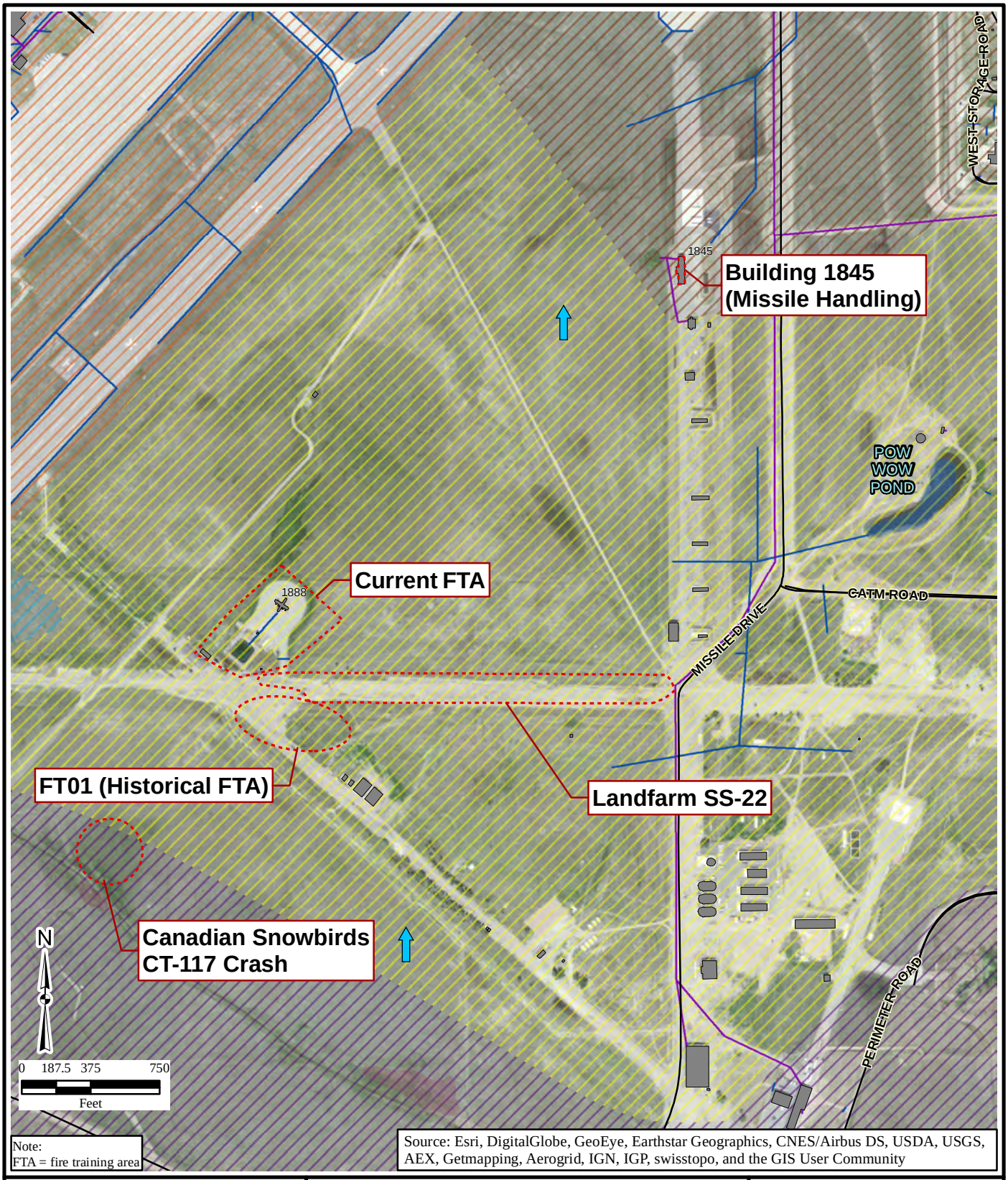

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4/24/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C. http://www.fws.gov/wetlands/

CH2MHILL

Legend

- Approximate Uppermost, Shallow Groundwater Flow Direction
- Stormwater Drainage Line
- Wastewater Line
- Industrial Wastewater Line
- Road
- Approximate Location
- Base Boundary
- Building

Wetland

- Freshwater Emergent Wetland
- Freshwater Pond

Watershed

- 1
- 3
- 5
- 6
- 7

Figure 2.1 Locations Identified in the South-central Part of Malmstrom AFB, Montana

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3.0 NON-FIRE TRAINING AREAS

3.1 HANGARS

3.1.1 Hangar 1440

3.1.1.1 Description and Operational History

Hangar 1440 is located on Malmstrom AFB and bordered by Building 1439 to the northwest and by paved/concrete areas to the east, south, and west (Figures 1.1 and 3.1). The geographical coordinates are 47°30'29.83"N and 111°11'28.77"W. Hangar 1440 was constructed in the 1993 with an AFFF fire suppression system that remains in use in Bay 5 only; Bays 3 and 4 were converted to a water-only system in the late 1990s (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C). A floor drain holding system that contains the AFFF was installed when the hangar was constructed.

Each bay is equipped with two fire suppression systems: ceiling sprinkler systems with heat-regulated sprinkler heads, and fire suppression hand-controlled cannons (only Bay 5 is connected to the AFFF distribution system). The AFFF system can be isolated (water only) inside the mechanical room for testing purposes. A 1,500-gallon AFFF tank is located in the mechanical room.

3.1.1.2 Waste Characteristics

AFFF waste generated from Hangar 1440 historically included 3 percent AFFF from annual fire suppression system testing. The AFFF would be pushed out onto the apron and allowed to evaporate or drain into a grated drop inlet stormwater drain that discharges at Outfall 1. Within the hangar bays, residual AFFF would eventually be washed into floor drains and collected in an oil-water separator (OWS) that conveys to the City of Great Falls wastewater treatment system. Since 2007, approximately 300 gallons of AFFF has been removed from the tank from fire suppression system testing and evaporation/line losses. However, it is common practice to isolate the AFFF and test the fire suppression systems with water only. On at least one occasion, the volume of AFFF that was washed through the OWS overflowed and came up through the access manhole (McLaughlin, 2015, personal communication; Appendix C).

3.1.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.1.1.3.1 Groundwater Pathway and Targets

Not applicable.

3.1.1.3.2 Surface Water Pathway and Targets

Not applicable.

3.1.1.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.1.2 Hangar 1464

3.1.2.1 Description and Operational History

Hangar 1464 is located on Malmstrom AFB and bordered by Building 1467 to the southwest, Building 1466 to the southeast, and paved/concrete areas to the northeast and northwest (Figures 1.1 and 3.1). The geographical coordinates are 47°30'22.34"N and 111°11'45.61"W. Hangar 1464 was constructed in the 1959 to provide support for aircraft maintenance. This hangar was later converted to a fuel cell maintenance facility for KC-135 aircraft. However, since the mid-1990s when all winged aircraft flight operations were halted at Malmstrom AFB, use of the hangar has changed to vehicle maintenance (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C). The original fire suppression system, which included a 500-gallon AFFF tank located in the mechanical room, was removed from Hangar 1464 in 2010 (Groux, 2015, personal communication; Appendix C Hester, 2015, personal communication; Appendix C).

No discharges of AFFF within the hangar were documented and no evidence of releases outside of the hangar was identified during personnel interviews (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C).

3.1.2.2 Waste Characteristics

AFFF waste generated from Hangar 1464 historically included 3 percent AFFF from annual fire suppression testing. No AFFF has been used since 2010 when the AFFF storage tank was removed. Prior to 2010, there are no documented discharges of the system within the building or releases outside the building.

3.1.2.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.1.2.3.1 Groundwater Pathway and Targets

Not applicable.

3.1.2.3.2 Surface Water Pathway and Targets

Not applicable.

3.1.2.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.2 FIRE STATIONS

3.2.1 Fire Station Building 349

3.2.1.1 Description and Operational History

Fire Station Building 349 (Fire Station 1) is located on Malmstrom AFB. It is surrounded by a paved/concrete area with small grassy areas bordering it to the southeast and southwest (Figures 1.1 and 3.1). Several other buildings are in the immediate vicinity, including Buildings

330, 345, 368, and 370. The geographical coordinates are 47°30'37.40"N and 111°11'12.30"W. Fire Station 1 serves as the main fire station for Malmstrom AFB and houses two P-34 fire trucks, each with a 400-gallon water capacity, as well as a 50-gallon AFFF capacity in one of the trucks and a 56-gallon AFFF capacity in the other. Fire Station 1 also stores a 220 gallons of AFFF and 150 gallons of Foam A in a storage room that includes no secondary containment.

Historically, Fire Station 1 has housed a number of fire suppression vehicles that contained AFFF (Dodson, 2015, personal communication; Appendix C), including the following:

- P-2 – 2,300-gallon water capacity and 200-gallon AFFF capacity
- P-4 – 1,500-gallon water capacity and 100-gallon AFFF capacity
- P-8 – pumper truck with 50-gallon AFFF capacity
- P-19 – 1,000-gallon water capacity and 50-gallon AFFF capacity
- A 600-gallon AFFF trailer

The response vehicles are typically parked inside one of the two bays at Fire Station 1; however, the trucks and trailer are parked along the flightline adjacent to the Fire Station during the warmer summer months (Dodson, 2015, personal communication; Appendix C).

A vehicle wash rack is located in the south bay containing a floor drain the leads to an OWS that drains into the City of Great Falls wastewater system.

In the late 1990s, a 600-gallon-capacity AFFF foam trailer was parked outside of the northeast corner of the building. Another vehicle backed into the trailer, which caused the tank to rupture and the entire contents drained onto the ground and into a stormwater drop inlet approximately 10 feet away, which drains to Outfall 3. No records exist for any spill follow-up activities (Dodson, 2015, personal communication; Appendix C).

3.2.1.2 Waste Characteristics

Firefighting activities have used 3 percent low-expansion AFFF since the 1970s. Nozzle spray testing has historically taken place at the fire training areas or outside Building 349 along the flightline (Dodson, 2015, personal communication; Appendix C). In addition to these activities, the only other known release of AFFF is the 600-gallon spill from the parked AFFF trailer in the late 1990s (Dodson, 2015, personal communication; Appendix C). All of these discharges drain into the stormwater system, which conveys water to Outfall 3.

3.2.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.2.1.3.1 Groundwater Pathway and Targets

Not applicable.

3.2.1.3.2 Surface Water Pathway and Targets

Not applicable.

3.2.1.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.3 EMERGENCY RESPONSE

3.3.1 Canadian Forces Snowbirds CT-117 Crash

3.3.1.1 Description and Operational History

In May 2007, in preparation of an air show, a Canadian Forces Snowbirds Air Demonstration CT-117 Tutor Jet crashed approximately 1,200 feet southwest of the current FTA (Figures 1.1 and 2.1). During the visit, the crash location could not be precisely identified, but a general area was presented to the PA installation visit team by the Malmstrom AFB Deputy Fire Chief, who was an initial responder to the crash. The general location is in a grassy area on the southwest side of the Base runway near the current FTA. The geographical coordinates are 47°29'47.35"N and 111°11'09.17"W.

Due to the small size of the jet and nature of the crash (nosedive), the debris field was limited to less than 1 acre (the aircraft made an impression in the ground on impact).

NTL Engineering and Geoscience, Inc. (NTL) prepared a Report of Site Remediation of Snow Bird Crash in September 2007 that details the remediation by Public Works and Government Services Canada. Only petroleum hydrocarbons were identified during post-crash sampling (NTL, 2007). Original satiates were 20 cubic yards of impacted soil from the crash. However, only 12.25 cubic yards were removed and placed in the soil farm also used for FT01 (NTL, 2007).

3.3.1.2 Waste Characteristics

Malmstrom AFB fire response vehicles were the first responders to the crash. Based on an interview with the Malmstrom AFB Deputy Fire Chief, who was one of the initial responders to the crash, a single truck, at most, was used to extinguish the flames, including 1,000 gallons of water and 30 gallons of AFFF foam (Dodson, 2015, personal communication; Appendix C). The incident report was not available at the time of this PA visit (the report was not in the activity logs at Base Civil Engineering). Cleanup efforts were managed by the Public Works and Government Services Canada.

3.3.1.3 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 (USEPA, 1989).

Database research (EDR, 2015) shows 53 day care facilities, 2 nursing home, 8 schools, 50 hospitals, and 2 colleges within the potential migration area of 4 miles from any potential PFC release location. Not included in the EDR report is one on-Base child care center and one on-Base youth center. The on-Base child care center is located approximately 7,080 feet hydrologically

upgradient of the crash location, and the on-Base child development center is located approximately 6,100 feet hydrologically upgradient of the crash location.

The remediation effort included soil excavation and land farming, and testing for petroleum constituents. AFFF was used in the initial crash response. Jet fuel-contaminated soils were removed from the crash location (disposal is unknown but possibly placed in the soil farm). These soils would have contained the bulk of the AFFF used. Because no testing was conducted to determine the extent of the PFC concentration in the surrounding soils, it is unknown if there is any AFFF-related contamination remaining at the location.

3.3.1.3.1 Groundwater Pathway and Targets

Drinking water for Malmstrom AFB is supplied by the City of Great Falls (Brown, 2015, personal communication; Appendix C). Malmstrom AFB has no water supply wells on-Base, with the nearest domestic well located within 2 mile downgradient of the Snow Bird crash but no information is readily available about the population served by this well (EDR, 2015). Perched groundwater is routinely encountered during excavations within 3 to 5 feet of the ground surface (Brown, 2015, personal communication; Appendix C). Therefore, dermal contact to contaminated shallow groundwater by workers in shallow excavations is a potential pathway. Approximately 25,320 people live within a 4-mile radius of Malmstrom AFB (EDR, 2015), most of whom receive drinking water from the City of Great Falls, which has an intake on the Missouri River approximately 8 miles upstream of the Base.

3.3.1.3.2 Surface Water Pathway and Targets

The crash location is in Watershed 7, which has no natural drainage pathway (Figure 1.2). A drainage channel just south of the crash location flows approximately 4,300 feet to the southeast where it flows into a wetland (within Watershed 7). Therefore, human dermal contact to contaminated surface water and ingestion by ecological receptors are potential pathways.

The City of Great Falls drinking water intake is approximately 8 miles upstream of Malmstrom AFB. The Missouri River is a source of municipal drinking water, drinking water for livestock, and irrigation water for agriculture along its 2,200-mile length downstream of Malmstrom AFB.

Rainbow Dam is located on the Missouri River approximately 1.2 miles upstream from the Malmstrom AFB outfall (Google Earth, 2015). Cochrane Dam is located approximately 2 miles downstream from Malmstrom AFB on the Missouri River (Google Earth, 2015). Local waterways are used for recreational fishing by residents of nearby communities; therefore, dermal exposure is likely. No environmentally sensitive areas are between Outfall 6 and the Missouri River, and the entire open channel flow path is through agricultural land.

The location is outside of a 500-year flood zone. The nearest body of water is the drainage wetland within Watershed 7, located 4,300 feet to the southeast of the location. USFWS on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are within 15 miles downstream from Malmstrom AFB. Approximately 4,300 feet downgradient from Outfall 6 is a wetland. Approximately 10,600 feet further downgradient is a second wetland near the confluence with the Missouri River (EDR, 2015).

3.3.1.3.3 Soil and Air Exposure Pathways and Targets

The crash location would be susceptible to infiltration of AFFF applied in the emergency response effort into the subsurface. This area has no residents or workers within 700 feet, but wetlands are located within 4 miles of the location. The vegetated area would preclude any fugitive dust emissions and potential exposures. Burrowing animals would have a potential for exposure.

The on-Base child care center is located approximately 6,300 feet northwest of the crash location, and the on-Base child development center is located approximately 4,450 feet north of the crash location.

3.4 OTHER

3.4.1 Building 1845 Missile Handling

3.4.1.1 Description and Operational History

Building 1845 is located on Malmstrom AFB. It is isolated on the southeast side of the Base with no other structures within 1,700 feet (Figures 1.1 and 2.1). The building is surrounded by paved/concrete parking areas, and an HDPE-lined evaporation pond is located 90 feet to the east. The geographical coordinates are 47°30'22.01"N and 111°10'26.04"W.

Building 1845 is a missile handling facility used to load missiles into transport trucks. The facility consists of a long drive-through bay with grated trench floor drains running down the middle of the concrete floor (photographs were not permitted inside the building bay). On the northwest side of the building is a mechanical room that contains a 400-gallon AFFF tank that was installed in 1993. AFFF is distributed from the mechanical room to a ceiling sprinkler system inside the bay. The system can isolate the AFFF and use water only for testing purposes. The drains in the bay floor drain to a lined evaporation pond on the southeast side of the building. The settling/evaporation pond measures 120 feet long by 38 feet wide by 2 feet deep.

Currently, the 400-gallon AFFF tank is leaking from two points due to aged (corroded) gaskets (photo in Appendix A). AFFF has leaked onto the floor at the base of the tank, but it appears it has not migrated outside the mechanical room based on visible staining of the concrete floor. Malmstrom AFB is currently working on repairing the tank but no dates for tank repair had been established at the time of this PA visit (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C).

3.4.1.2 Waste Characteristics

Building 1845 is equipped with a 400-gallon AFFF leaking storage tank located in the mechanical room with no evidence of release outside the room. Floor drains in the main bay capture fluids that drain onto the floor and discharge into a lined settling /evaporation pond 90 feet to the east. The only known release is the current slow leak from the AFFF tank due to corroded gaskets. Other than the leaking AFFF tank, there are no known AFFF discharges from the fire suppression system.

3.4.1.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.1.3.1 Groundwater Pathway and Targets

Not applicable.

3.4.1.3.2 Surface Water Pathway and Targets

Not applicable.

3.4.1.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.2 Building 434 – 90-Day Storage

3.4.2.1 Description and Operational History

Building 434 is a 90-day storage facility located on Malmstrom AFB (Figures 1.1 and 3.2). The location is an outside (uncovered) cement secondary containment with large metal storage containers and is surrounded on all sides by grassy fields. The geographical coordinates are 47°31'10.23"N and 111°10'51.48"W.

The facility is divided into two areas: the west side is for hazardous waste and the east side is for non-hazardous waste. Each storage box is an enclosed container approximately 8 feet wide by 20 feet long with ventilation, and the floor acts as a secondary containment. When AFFF waste is generated on Base, it is stored in the 90-day storage area inside a storage box on the non-hazardous waste side (Semana, 2015, personal communication; Appendix C). From the original generation date (listed on a label on the side of the storage container), the Base has 90 days to ship the container offsite for disposal. The AFFF waste can sit inside the storage box up to 90 days.

The 90-day storage area holds AFFF waste inside a waste containment box. No AFFF is used at this facility. There are no reported releases of AFFF wastes at the facility.

3.4.2.2 Waste Characteristics

Not applicable.

3.4.2.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.2.3.1 Groundwater Pathway and Targets

Not applicable.

3.4.2.3.2 Surface Water Pathway and Targets

Not applicable.

3.4.2.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.3 Building 1467 – Fuel Truck Storage

3.4.3.1 Description and Operational History

Building 1467 is located on Malmstrom AFB in an area surrounded by paved/concrete on all sides except for a small patch of grass on the southwest corner (Figures 1.1 and 3.1). The nearest structures in proximity to Building 1467 are Buildings 1464 and 1466, located just to the east. The geographical coordinates are 47°30'20.79"N and 111°11'48.00"W.

Building 1467 was constructed in 1993 to house Base fuel trucks and includes two bays. The fire suppression system inside Building 1467 consists of an approximate 300-gallon AFFF tank connected to a distribution system that pumps the AFFF and water mixture to the two bays through ceiling sprinklers. The bay floors have grated trench floor drains that drain into an OWS and then on to the City of Great Falls wastewater system.

3.4.3.2 Waste Characteristics

Historically, AFFF waste generated at Building 1467 included 3 percent AFFF from annual fire suppression testing. No AFFF has been used since the AFFF storage tank was removed in 2010 (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C). It is unknown how much AFFF was used prior to 2010. It is also unknown where and under what conditions any discharged AFFF was addressed.

A single 5-gallon AFFF spill was reported on January 30, 2008. This spill flowed into the wastewater drain while routine maintenance was being performed. The main pump was shut down and the City of Great Falls was notified immediately via telephone (Malmstrom AFB, 2008).

3.4.3.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.3.3.1 Groundwater Pathway and Targets

Not applicable

3.4.3.3.2 Surface Water Pathway and Targets

Not applicable

3.4.3.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.4 Building 1535 – Temporary Storage and Disposal Facility

3.4.4.1 Description and Operational History

Building 1535 is located on Malmstrom AFB along the northern facility boundary (Figures 1.1 and 3.2). The building is surrounded by paved/concrete on all sides. Buildings 1534 and 1536, located just to the west, are the nearest structures in proximity to Building 1535. The geographical coordinates are 47°31'16.47"N and 111°10'31.73"W.

Before shipment offsite, chemicals are transported to the Temporary Storage and Disposal Facility (TSDF), where they are temporarily held and loaded for shipment. The facility acts as a secondary containment facility with impervious concrete curbing in each of the segregated storage areas. Storage racks are used to temporarily store materials awaiting shipment.

When AFFF wastes are generated and are ready for shipment, they are transported to the TSDF (likely coming from the 90-day facility), where they are prepared and stored for shipment in a designated area inside the TSDF. At most, the TSDF would contain two 55-gallon drums of AFFF, typically expired AFFF or AFFF that does not meet the required specifications in their original manufacturer containers. No AFFF waste was contained within Building 1535 at the time of the facility inspection, and no spills or releases of AFFF wastes have been reported (Semana, 2015, personal communication; Appendix C).

AFFF waste is not generated at the TSDF, but it is temporarily stored onsite while awaiting shipment offsite. No spills or releases of AFFF wastes have been reported.

3.4.4.2 Waste Characteristics

Not applicable.

3.4.4.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.4.3.1 Groundwater Pathway and Targets

Not applicable.

3.4.4.3.2 Surface Water Pathway and Targets

Not applicable.

3.4.4.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.5 Building 410 – Base Supply

3.4.5.1 Description and Operational History

Building 410 is located on Malmstrom AFB and surrounded by paved/concrete to the north, east, and south, and a grassy area to the west (Figures 1.1 and 3.2). Building 407, located to the east, is the nearest structure in proximity to Building 410. The geographical coordinates are 47°31'08.99"N and 111°10'47.77"W.

Building 410 (Base Supply) holds a reserve amount of AFFF for the Fire Station in 5-gallon plastic containers from the manufacturer (similar to those shown in the Appendix A photo log for the Fire Station). Deputy Fire Chief Daniel Dodson estimated the total quantity stored in Base Supply at approximately 200 gallons (Dodson, 2015, personal communication; Appendix C). Access was not provided to Building 410 during the time of this PA visit.

Building 410 stores approximately 200 gallons of AFFF in 5-gallon plastic containers. No AFFF waste has ever been reported from the facility nor releases of any AFFF.

3.4.5.2 Waste Characteristics

Not applicable.

3.4.5.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.5.3.1 Groundwater Pathway and Targets

Not applicable.

3.4.5.3.2 Surface Water Pathway and Targets

Not applicable.

3.4.5.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.6 Jet Fuel Aboveground Storage Tanks

3.4.6.1 Description and Operational History

Five aboveground storage tanks (ASTs) are located at on Malmstrom AFB with attached fire suppression systems: two active ASTs are grouped together near Building 1467, and the three deactivated ASTs are located near Building 410 (Figures 1.1 and 3.2) as described below:

- ASTs 41100 and 41102: Active service in 1989 and deactivated in 1997; 1,050,000-gallon capacity of JP-8; each located near Building 410. The geographical coordinates are 47°31'04.39"N and 111°10'39.61"W.
- AST 41101: Active service in 1959 and deactivated in 1997; 475,000-gallon capacity of diesel fuel; located near Building 410. The geographical coordinates are 47°31'04.39"N and 111°10'39.61"W.
- ASTs 41120 and 41121: Active service in 1980 (remains in service); 210,000-gallon capacity jet fuel; located near Building 1467. The geographical coordinates are 47°30'19.03"N and 111°11'49.45"W.

The ASTs include secondary containment. Due to mission changes, ASTs 41100, 41102, and 41101 were deactivated in 1997.

The secondary containment for each of the five ASTs extends approximately 60 feet from the outside edge of the centrally located AST. The containments are lined with concrete and have sloped, exterior concrete walls that rise approximately 5 to 6 feet above the bottom of the containment. The secondary containment for the two ASTs located near Building 1467 are primarily surrounded by bare ground (unpaved). The three secondary containment areas near Building 410 are surrounded by a combination of bare ground to the northeast and paved surface to the southwest (Appendix A).

The fire suppression system for each of the five ASTs consists of an approximate 4-inch-diameter pipe that extends out from the secondary containment areas and dead ends at a locked fitting. Fire trucks and response vehicles can park near and connect a fire hose from the truck to the pipe end

and pump water/fire suppression foam through the pipe, which runs up the side of each AST and distributes across the top.

No recorded AFFF usage, spills or discharges have been associated with the five jet fuel ASTs.

3.4.6.2 Waste Characteristics

Not applicable.

3.4.6.3 Pathway and Environmental Hazard Assessment

Not applicable.

3.4.6.3.1 Groundwater Pathway and Targets

Not applicable.

3.4.6.3.2 Surface Water Pathway and Targets

Not applicable.

3.4.6.3.3 Soil and Air Exposure Pathways and Targets

Not applicable.

3.4.7 Outfall 1

3.4.7.1 Description and Operational History

Outfall 1 is located on the northern boundary of Malmstrom AFB and is the westernmost outfall. Outfall 1 is the discharge point for Watershed 1 (Figures 1.1, 2.1, and 3.1). Outfall 1 is a controlled stormwater discharge point that consists of a culvert structure and a valve (usually left open) that when closed will block the flow of surface water from exiting the Base. The culvert passes under a manmade dike, which when the valve is closed, allows for collection of surface water. Outfall 1 is surrounded by grasslands with the nearest residential structure 160 feet to the south. The geographical coordinates are 47°31'13.18"N and 111°11'09.17"W.

3.4.7.2 Waste Characteristics

As discussed in Section 3.1.1, on at least one occasion, AFFF generated from Hangar 1440 was pushed out onto the apron outside the hangar and allowed to dissipate (McLaughlin, 2015, personal communication; Appendix C). Drop inlet storm drains in the vicinity of the AFFF would collect the AFFF and convey to Outfall 1 where the water would exit the boundary of Malmstrom AFB.

3.4.7.3 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 (USEPA, 1989).

Database research (EDR, 2015) shows 53 day care facilities, 2 nursing home, 8 schools, 50 hospitals, and 2 colleges within the potential migration area of 4 miles from any potential PFC release location. Not included in the EDR report is one on-Base child care center and one on-Base youth center. The on-Base child care center is located approximately 3,700 feet hydrologically upgradient of Outfall 1, and the on-Base child development center is located approximately 2,400 feet hydrologically upgradient of Outfall 1.

3.4.7.3.1 Groundwater Pathway and Targets

Drinking water for Malmstrom AFB is supplied by the City of Great Falls (Brown, 2015, personal communication; Appendix C). Malmstrom AFB has no water supply wells on-Base, with the nearest domestic well located within 1 mile downgradient of Outfall 1, but no information is readily available about the population served by this well (EDR, 2015). Perched groundwater is routinely encountered during excavations within 3 to 5 feet of the ground surface (Brown, 2015, personal communication; Appendix C). Therefore, dermal contact to contaminated shallow groundwater by workers in shallow excavations is a potential pathway. Approximately 17,210 people live within a 4-mile radius of Malmstrom AFB (EDR, 2015), most of whom receive drinking water from the City of Great Falls, which has an intake on the Missouri River approximately 8 miles upstream of the Base.

3.4.7.3.2 Surface Water Pathway and Targets

From Outfall 1, surface water flows through an open channel approximately 1.6 miles, where it discharges into the Missouri River. Therefore, human dermal contact to contaminated surface water and ingestion by ecological receptors is a potential pathway.

The City of Great Falls drinking water intake is approximately 8 miles upstream of Malmstrom AFB. The Missouri River is a source of municipal drinking water, drinking water for livestock, and irrigation water for agriculture downstream of Malmstrom AFB.

Rainbow Dam is located on the Missouri River approximately 1.2 miles upstream from the Malmstrom AFB outfall (Google Earth, 2015). Cochrane Dam is located approximately 2 miles downstream from Malmstrom AFB on the Missouri River (Google Earth, 2015). Local waterways are used for recreational fishing by residents of nearby communities. No environmentally sensitive areas are between Outfall 1 and the Missouri River, and the entire open channel flow path is through agricultural land.

Outfall 1 is located outside of a 500-year flood zone. USFWS on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are within 15 miles downstream from Malmstrom AFB. Approximately 8,600 feet downgradient from Outfall 1 is a wetland near the confluence with the Missouri River (EDR, 2015).

3.4.7.3.3 Soil and Air Exposure Pathways and Targets

Historically, AFFF pushed out of Hangar 1440 and piled up on the apron to allow for evaporation and drainage into unprotected stormwater drop inlets that conveyed water to Outfall 1 (McLaughlin, 2015, personal communication; Appendix C). Residential housing is located approximately 160 feet to the south of Outfall 1. The on-Base child care center is located approximately 3,700 feet southwest of Outfall 1, and the on-Base child development center is located approximately 2,400 feet south of Outfall 1.

3.4.8 Outfall 3

3.4.8.1 Description and Operational History

Outfall 3 is located on the northern boundary of Malmstrom AFB and is the discharge point for Watershed 3 (Figures 1.1, 2.1, and 3.2). Outfall 3 is a controlled stormwater discharge point that consists of a culvert structure and a valve (usually left open) that when closed will block the flow of surface water from exiting the Base. The culvert passes under a manmade dike, which when the valve is closed, allows for collection of surface water. Outfall 3 is surrounded by grasslands and is 400 feet east of the nearest industrial building. The geographical coordinates are 47°31'17.96"N and 111°10'23.61"W.

3.4.8.2 Waste Characteristics

As discussed in Section 3.2.1, a 600-gallon AFFF mobile tank parked outside the Fire Station Building 349 was backed into in the late 1990s. The resulting tank rupture allowed all 600 gallons of AFFF to drain into a stormwater drop inlet approximately 10 feet way (Dodson, 2015, personal communication; Appendix C). In addition, routine spray testing of mobile fire response vehicles was conducted on the apron by Fire Station 349 and allowed to drain into nearby stormwater drop inlets (Dodson, 2015, personal communication; Appendix C). That drop inlet conveys water to Outfall 3 where the water would exit the boundary of Malmstrom AFB.

3.4.8.3 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 (USEPA, 1989).

Database research (EDR, 2015) shows 53 day care facilities, 2 nursing home, 8 schools, 50 hospitals, and 2 colleges within the potential migration area of 4 miles from any potential PFC release location. Not included in the EDR report is one on-Base child care center and one on-Base youth center. The on-Base child care center is located approximately 8,700 feet hydrologically upgradient of Outfall 3, and the on-Base child development center is located approximately 5,170 feet hydrologically upgradient of Outfall 3.

3.4.8.3.1 Groundwater Pathway and Targets

Drinking water for Malmstrom AFB is supplied by the City of Great Falls (Brown, 2015, personal communication; Appendix C). Malmstrom AFB has no water supply wells on Base, with the nearest domestic well located within 1 mile downgradient of Outfall 3, but no information is readily available about the population served by this well (EDR, 2015). Perched groundwater is routinely encountered during excavations within 3 to 5 feet of the ground surface (Brown, 2015, personal communication; Appendix C). Therefore, dermal contact to contaminated shallow groundwater by workers in shallow excavations is a potential pathway. Approximately 17,210 people live within a 4-mile radius of Malmstrom AFB (EDR, 2015), most of whom receive

drinking water from the City of Great Falls, which has an intake on the Missouri River approximately 8 miles upstream of the Base.

3.4.8.3.2 Surface Water Pathway and Targets

From Outfall 3, surface water flows through an open channel approximately 1.5 miles where it discharges into the Missouri River. Therefore, human dermal contact to contaminated surface water and ingestion by ecological receptors are potential pathways.

The City of Great Falls drinking water intake is approximately 8 miles upstream of Malmstrom AFB. The Missouri River is a source of municipal drinking water, drinking water for livestock, and irrigation water for agriculture along its 2,200-mile length downstream of Malmstrom AFB.

Rainbow Dam is located on the Missouri River approximately 1.2 miles upstream from the Malmstrom AFB outfall (Google Earth, 2015). Cochrane Dam is located approximately 2 miles downstream from Malmstrom AFB on the Missouri River (Google Earth, 2015). Local waterways are used for recreational fishing by residents of nearby communities; therefore, dermal exposure is likely. No environmentally sensitive areas are between Outfall 6 and the Missouri River, and the entire open channel flow path is through agricultural land.

Outfall 3 is located outside of a 500-year flood zone. USFWS on-line data indicate that the nearest federal fishery is located approximately 135 miles east (upstream) of Malmstrom AFB near Kalispell, Montana (USFWS, 2015). However, the Giant Springs State Park and Fish Hatchery (state) is located approximately 2.25 miles east (upstream) of Malmstrom AFB. No fisheries are within 15 miles downstream from Malmstrom AFB. Approximately 8,700 feet downgradient from Outfall 3 is a wetland near the confluence with the Missouri River (EDR, 2015).

3.4.8.3.3 Soil and Air Exposure Pathways and Targets

The 600-gallon AFFF spill occurring outside the Fire Station Building 349 in the late 1990s as well as the fire response vehicle spray testing drained into a stormwater drop inlet that conveyed water to Outfall 3 (Dodson, 2015, personal communication; Appendix C). The nearest industrial building is located 400 feet to the west of Outfall 3. The on-Base child care center is located approximately 8,700 feet southwest of Outfall 3, and the on-Base child development center is located approximately 5,170 feet south of Outfall 3.

FIGURES

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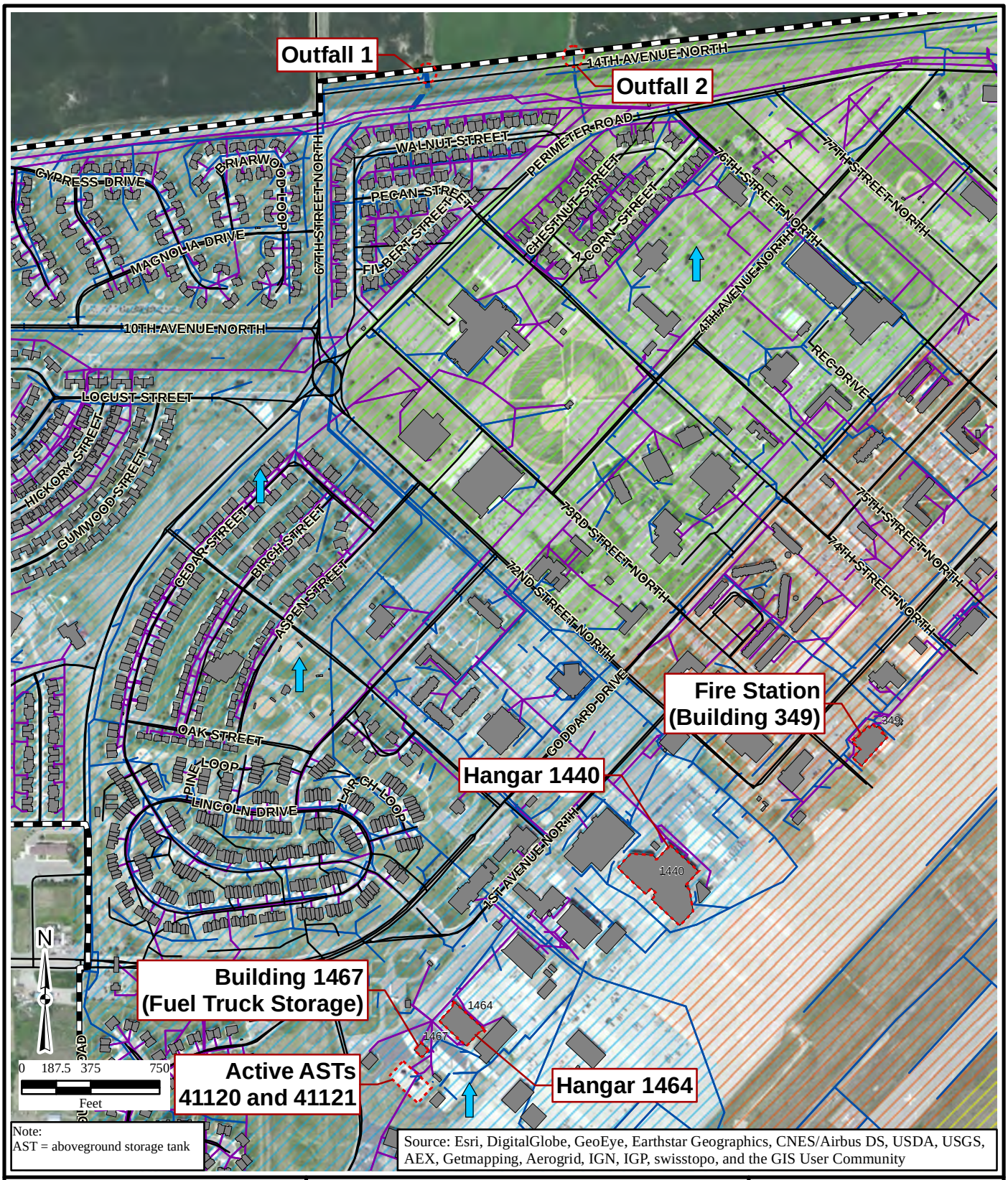

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4/27/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C. http://www.fws.gov/wetlands/

CH2MHILL

Legend

- Approximate Uppermost, Shallow Groundwater Flow Direction
- Stormwater Drainage Line
- Wastewater Line
- Industrial Wastewater Line
- Road
- Approximate Location
- Base Boundary
- Building

Watershed

- 1
- 2
- 3
- 6

Figure 3.1 Locations Identified in the Northwestern Part of Malmstrom AFB, Montana

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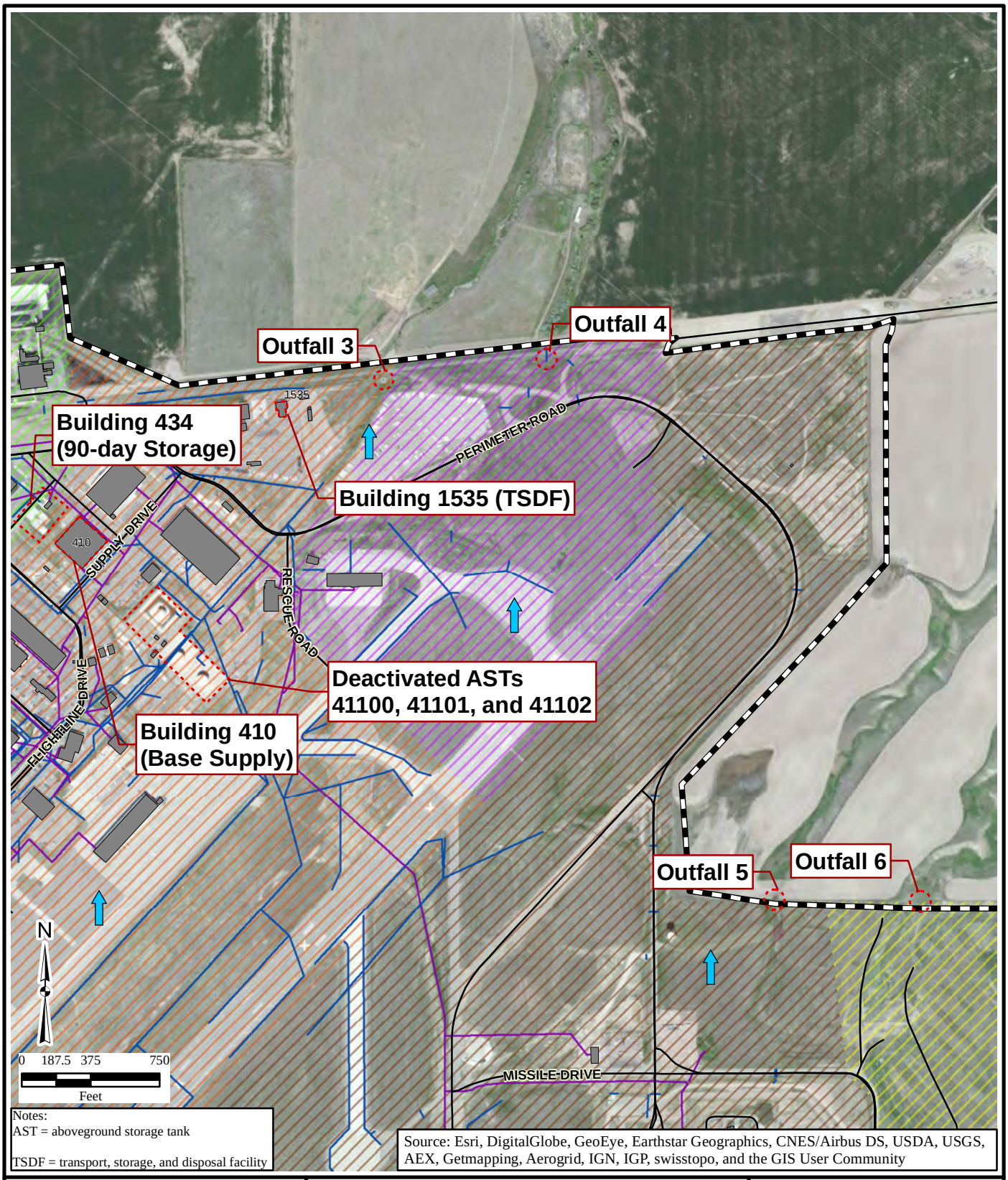

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4/27/2015 AR
Source: Wetland, National Wetlands Inventory - Wetland Polygons, Published September 2012, U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation, Washington, D.C. http://www.fws.gov/wetlands/

CH2MHILL

Legend

- Approximate Uppermost, Shallow Groundwater Flow Direction
- Stormwater Drainage Line
- Wastewater Line
- Industrial Wastewater Line
- Road
- Approximate Location
- Base Boundary
- Building

Wetland
- Freshwater Emergent Wetland

Watershed
- 2
- 3
- 4
- 5
- 6

Figure 3.2 Locations Identified in the Northern Part of Malmstrom AFB, Montana

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4.0 SUMMARY AND CONCLUSIONS

4.1 SUMMARY

4.1.1 Fire Training Areas

4.1.1.1 FT01 and Soil Farm

FT01, a former FTA with a 30-year history of operation, was remediated in 1997. The unlined FTA had a history of leaded fuel use along with firefighting activities, including the use of AFFF. Although the soils have been removed as part of the 1997 remedial activity, no sampling was performed for PFCs.

4.1.1.2 Current Fire Training Area

Constructed in the early 1990s, this new FTA uses a HDPE-lined fire training pit and a lined retention pond that are connected in an isolated system. The engineered construction and operation of the current FTA are such that the possibility of release of AFFF/PFCs to the environment is minimal.

4.1.2 Non-Fire Training Areas

4.1.2.1 Building 349 – Fire Station

The fire station has been in operation throughout the history of the Base and has housed a number of response vehicles that contained AFFF. A vehicle wash rack is located inside one of the bays connected to the building, which drains to an OWS. A 600-gallon spill, which drained into a nearby stormwater system, occurred in the late 1990s. Nozzle spray testing occurred adjacent to the fire station on paved areas that also drained to the stormwater system. The stormwater system conveys water to Outfall 3.

4.1.2.2 Hangar 1440

Hangar 1440, a three-bay hangar, historically supplied AFFF fire suppression to all three bays, but currently has the capability to supply AFFF to only Bay 3. A 1,500-gallon AFFF tank is currently located inside the mechanical room, but the use of AFFF has been limited to less than 300 gallons since 2007. Based on an interviews, after a discharge of AFFF (testing the fire suppression system), the AFFF would be pushed outside to evaporate and drain into the stormwater system that discharges to Outfall 1 (McLaughlin, 2015, personal communication; Appendix C). Discharges within the building are contained in engineered systems and conveyed to the City of Great Falls wastewater system.

4.1.2.3 Hangar 1464

Hangar 1464 previously had an AFFF system that was removed in 2010. No discharges or releases were documented or identified during personnel interviews.

4.1.2.4 Building 1467

Building 1467 is a two-bay building used to house fuel trucks. The current fire suppression system includes a 300-gallon AFFF tank located in the mechanical room. A single spill of 5 gallons of AFFF was reported in 2008, which reached the wastewater system. The City of Great Falls was notified (Malmstrom, 2008).

4.1.2.5 Building 1845

Building 1845, a single-bay facility used to support missile loading and unloading, is located in an isolated portion of the south side of Malmstrom AFB. The current fire suppression system includes a leaking 400-gallon AFFF tank located in the mechanical room Civil Engineering (CE) personnel are planning to repair the tank under Work Order 1758 to stop the leak (Groux, 2015, personal communication; Appendix C; Hester, 2015, personal communication; Appendix C). There are no signs of AFFF escaping the mechanical room. Any liquids that flow into the bay floor drains collect in a HDPE-lined settling/evaporation pond to the east.

4.1.2.6 Building 434 – 90-day Storage

Building 434 is an outside facility that is completely surrounded by secondary containment used to store chemical waste for no more than 90 days while the chemical waste is characterized and waiting to be shipped for disposal. AFFF waste is stored on the east side with non-hazardous wastes. No AFFF-related spills or releases have been reported.

4.1.2.7 Building 1535 – Treatment, Storage, and Disposal Facility

Building 1535 is a TSDF used to temporarily store and ship waste materials, including AFFF waste, offsite for disposal. No AFFF spills or releases have been reported.

4.1.2.8 Building 410 – Base Supply

Building 410 is a Base Supply facility that stores up to 200 gallons of AFFF for backup purposes. No AFFF spills or releases have been reported.

4.1.2.9 Jet Fuel Aboveground Storage Tanks with Individual Fire Suppression Systems

Five jet fuel ASTs are located on Base: three are located near Building 410 and two are located near Hangar 1464. Each is equipped with a fire suppression system that response vehicles can plug into to deliver AFFF. Each tank is located within a secondary containment. No AFFF usage or discharges have been reported.

4.1.2.10 Canadian Forces Snowbirds CT-117 Crash

While practicing for an air show, Canadian Forces Snowbirds Air Demonstration jet crashed near the current FTA. Base response included a single firefighting truck containing 30 gallons of AFFF. Remediation was managed by the Royal Canadian Air Force (RCAF) (Brown, 2015, personal communication; Appendix C). Based on an interview with the Restoration Program Manager,

some soil excavation and offsite disposal was conducted, but no sampling was performed for PFCs (Brown, 2015, personal communication; Appendix C).

4.1.2.11 Outfall 1

Outfall 1 is the discharge point for Watershed 1 and includes Hangar 1440, which historically pushed AFFF outside onto the apron where the AFFF was allowed to dissipate and drain into stormwater drop inlets nearby (McLaughlin, 2015, personal communication; Appendix C).

4.1.2.12 Outfall 3

Outfall 3 is the discharge point for Watershed 3 and Fire Station Building 349, which had a 600-gallon AFFF spill in the late 1990s when an AFFF trailer parked outside was backed into, causing the entire contents to drain into a nearby stormwater drop inlet (Dodson, 2015, personal communication; Appendix C). Outfall 3 also conducted routine fire response vehicle spray testing on the apron outside Fire Station Building 349, which drained into stormwater drop inlets (Dodson, 2015, personal communication; Appendix C).

4.2 CONCLUSIONS

Table 4.1 summarizes the findings from this PA Report and presents possible future location management decisions. The identified locations are categorized by group 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.

Recommendations are provided in Table 4.1, based on the group designation and rationale for each location. In accordance with the USEPA CERCLA Preliminary Assessment and Site Inspection (SI) guidance documents (USEPA, 1991; USEPA, 1992), each identified location is recommended for one of the following actions: Implement removal action due to imminent threat; Close out due to no release; Initiate a Remedial Investigation (RI); or Initiate an SI.

- Removal actions, 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).
- Close out or no further remedial action planned 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
Malmstrom Air Force Base, Montana

Locations	Group	Rationale	Recommendation
FT01 (Historical FTA)	Group 1	• Known releases of AFFF on unlined fire training pit. • Unknown quantity of AFFF used.	Initiate SI.
Current FTA	Group 3	• Current, engineered, lined fire training area. Known use of AFFF within confines of FTA that drains to lined retention pond.	Close out with no additional investigation.
Hangar 1440	Group 4	• Pushed AFFF foam onto apron surface drainage into stormwater system. • Ultimate discharge at Outfall 1.	Close out with no additional investigation.
Hangar 1464	Group 4	• No AFFF waste releases reported.	Close out with no additional investigation.
Fire Station (Building 349)	Group 4	• Known spill of AFFF into stormwater system. • Ultimate discharge at Outfall 3.	Close out with no additional investigation.
Canadian Snowbirds CT-117 Crash	Group 3	• Used AFFF in response, with some soil excavation and removal; no sampling for PFCs as part of remediation.	Initiate SI.
Building 1845 (Missile Handling)	Group 3	• Leaking AFFF tank inside mechanical room; low volume not released outside of mechanical room. • No other known AFFF releases.	Close out with no additional investigation.
Building 434 (90-Day Storage)	Group 4	• Containerized storage of AFFF waste. • No AFFF waste releases.	Close out with no additional investigation.
Building 1467 (Fuel Truck Storage)	Group 4	• No AFFF waste releases reported.	Close out with no additional investigation.
Building 1535 (TSDF)	Group 4	• Containerized temporary storage of AFFF waste. • No AFFF waste releases.	Close out with no additional investigation.
Building 410 (Base Supply)	Group 4	• Storage of containerized AFFF. • No AFFF releases.	Close out with no additional investigation.
ASTs	Group 4	• Fire suppression systems tested only with water. • No AFFF releases.	Close out with no additional investigation.
Outfall 1	Group 2	• AFFF discharges from Hangar 1440.	Initiate SI.
Outfall 3	Group 2	• AFFF discharges from Fire Station 349.	Initiate SI.

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APPENDIX A

PHOTO DOCUMENTATION

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PHOTOGRAPH LOG
Malmstrom Air Force Base, Montana

Photo Number	Date and Time	Location	Direction	Description
01	2/3/15 @ 0951	Bldg. 349	Inside	SW Bay inside fire station
02	2/3/15 @ 0951	Bldg. 349	Inside	SW Bay wash rack
03	2/3/14 @ 0953	Bldg. 349	Inside	SW Bay wash rack drain
04	2/3/15 @ 0958	Bldg. 349	Inside	NE bay inside fire station
05	2/3/15 @ 0959	Bldg. 349	Inside	P34 Truck 1
06	2/3/15 @ 1003	Bldg. 349	Inside	P34 Truck 2
07	2/3/15 @ 1004	Bldg. 349	Inside	5-gallon AFFF solution
08	2/3/15 @ 1004	Bldg. 349	Inside	5-gallon AFFF solution
09	2/3/15 @ 1004	Bldg. 349	Inside	5-gallon Foam A
10	2/3/15 @ 1007	Bldg. 349	NW	600 gallon discharge into stormwater drain
11	2/3/15 @ 1019	Near Fire Training Pit	NW	General location of the 2007 plane crash site and approximate location of Fire Training Pit 01 (FT 01). Snow on ground and poor mapping made it hard to identify exact locations.
12	2/3/15 @ 1024	Fire training pit	North	Current fire training pit (lined)
13	2/3/15 @ 1024	Fire training pit	North	Fire training pit drain
14	2/3/15 @ 1026	Fire training pit	West	Fire training pit water line
15	2/3/15 @ 1027	Fire training pit	NE	Fire training pit propane piping
16	2/3/15 @ 1028	Fire training retention pond	West	Fire training lined retention pond (isolated system with pit)
17	2/3/15 @ 1028	Fire training retention pond	West	Fire training lined retention pond
18	2/3/15 @ 1029	Fire training retention pond	North	Pond discharge point
19	2/3/15 @ 1029	Fire training retention pond	North	Pond discharge point
20	2/3/15 @ 1035	Landfarm	South	Landfarm with stockpiled soils
21	2/3/15 @ 1039	Outfalls 5 and 6	NE	Outfall 6 (further away) and Outfall 5 (closer)
22	2/3/15 @ 1039	Outfalls 5 and 6	NE	Outfall 6 (further away) and Outfall 5 (closer)
23	2/3/15 @ 1045	Outfall 4	North	Outfall 4 structure
24	2/3/15 @ 1045	Outfall 4	North	Outfall 4 structure
25	2/3/15 @ 1046	Outfall 4	North	Inside outfall 4 structure (drain)
26	2/3/15 @ 1046	Outfall 4	North	Outfall 4 drainage path to the north
27	2/3/15 @ 1047	Outfall 4	West	Monitoring wells to the west (between Outfall 3 and 4)
28	2/3/15 @ 1048	Outfall 4	East	Outfall 4 structure
29	2/3/15 @ 1050	Outfall 3	West	Outfall 3 structure
30	2/3/15 @ 1051	Outfall 3	SW	Outfall 3 structure and drainage pathway (wetlands)
31	2/3/15 @ 1051	Outfall 3	SW	Outfall 3 structure and drainage pathway (wetlands)
32	2/3/15 @ 1051	Outfall 3	North	Drainage north from Outfall 3
33	2/3/15 @ 1057	Outfall 2	North	Outfall 2 structure

PHOTOGRAPH LOG
Malmstrom Air Force Base, Montana

Photo Number	Date and Time	Location	Direction	Description
34	2/3/15 @ 1058	Outfall 2	North	Outfall 2 structure
35	2/3/15 @ 1059	Outfall 2	North	Outfall drainage off Base to north
36	2/3/15 @ 1102	Outfall 1	West	Drainage
37	2/3/15 @ 1102	Outfall 1	West	Drainage
38	2/3/15 @ 1102	Outfall 1	North	Outfall structure
39	2/3/15 @ 1103	Outfall 1	North	Outfall structure
40	2/3/15 @ 1103	Outfall 1	North	Outfall drainage off Base to north
41	2/4/15 @ 0818	Bldg. 1440	Mech Room	1,500 gallon AFFF tank
42	2/4/15 @ 0821	Bldg. 1440	Mech Room	AFFF distribution system
43	2/4/15 @ 0821	Bldg. 1440	Mech Room	AFFF distribution system
44	2/4/15 @ 0821	Bldg. 1440	Mech Room	AFFF control box
45	2/4/15 @ 0833	Bldg. 1440	Bay 4	Fire suppression cannon
46	2/4/15 @ 0834	Bldg. 1440	Bay 4	Fire suppression cannon
47	2/4/15 @ 0834	Bldg. 1440	Bay 4	Fire suppression ceiling sprinklers
48	2/4/15 @ 1310	Bldg. 1440	Outside	Oil-water separator (under covered smoking area)
49	2/4/15 @ 0852	Bldg. 1467	Mech Room	300-gallon AFFF tank
50	2/4/15 @ 0925	Bldg. 1845	Mech Room	Leaking 400-gallon AFFF
51	2/4/15 @ 0925	Bldg. 1845	Mech Room	Leaking 400-gallon AFFF
52	2/4/15 @ 0926	Bldg. 1845	Mech Room	Leaking 400-gallon AFFF faceplate
53	2/4/15 @ 0933	Bldg. 1845	Storage Pond	Lined evaporative pond outside 1845
54	2/4/15 @ 1249	Bldg. 434	90-Day	Haz waste side of 90-day storage
55	2/4/15 @ 1250	Bldg. 434	90-Day	Inside locker for AFFF disposal at 90-day storage facility
56	2/4/15 @ 1252	Bldg. 434	90-Day	Non-haz waste side of 90-day storage facility
57	2/4/15 @ 1256	Bldg. 1535	TSDF	Inside temporary storage bay
58	2/4/15 @ 1300	Bldg. 1535	TSDF	TSDF Building
59	2/4/15 @ 0859	Fuel Tanks	East	Jet A fuel tank fire system piping (2x)
60	2/4/15 @ 0859	Fuel Tanks	East	Jet A fuel tank fire system piping (2x)
61	2/4/15 @ 0900	Fuel Tanks	East	Jet A fuel tank fire system piping (2x)
62	2/4/15 @ 0947	Fuel Tanks	West	Deactivated Jet A fuel tank (3x)

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Photo 13

Photo 14

Photo 15

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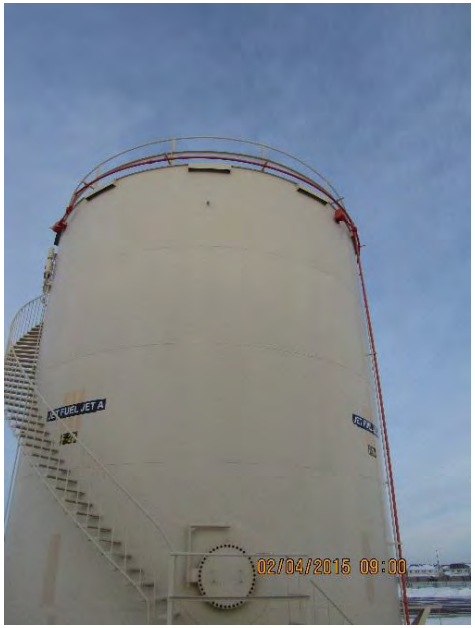

Photo 61

Photo 62

APPENDIX B

FIELD DOCUMENTATION

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APPENDIX B.1

POTENTIAL HAZARDOUS WASTE SITE FORMS

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OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB FIRE TRAINING PIT (FTA)

Street Address: 21 77TH STREET N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47 ° 29 . 50.38 Longitude: 111 ° 10 . 57.98

Approximate Area of Site: _____ Acres; 16800 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.) (NATIVE)

2. Owner/Operator Information

Owner: DEPARTMENT OF DEFENSE

Street Address: 21 77TH STREET N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: U.S. AIR FORCE

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/19/2015

Street Address: 322 EAST FRONT ST SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1960s
Ending Year 1997
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
4,456 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☑ Landfill	147 YD^3	
☐ Surface Impoundment		
☐ Drums		
☐ Tanks and Non-Drum Containers		
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☑ Land Treatment	1853 YD^3	
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other _____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Pesticides/Herbicides
- ☑ Organics
- ☐ Acids/Bases
- ☐ Inorganics
- ☑ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☑ Other PFCs
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☑ Solid
- ☐ Sludge
- ☐ Powder
- ☐ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [x] Yes
- [ ] No

If Yes, Enter Primary Target Population:
~~2~~ 2000 People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [x] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3472
>1 - 2 Miles	~~34~~ 3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
3400 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [x] Yes
- [ ] No

If Yes, Enter Population Served by Primary Target Intakes:
50,000 People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [x] Yes
- [ ] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☒ Yes
☐ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☒ Yes
☐ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:

10. Air Pathway

Is There a Suspected Release to Air:
☒ Yes
☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3472
> ½ - 1 Mile	~~3734~~
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	NONE
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name	Street Address
MALMSTROM AFB FIRE TRAINING PIT	21 77TH STREET N BLDG 500 RM 151A

City	State	Zip Code	County	Co. Code	Cong. Dist.
GREAT FALLS	MT	59402	CASCADE		

Latitude: 47 ° 30 ' 04.06 " Longitude: 111 ° 10 ' 57.46 "

Approximate Area of Site: _____ Acres; 118,000 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner	Operator
U.S. DoD / MALMSTROM AFB	MALMSTROM AFB
Street Address: 21 77TH STREET N BLDG 500 RM 151A	Street Address:
City: GREAT FALLS	City:
State: MT Zip Code: 59402 Telephone: ( )	State: Zip Code: Telephone: ( )

Type of Ownership:
☐ Private
☒ Federal Agency Name DOD
☐ State
☐ Indian
☐ County
☐ Municipal
☐ Not Specified
☐ Other

How Initially Identified:
☐ Citizen Complaint
☐ PA Petition
☐ State/Local Program
☐ RCRA/CERCLA Notification
☐ Federal Program
☐ Incidental
☐ Not Specified
☒ Other

3. Site Evaluator Information

Name of Evaluator	Agency/Organization	Date Prepared
MICHAEL WIRTZ	CH2M HILL	2/19/2015

Street Address	City	State
~~3050~~ 322 EAST FRONT ST SUITE 200	BOISE	ID

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 Reconnmendation	Signature
☐ Yes ☐ No Date: _____	☐ Higher Priority SI ☐ Lower Priority SI ☐ NFRAP ☐ RCRA ☐ Other _____ Date: _____	Name (typed): Position:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1990
Ending Year ACTIVE
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
5100 Feet
YOUTH CENTER

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☐ Tanks and Non-Drum Containers		
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other_____		
☒ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Organics
- ☐ Inorganics
- ☐ Solvents
- ☐ Paints/Pigments
- ☐ Pesticides/Herbicides
- ☐ Acids/Bases
- ☐ Oily Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☐ Other_____
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☐ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:

_____People

Depth to Shallowest Aquifer:

_____ Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	6
>¼ - ½ Mile	6
>½ - 1 Mile	3472
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:

3,070 Feet

_____ Miles

Is There a Suspected Release to Surface Water:
- [ ] Yes
- [x] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
☒ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3422
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BUILDING 1440

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 30' 29.83" Longitude: 111° 11' 28.77"

Approximate Area of Site: _____ Acres; 108,100 Square Ft

Status of Site: ☑ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: U.S. DOD MALMSTROM AFB	Operator: MALMSTROM AFB
Street Address: 21 77TH ST N BLDG 500 RM 151A	Street Address:
City: GREAT FALLS	City:
State: MT	Zip Code: 59402	Telephone: ( )	State:	Zip Code:	Telephone: ( )

Type of Ownership:
☐ Private ☑ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☑ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/19/2015

Street Address: 322 EAST FRONT ST SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1993
Ending Year ACTIVE
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
1036 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☒ Tanks and Non-Drum Containers	1500 GAL	V
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other _____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Pesticides/Herbicides
- ☒ Organics
- ☐ Acids/Bases
- ☐ Inorganics
- ☐ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PFCs
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☒ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
4,620 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [x] Yes
- [ ] No

If Yes, Enter Population Served by Primary Target Intakes:
56000 People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:

10. Air Pathway

Is There a Suspected Release to Air:
☒ Yes
☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☐ Yes
☒ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BUILDING 1464	Street Address: 21 77TH ST N BLDG 500 RM 151A				
City: GREAT FALLS	State: MT	Zip Code: 59402	County: CASCADE	Co. Code:	Cong. Dist:
Latitude: 47 ° 30 ' 22.34 "	Longitude: 111 ° 11 ' 45.61 "	Approximate Area of Site: ____ Acres 27195 Square Ft		Status of Site: ☑ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)	

2. Owner/Operator Information

Owner: DOD / MALMSTROM AFB	Operator: MALMSTROM AFB
Street Address: 21 77TH ST N BLDG 500 RM 151A	Street Address:
City: GREAT FALLS	City:
State: MT Zip Code: 59402 Telephone: ( )	State: Zip Code: Telephone: ( )

Type of Ownership:
- ☐ Private
- ☑ Federal Agency Name DOD
- ☐ State
- ☐ Indian
- ☐ County
- ☐ Municipal
- ☐ Not Specified
- ☐ Other

How Initially Identified:
- ☐ Citizen Complaint
- ☐ PA Petition
- ☐ State/Local Program
- ☐ RCRA/CERCLA Notification
- ☐ Federal Program
- ☐ Incidental
- ☐ Not Specified
- ☑ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ	Agency/Organization: CH2M HILL	Date Prepared: 2/19/2015
Street Address: 322 E FRONT ST SUITE 200	City: BOISE	State: ID
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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1959
Ending Year ACTIVE
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
862 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☑ Tanks and Non-Drum Containers	500 GAL	V
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other _____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Pesticides/Herbicides
- ☑ Organics
- ☐ Acids/Bases
- ☐ Inorganics
- ☐ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☑ Other PFC
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☑ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
>¼ - ½ Mile	3472
>½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
4650 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [x] Yes
- [ ] No

If Yes, Enter Population Served by Primary Target Intakes:
60000 People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:

10. Air Pathway

Is There a Suspected Release to Air:
☒ Yes
☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	6
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BLDG 349

Street Address: 21 77TH STREET N BLDG 500 RM 151A

City: GREAT FALLS | State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47 ° 30 ' 32.40 Longitude: 111 ° 11 ' 12.30

Approximate Area of Site: _____ Acres 31500 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD / MALMSTROM AFB
Street Address: 21 77TH ST. N BLDG 500 RM 151A
City: GREAT FALLS
State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB
Street Address:
City:
State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST. SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1960s
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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
2200 Feet
DWELLING

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
■ Drums	200 GAL	✓
☐ Tanks and Non-Drum Containers		
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other_____		
☐ No Sources		

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

General Types 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

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:

_____ People

Depth to Shallowest Aquifer:

40 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	100
> ¼ - ½ Mile	0
> ½ - 1 Mile	~~34~~ 3372
>1 - 2 Miles	
>2 - 3 Miles	3734
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:

3970 Feet

_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
- ☐ Yes
- ■ No

Have Primary Target Wetlands Been Identified:
- ☐ Yes
- ■ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
- ☐ Yes
- ■ No

Have Primary Target Sensitive Environments Been Identified:
- ☐ Yes
- ■ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
- ☐ Yes
- ■ No

If Yes, Enter Total Resident Population:

_____ People

Number of Workers Onsite:
- ☐ None
- ■ 1 - 100
- ☐ 101 - 1,000
- ☐ >1,000

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 Environment:

_____

_____

10. Air Pathway

Is There a Suspected Release to Air:
- ■ Yes
- ☐ No

Enter Total Population on or Within:

Onsite	100
0 - ¼ Mile	0
> ¼ - ½ Mile	3372
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
- ■ Yes
- ☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
- ☐ Yes
- ■ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB AIRPLANE CRASH 2007

Street Address: 2177TH ST N BLDG 500 RM 151A

City: GREAT FALLS | State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47°30'08.26" Longitude: 111°11'04.08"

Approximate Area of Site: 1 Acres; ____ Square Ft

Status of Site: ☐ Active ☐ Not Specified ☒ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD / MALMSTROM AFB
Street Address: 2177TH ST N BLDG 500 RM 151A
City: GREAT FALLS
State: MT | Zip Code: 59462 | Telephone: ( )

Operator: MALMSTROM AFB
Street Address:
City:
State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☐ County
☒ Federal Agency ☐ Municipal
Name DOD ☐ Not Specified
☐ State ☐ Other____
☐ Indian

How Initially Identified:
☐ Citizen Complaint ☐ Federal Program
☐ PA Petition ☐ Incidental
☐ State/Local Program ☐ Not Specified
☐ RCRA/CERCLA Notification ☐ Other____

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 2007

Ending Year 2007

☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:

4000 Feet

DOD BUILDING

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☐ Tanks and Non-Drum Containers		
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☒ Contaminated Soil	30 GAL AFFF	✓
☒ Other AIRPLANE CRASH		
☐ No Sources		

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

General Types of Waste (check all that apply)

- ☐ Metals
- ☐ Pesticides/Herbicides
- ☒ Organics
- ☐ Acids/Bases
- ☒ Inorganics
- ☐ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PFC FOCUS
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):

- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☒ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3472
>1 - 2 Miles	
>2 - 3 Miles	3794
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
3600 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:
_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
- ☐ Yes
- ☒ No

Have Primary Target Wetlands Been Identified:
- ☐ Yes
- ☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
- ☐ Yes
- ☒ No

Have Primary Target Sensitive Environments Been Identified:
- ☐ Yes
- ☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
- ☐ Yes
- ☒ No

If Yes, Enter Total Resident Population:

_____ People

Number of Workers Onsite:
- ☒ None
- ☐ 1 - 100
- ☐ 101 - 1,000
- ☐ >1,000

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 Environment:

_____

_____

10. Air Pathway

Is There a Suspected Release to Air:
- ☒ Yes
- ☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
>¼ - ½ Mile	3422
>½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
- ☒ Yes
- ☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
- ☐ Yes
- ☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
>¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BLDG 1845

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47°30'22.91" Longitude: 111°10'26.04"

Approximate Area of Site: _____ Acres; 7500 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DoD / MALMSTROM AFB 21 77TH ST N BLDG 500 RM 151A

Operator: MALMSTROM AFB

Street Address:

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator — State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DoD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/15

Street Address: 322 EAST FRONT ST. SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 _____
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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
669 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☒ Tanks and Non-Drum Containers	400 GAL	
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other _____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☒ Organics
- ☐ Inorganics
- ☐ Solvents
- ☐ Paints/Pigments
- ☐ Pesticides/Herbicides
- ☐ Acids/Bases
- ☐ Oily Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PPCs
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☒ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:

_____ People

Depth to Shallowest Aquifer:

40 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	6
> ¼ - ½ Mile	0
> ½ - 1 Mile	3472
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:

_____ Feet

1676 Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
- ☐ Yes
- ☒ No

Have Primary Target Wetlands Been Identified:
- ☐ Yes
- ☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
- ☐ Yes
- ☒ No

Have Primary Target Sensitive Environments Been Identified:
- ☐ Yes
- ☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
- ☐ Yes
- ☒ No

If Yes, Enter Total Resident Population:

_____ People

Number of Workers Onsite:
- ☐ None
- ☒ 1 - 100
- ☐ 101 - 1,000
- ☐ >1,000

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 Environment:

10. Air Pathway

Is There a Suspected Release to Air:
- ☒ Yes
- ☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
- ☒ Yes
- ☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
- ☐ Yes
- ☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BLDG 44434 (90-DAY STORAGE)

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 31' 10.23" Longitude: 111° 10' 51.48"

Approximate Area of Site: _____ Acres 8000 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD MALMSTROM AFB

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST. SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 _____
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 (e.g., pesticides, fertilizers)
  - ☒ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink) (HW)
  - ☐ 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"
- ☐ Not 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:
2300 Feet
DWELLING

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☒ Drums	VARIES	
☒ Tanks and Non-Drum Containers	VARIES	
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☒ Other HAZ WASTE	VARIES	
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☒ Organics
- ☒ Inorganics
- ☐ Solvents
- ☐ Paints/Pigments
- ☒ Pesticides/Herbicides
- ☒ Acids/Bases
- ☒ Oily Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PFC
- ☐ Construction/Demolition Waste
- HAZ WASTE

Physical State of Waste as Deposited (check all that apply):
- ☒ Solid
- ☒ Sludge
- ☒ Powder
- ☒ Liquid
- ☒ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:

_____ People

Depth to Shallowest Aquifer:

2012 (MW) Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	200
> ½ - 1 Mile	3272
>1 - 2 Miles	
>2 - 3 Miles	3734
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:

2000 Feet

_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
☒ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3422
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM APB BUILDING 1467

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 30' 20.79" Longitude: 111° 11' 48.00"

Approximate Area of Site: _____ Acres; 4400 Square Ft

Status of Site: ☒ Active ☐ Inactive ☐ Not Specified ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: U.S. DOD/MALMSTROM APB

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/19/2015

Street Address: 322 E FRONT ST SUITE 200 | City: BOISE | State: ID

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:

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1993
Ending Year ACTIVE
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
860 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☑ Tanks and Non-Drum Containers	300 Gal	✓
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other _____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Pesticides/Herbicides
- ☑ Organics
- ☐ Acids/Bases
- ☐ Inorganics
- ☐ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☑ Other PFCs
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☑ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3472
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	~~29759~~ 22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
5300 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [ ] Yes
- [x] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [x] Yes
- [ ] No

If Yes, Enter Population Served by Primary Target Intakes:
56000 People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☑ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☑ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☑ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☑ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☑ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☑ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____

10. Air Pathway

Is There a Suspected Release to Air:
☑ Yes
☐ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	6
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☑ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☑ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BLDG 1535 (TSDF)

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 31' 08.3" Longitude: 111° 16' 47.73" 10 04 08

Approximate Area of Site: _____ Acres; 5720 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DoD/MALMSTROM AFB

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☐ County
☒ Federal Agency ☐ Municipal
Name DOD ☐ Not Specified
☐ State ☐ Other
☐ Indian

How Initially Identified:
☐ Citizen Complaint ☐ Federal Program
☐ PA Petition ☐ Incidental
☐ State/Local Program ☐ Not Specified
☐ RCRA/CERCLA Notification ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ

Agency/Organization: CH2M HILL

Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST SUITE 200

City: BOISE

State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 _____
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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
3724 Feet
DWELLING

6. Waste Characteristics Information

Source Type (check all that apply)	Source Waste Quantity (include units)	Tier*
☐ Landfill		
☐ Surface Impoundment		
☒ Drums	VARIES	
☒ Tanks and Non-Drum Containers	VARIES	
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☒ Other HAZ WASTE	VARIES	
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☒ Organics
- ☒ Inorganics
- ☐ Solvents
- ☐ Paints/Pigments
- ☒ Pesticides/Herbicides
- ☒ Acids/Bases
- ☒ Oily Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PFC HAZ WASTE
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☒ Solid
- ☒ Sludge
- ☒ Powder
- ☒ Liquid
- ☒ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:

_____ People

Depth to Shallowest Aquifer:

~~20~~ 12 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] > 0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3422
>1 - 2 Miles	
>2 - 3 Miles	3734
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:

540 Feet

_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] > 10 yr - 100 yr Floodplain
- [ ] > 100 yr - 500 yr Floodplain
- [x] > 500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____
_____

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
☒ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
>¼ - ½ Mile	3422
>½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22253
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
>¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB BUILDING 410

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47°31'08.99" Longitude: 111°10'47.77"

Approximate Area of Site: _____ Acres; 40000 Square Ft

Status of Site: ☒ Active ☐ Not Specified ☐ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD/MALMSTROM AFB

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WURTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST. SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 _____
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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
2400 Feet
DWELLING

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☒ Drums	200 GAL	✓
☐ Tanks and Non-Drum Containers		
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other		
☐ No Sources		

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

General Types 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 PCBs

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☒ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
~~12~~ 17 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	± 200
> ½ - 1 Mile	3272
>1 - 2 Miles	
>2 - 3 Miles	3734
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
1700 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:
_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☐ None
☒ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
☒ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
>¼ - ½ Mile	3422
>½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	29909

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
>¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB
TANKS 41100, 41101, 41102

Street Address: 21 77TH ST N
BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 31' 04.39" (05.52")

Longitude: 111° 10' 39.61" (44.88")

Approximate Area of Site: _____ Acres
81600 Square Ft

Status of Site:
☐ Active ☐ Not Specified
☒ Inactive ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD / MALMSTROM AFB

Street Address: 21 77TH ST N
BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: MALMSTROM AFB

Street Address:

City:

State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private
☒ Federal Agency — Name: DOD
☐ State
☐ Indian
☐ County
☐ Municipal
☐ Not Specified
☐ Other

How Initially Identified:
☐ Citizen Complaint
☐ PA Petition
☐ State/Local Program
☐ RCRA/CERCLA Notification
☐ Federal Program
☐ Incidental
☐ Not Specified
☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WEST

Agency/Organization: CH2M HILL

Date Prepared: 2/20/2015

Street Address: 322 EAST FRONT ST. SUITE 200

City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1959
Ending Year 1997
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
2900 Feet

6. Waste Characteristics Information

Source Type (check all that apply)	Source Waste Quantity (include units)	Tier*
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☑ Tanks and Non-Drum Containers	2575000GAL	✓
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other_____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☐ Pesticides/Herbicides
- ☑ Organics
- ☐ Acids/Bases
- ☑ Inorganics
- ☐ Oily Waste
- ☐ Solvents
- ☐ Municipal Waste
- ☐ Paints/Pigments
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☑ Other FUELS
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☑ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- [x] Yes
- [ ] No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- [ ] Municipal
- [x] Private
- [ ] None

Is There a Suspected Release to Ground Water:
- [ ] Yes
- [x] No

Have Primary Target Drinking Water Wells Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Primary Target Population:
_____ People

Depth to Shallowest Aquifer:
20 Feet

Karst Terrain/Aquifer Present:
- [ ] Yes
- [ ] No

Nearest Designated Wellhead Protection Area:
- [ ] Underlies Site
- [ ] >0 - 4 Miles
- [ ] None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3472
>1 - 2 Miles	
>2 - 3 Miles	3734
>3 - 4 Miles	22753
Total Within 4 Miles	29959

8. Surface Water Pathway

Type of Surface Water Draining Site and 15 Miles Downstream (check all that apply):
- [x] Stream
- [x] River
- [ ] Pond
- [ ] Lake
- [ ] Bay
- [ ] Ocean
- [ ] Other _____

Shortest Overland Distance From Any Source to Surface Water:
1700 Feet
_____ Miles

Is There a Suspected Release to Surface Water:
- [x] Yes
- [ ] No

Site is Located in:
- [ ] Annual - 10 yr Floodplain
- [ ] >10 yr - 100 yr Floodplain
- [ ] >100 yr - 500 yr Floodplain
- [x] >500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- [x] Yes
- [ ] No

Have Primary Target Drinking Water Intakes Been Identified:
- [ ] Yes
- [x] No

If Yes, Enter Population Served by Primary Target Intakes:
_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- [ ] Yes
- [x] No

Have Primary Target Fisheries Been Identified:
- [ ] Yes
- [x] No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
☒ No

Have Primary Target Wetlands Been Identified:
☐ Yes
☒ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
☒ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
☒ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
☒ None
☐ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
☒ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
> ¼ - ½ Mile	3472
> ½ - 1 Mile	
> 1 - 2 Miles	3734
> 2 - 3 Miles	
> 3 - 4 Miles	22753
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
☒ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
☒ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
> ¼ - ½ Mile	

OMB Approval Number: 2050-0095
Approved for Use Through: 1/92

EPA Potential Hazardous Waste Site Preliminary Assessment Form

Identification

State: | CERCLIS Number:

CERCLIS Discovery Date:

1. General Site Information

Name: MALMSTROM AFB TANKS 41120 & 41121

Street Address: 21 77TH ST N BLDG 500 RM 151A

City: GREAT FALLS

State: MT | Zip Code: 59402 | County: CASCADE | Co. Code: | Cong. Dist:

Latitude: 47° 30' 04.39" Longitude: 111° 10' 39.61"

Approximate Area of Site: _____ Acres 14400 Square Ft

Status of Site: ☒ Active ☐ Inactive ☐ Not Specified ☐ NA (GW plume, etc.)

2. Owner/Operator Information

Owner: DOD / MALMSTROM AFB 21 77TH ST N BLDG 500 RM 151A

Operator: MALMSTROM AFB

Street Address:

City: GREAT FALLS

State: MT | Zip Code: 59402 | Telephone: ( )

Operator: State: | Zip Code: | Telephone: ( )

Type of Ownership:
☐ Private ☒ Federal Agency Name DOD ☐ State ☐ Indian ☐ County ☐ Municipal ☐ Not Specified ☐ Other

How Initially Identified:
☐ Citizen Complaint ☐ PA Petition ☐ State/Local Program ☐ RCRA/CERCLA Notification ☐ Federal Program ☐ Incidental ☐ Not Specified ☒ Other

3. Site Evaluator Information

Name of Evaluator: MICHAEL WIRTZ | Agency/Organization: CH2M HILL | Date Prepared: 2/20/2005

Street Address: 322 EAST FRONT ST. SUITE 200 | City: BOISE | State: ID

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:

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 2 of 4

CERCLIS Number:

5. General Site Characteristics

Predominant Land Uses 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 1980
Ending Year ACTIVE
☐ 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 (e.g., pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products (e.g., adhesives, explosives, ink)
  - ☐ 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"
- ☐ Not 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:
723 Feet

6. Waste Characteristics Information

Source Type: (check all that apply)	Source Waste Quantity: (include units)	Tier*:
☐ Landfill		
☐ Surface Impoundment		
☐ Drums		
☒ Tanks and Non-Drum Containers	240,000 GAL x 3	V
☐ Chemical Waste Pile		
☐ Scrap Metal or Junk Pile		
☐ Tailings Pile		
☐ Trash Pile (open dump)		
☐ Land Treatment		
☐ Contaminated Ground Water Plume (unidentified source)		
☐ Contaminated Surface Water/Sediment (unidentified source)		
☐ Contaminated Soil		
☐ Other_____		
☐ No Sources		

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

General Types of Waste (check all that apply)
- ☐ Metals
- ☒ Organics
- ☐ Inorganics
- ☐ Solvents
- ☐ Paints/Pigments
- ☐ Pesticides/Herbicides
- ☐ Acids/Bases
- ☐ Oily Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Laboratory/Hospital Waste
- ☐ Explosives
- ☐ Radioactive Waste
- ☒ Other PFCs
- ☐ Construction/Demolition Waste

Physical State of Waste as Deposited (check all that apply):
- ☐ Solid
- ☐ Sludge
- ☐ Powder
- ☒ Liquid
- ☐ Gas

EPA **Potential Hazardous Waste Site**
Preliminary Assessment Form - Page 3 of 4

CERCLIS Number:

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles:
- ■ Yes
- ☐ No

Type of Drinking Water Wells Within 4 Miles (check all that apply):
- ☐ Municipal
- ■ Private
- ☐ None

Is There a Suspected Release to Ground Water:
- ☐ Yes
- ■ No

Have Primary Target Drinking Water Wells Been Identified:
- ☐ Yes
- ■ No

If Yes, Enter Primary Target Population:

_____ People

Depth to Shallowest Aquifer:

20 Feet

Karst Terrain/Aquifer Present:
- ☐ Yes
- ☐ No

Nearest Designated Wellhead Protection Area:
- ☐ Underlies Site
- ☐ > 0 - 4 Miles
- ☐ None Within 4 Miles

List Secondary Target Population Served by Ground Water Withdrawn From:

0 - ¼ Mile	0
> ¼ - ½ Mile	0
> ½ - 1 Mile	3492
>1 - 2 Miles	3734
>2 - 3 Miles	
>3 - 4 Miles	22753
Total Within 4 Miles	21959

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:

5510 Feet

_____ Miles

Is There a Suspected Release to Surface Water:
- ■ Yes
- ☐ No

Site is Located in:
- ☐ Annual - 10 yr Floodplain
- ☐ > 10 yr - 100 yr Floodplain
- ☐ > 100 yr - 500 yr Floodplain
- ■ > 500 yr Floodplain

Drinking Water Intakes Located Along the Surface Water Migration Path:
- ■ Yes
- ☐ No

Have Primary Target Drinking Water Intakes Been Identified:
- ☐ Yes
- ■ No

If Yes, Enter Population Served by Primary Target Intakes:

_____ People

List All Secondary Target Drinking Water Intakes:

Name	Water Body	Flow (cfs)	Population Served

Total within 15 Miles _____

Fisheries Located Along the Surface Water Migration Path:
- ☐ Yes
- ■ No

Have Primary Target Fisheries Been Identified:
- ☐ Yes
- ■ No

List All Secondary Target Fisheries:

Water Body/Fishery Name	Flow (cfs)

EPA Potential Hazardous Waste Site
Preliminary Assessment Form - Page 4 of 4

CERCLIS Number:

8. Surface Water Pathway (continued)

Wetlands Located Along the Surface Water Migration Path:
☐ Yes
■ No

Have Primary Target Wetlands Been Identified:
☐ Yes
■ No

List Secondary Target Wetlands:

Water Body	Flow (cfs)	Frontage Miles

Other Sensitive Environments Located Along the Surface Water Migration Path:
☐ Yes
■ No

Have Primary Target Sensitive Environments Been Identified:
☐ Yes
■ No

List Secondary Target Sensitive Environments:

Water Body	Flow (cfs)	Sensitive Environment Type

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination:
☐ Yes
■ No

If Yes, Enter Total Resident Population:
_____ People

Number of Workers Onsite:
■ None
☐ 1 - 100
☐ 101 - 1,000
☐ >1,000

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 Environment:
_____
_____

10. Air Pathway

Is There a Suspected Release to Air:
☐ Yes
■ No

Enter Total Population on or Within:

Onsite	0
0 - ¼ Mile	0
>¼ - ½ Mile	3422
>½ - 1 Mile	
>1 - 2 Miles	3734
>2 - 3 Miles	22753
>3 - 4 Miles	
Total Within 4 Miles	29959

Wetlands Located Within 4 Miles of the Site:
■ Yes
☐ No

Other Sensitive Environments Located Within 4 Miles of the Site:
☐ Yes
■ No

List All Sensitive Environments Within ½ Mile of the Site:

Distance	Sensitive Environment Type/Wetlands Area (acres)
Onsite	
0 - ¼ Mile	
>¼ - ½ Mile	

APPENDIX B.2

OTHER

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CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/3/2015

PROJECT NUMBER: SHEET 1 OF 1

KICKOFF MEETING

0900 - MEET WITH 8 REPRESENTATIVES
(SEE SIGN IN SHEET)

INTRODUCTIONS AND DESCRIBE PROJECT AND PURPOSE

- SET OF MEETINGS
  - TUESDAY AFTER M. KICKOFF MEET/ESCORT DANIEL DODSON / DEPUTY FIRE CHIEF
  - WEDNESDAY 08:00 - CURTIS HESTER 341 CES
    - BLDG 220 #731-6127
  - WEDNESDAY 13:00 LEO SEMANA
    - BLDGS 434 & 1535

WEATHER

FF 18°F LIGHT SNOW - SNOW ON GROUND

REV 11/01 FORM 3B

EMERGING CONTAMINANTS: PERFLORINATED COMPOUNDS
AFFF ASSESSMENT KICKOFF MEETING SIGN IN SHEET
3 Feb 15

NAME	DUTY SECTION	PHONE	EMAIL
MICHAEL WIRTZ	CIV CH2M HILL	208-383-6281	MIKE.WIRTZ@CH2M.COM
STEPHANIE GROUX	341 CES/CEOER	(406)731-7702	stephanie.groux@us.af.mil
Daniel DODSON	341CES/CEF	(406) 731-4103	daniel.dodson@us.af.mil
LEO SEMANA	341/CES/CEIE	731-6163	LEO.SEMANA@US.AF.MIL
JASON UNDERWOOD	~~CIV~~ 341 CES/CENME	731-7249	jason.underwood.3.CTR@us.af.mil
Rob Brown	CIV AFCEC/CZOM	731-7099	Robert.brown.124@us.af.mil
William Medema	341MW/AFO	7317034	william.medema1@us.af.mil
CURTIS HESTER	341 CES/CEOER	731-6127	CURTIS.HESTER.1@US.AF.MIL
JIM BEISEL	341 MOS	3355	JIM.BEISEL@US.AF.MIL

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: M. WURTZ DATE: 2/3/2015

PROJECT NUMBER: SHEET 1 OF 2

REVIEW OF FT-1 CORRECTIVE ACTION (1997)

- RFI BY IT DR FROM 1992 TO 1994
  - FINAL RFI IN 1995
  - MALMSTROM IRP (INSTALLATION RESTORATION PROGRAM) CONDUCTED RFI PHASE II IN 1995/1996
- FT-1
  - USED 30 YEARS
    - ALL TYPES OF FUELS INCLUDING AUTO AND AIRCRAFT (LEADED & UNLEADED) JET, KEROSEAN WERE BURNED
  - THREE MW; IN AREA
    - MW-03 (CONTAMINATED ZONE), MW-01, MW-02
    - CLAY LAYER AT ABOUT 5' BGS - 145' BGS
    - MW'S INSTALLED IN 1992 AS PART OF FIRST RFI
  - PETROLEUM REMEDIATION TECHNOLOGIES
    1) SOIL VAPOR EXTRACTION (SVE)
    2) BIOVENTING (BV)
    3) EXCAVATION & OFF SITE TREATMENT (LAND FARM)
    4) NATURAL ATTENUATION (NA)

NOTE: COCS IN RFI ARE LEAD AND PETROLEUM

PETROLEUM: BTEX, GRO, TPH, DRO, TEH

1992 (FALL) & SEP 1995

REV 11/01 FORM 3B

CH2MHILL

SUBJECT: MACMSTROM AFB

BY: WIRTZ DATE: 2/3/2015

PROJECT NUMBER: SHEET 2 OF 2

FINAL CORRECTIVE MEASURES IMPLEMENTATION 1998

- EXCAVATE 1853 YD^3 LANDFARMED
- 147 YD^3 HAULED OFF-SITE FOR DISPOSAL
- "SWMU FT-01" - FIRE TRAINING AREA NAME
  - REMOVE SOILS TO 1500 PPM LEAD
- AFTER CONFIRMATION SAMPLING, AREA WAS FILLED TO ORIGINAL GRADE FROM ON-SITE SOIL BORROW AND SEEDED

- FLIGHT OPS CEASED IN 1996

CH2MHILL

SUBJECT:

BY: WIRTZ DATE: 2/4/2015

PROJECT NUMBER: SHEET 1 OF 1

REVIEW OF RCRA CORRECTIVE MEASURES (CONTINUED)

CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN

- NOV ~~2007~~ 1997, FIRE TRAINING AREA
- REMOVED SOILS PLACEMENT DETERMINED PRIMARILY BY LEAD CONTENT
  - ≥ 1500 mg/kg (UNDISTURBED) goes to CLASS II LANDFILL
  - ≥ 400 mg/kg (EXCAVATED) goes to CLASS II LANDFILL
- PETROLEUM CONTENT

LAND FARM	NON HAZ WASTE
TPH = ≥ 100 mg/kg	TPH = < 100 mg/kg
BTEX = ≥ 10 mg/kg	BTEX = < 10 mg/kg
BENZENE = ≥ 1 mg/kg	BENZENE = < 1 mg/kg

REV 11/01 FORM 3B

CH2MHILL

SUBJECT: MACMSTROM AFB

BY: WIRT2 DATE: 2/4/2015

PROJECT NUMBER: SHEET 1 OF 1

REVIEW OF FEB 7, 1995 FINAL RCRA

- FT-01
  - INACTIVE SINCE ~~X~~ 1990
    - USED 2x PER MONTH FOR 30 YEARS
  - MOSTLY JP-4

BEDROCK IS EXPOSURE IN SOUTHERN BOUNDARY TO 200 FEET NE CORNER CLEMICE AND MAGHAN, 1977)

REV 11/01 FORM 3B

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/3/2015

PROJECT NUMBER: SHEET 1 OF 4

BASE FIRE DEPARTMENT

DANIEL DODSON - DEPUTY FIRE CHIEF

731-4103

DANIEL.DODSON@US.AF.MIL

341 CES/CEIE

RICK NALCARATO - ASSISTANT FIRE CHIEF, FIRE PREVENTION

731-4836

FIRE STATION - BLDG 349

NO ACTIVE AIRPLANES, SUPPORT HELICOPTER OPERATIONS

- REDUCED FIRE FIGHTING EQUIPMENT
  - FOAM TRUCKS INCLUDE TWO P34
    - 400 GAL H_2O, 50 GAL FOAM/56 GAL FOAM
  - HISTORICALLY HOUSED
    - P2 - 2300 GAL H_2O, 200 GAL FOAM
    - P4 - 1500 GAL H_2O, 180 GAL FOAM
    - P19 - 1000 GAL H_2O, 50 GAL FOAM
    - P8 - PUMPER TRUCK - 50 GAL FOAM
- TRUCKS WERE USUALLY STORED INSIDE, BUT COULD BE OUTSIDE ALONG RAMP IN SUMMER MONTHS
- TRUCK WASH IN ONE STALL. WOULD DRAIN INTO A FLOOR DRAIN THAT GOES TO OWS. OWS CONDITION IS UNKNOWN. CURRENT ~~SAF~~ STAFF HAVE NEVER SEEN IT OR HAD IT CLEANED OUT.
- WHEN TESTING TRUCKS WOULD MOSTLY SPRAY WATER
- AFFF IS STORED IN A BACK ROOM IN 5-GALLON CONTAINERS - APPROXIMATELY 220 GALLONS TOTAL AT TIME OF VISIT

FIRE STATION CONTINUED

- AFFF ALSO STORED AT BLDG 400 - BASE SUPPLY
  - APPROXIMATELY 200 GALLONS
- IN THE LATE 1990s A FOAM TRAILER (600 GAL) PARKED OFF THE SIDE OF BLDG 349 WAS BACKED INTO CAUSING THE TANK TO RUPTURE AND THE ENTIRE CONTENTS TO DRAIN INTO A NEARBY STORM DRAIN.
  - STORM DRAINS LEAD TO ONE OF FIVE OUTFALLS THAT LEAD TO MISSOURI RIVER ABOUT 1-MILE AWAY (NORTH)

FIRE TRAINING AREA FT-01

TOURED FT-01 INCLUDING WALKAROUND OF FIRE TRAINING PIT AND WATER RETENTION POND

- FIRE TRAINING PIT - BUILT AFTER RFI
- LINED WITH WATER PIPING AND DRAIN
  - WATER WAS PUMPED FROM RETENTION POND TO PIT. PROPANE IS PUMPED ~~FIT~~ THROUGH PARTIALLY SUBMERGED PIT (INCHES) TO ~~RESEMBLE~~ RESEMBLE ACTUAL FIRE
  - WATER THAN GRAVITY FEEDS BACK TO RETENTION POND (LINED POND)
  - WATER IN POND - FOAM FLOATS TO TOP TO EVAPORATE
- FOAM CAN READILY MIGRATE AWAY FROM LINED FIRE TRAINING PIT

FIRE TRAINING AREA CONTINUED

- MIGRATION BY OVERSPRAY, FOOT TRAFFIC
- RETENTION POND CAN BE CLOSED TO CREATE CLOSED SYSTEM WITH PIT

SOIL LANDFARM FROM FT-01 ~~REMEDY~~ FINAL ACTION

- SOIL WAS EXCAVATED FROM FT-01 AREA DURING 1997 REMEDIATION PROJECT
  - APPROX 1800 CUBIC YDS
  - SPRED OUT OVER OLD TAXIWAY

AIRCRAFT CRASH

- DURING PRACTICE FOR AIRSHOW (AROUND 2007) A CANADIAN JET (SNOW BIRD CT 117) CRASHED NEAR FT-01 AREA. FIRE DEPARTMENT RESPONDED. WAS A NOSE DIVE CRASH SO RELATIVELY SMALL AREA. WATER FOAM USED WAS AT MOST ONE TRUCK
  - 1,000 GAL H_2O
  - 30 GAL FOAM
- WILL NEED TO CHECK WITH ENVIRONMENTAL TOMORROW ABOUT FURTHER ACTIONS

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/3/2015

PROJECT NUMBER: SHEET 4 OF 4

~~OUTFALLS~~

THERE ARE 6 OUTFALLS. WAS ABLE TO VISUALLY ASSESS 4 OF THE OUTFALLS

- VISUALLY SAW OF-01 THROUGH OF-04
- SAW OF-05 & 06 FROM A HIGH POINT.

OUTFALLS 01 THROUGH 04 HAVE CONTROL STRUCTURES THAT CAN BE BLOCKED

- DRAIN INTO NATURAL DRAINAGE PATHWAYS THAT FLOW NORTH TO MISSOURI RIVER

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)?

2. What manufacturer's AFFF products are used on this installation (i.e. 3M, Ansul, Chemguard)? MILSPEC SO MULTIPLE MANUFACTURER

3. Where has the AFFF solution been handled (mixed, contained, transferred, etc.)? - FILLING TANKS

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? AFFF

5. Do you have an inventory of the amount of AFFF stored on the installation or present in automated fire suppression systems? SEE NOTES - 220 GAL AT FIRE STATION
200 GAL AT BLDG 400

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? YES, NONE SINCE 1996 WHEN FLIGHT OPS CEASED

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?

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?

MR NACCARATO 731-4836
MR DODSON 731-4103

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)?

MIXED manufacturers

3. Where has the AFFF solution been handled (mixed, contained, transferred, etc.)?

For fire, at the station, at the fire training area, and on the ramp in front of station

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?
   AFFF
5. Do you have an inventory of the amount of AFFF stored on the installation or present in automated fire suppression systems?
   NOT IN FD
6. Can you describe the procedure on how the suppression systems are supplied with AFFF?
   see utilities shop
7. Have there been inadvertent releases of AFFF from hangar fire suppression systems? When? Yes, prior to 1996 (numerous) at least 3 prior in bldg 1440
8. How are releases handled (i.e. when the suppression system goes off)?
   UNK

Trucks and Trailers

9. Provide a list of trucks and trailers currently carrying AFFF and where they are parked/stored?

   2 ea P-24, 2 ea P-34. In past, numerous ARFF fire trucks to include p-15, P-2 and P-19

10. How much AFFF (gallons) is carried/stored in the specified trucks and trailers?

25 Gal on ea P-24, 50 gal on ea P-24

11. Do you test the trucks for spray patterns to make sure equipment is working properly?

Yes, usually foam is tested at training area, but when tanks become premixed, foam solution can end up on the ramp. The foam on the ramp would flow north north east and usually spread out on the ramp. There may have been foam dumped on or flowed to the grass along the ramp across from the fire station.

12. How often are these spray tests performed and can you provide the locations of these tests?

Daily, without foam in front of the station. Foam is tested at the fire training 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?

Foam is poured by hand from 5 gal containers into the trucks usually at the fire station. There is no containment.
Additionally, foam could be resupplied into the trucks at the scene of a fire.

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?

Vehicle cleaning occurs almost daily and is carried out in the washrack in the fire station.

15. When AFFF was used during a fire training exercise, how was the AFFF cleaned up and disposed of?

AFFF used during training is contained in the berm area of the training area and either captured in the retention pond or left on the ground of the training area to evaporate.

<u>Records, Spill logs, Historical Information</u>

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

Currently, no records. From individual recollection, there have been at least 3 foam dumps in Bldg 1440 in the past 15 years. There was one foam spill of 600 gallons outside the fire station in the 1990's which flowed into the strom drain. As for emergencies, we have no records for the past when aircraft other than helicopters were assigned and conducted flying operations here. I suspect runway foaming and other firefighting operations could have been conducted since the base opened and foam was in use.
Some foam could have been used during snowbird aircraft crash in 2007

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?

Yes see #16 above.

18. What are the non-FTA locations where:
    a. AFFF release systems are installed (i.e. Hangars, Wastewater Treatment Plants, and Fire Stations)

    Fire station, hangars and maint bldg

    b. Where are these locations that currently contain or have contained AFFF (Building numbers)

    Bldg 349, 1440, 1845

    c. If converted from AFFF, when did they convert the system to high expansion foam

    N/A

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)?

Foam is stored in a room in the fire station. Additional foam is stored in bldg. 400 base supply,

CH2MHILL

SUBJECT: MALMSTROM

BY: WIRTZ DATE: 2/4/2015

PROJECT NUMBER: SHEET 1 OF 2

CURTIS HESTER & STEPHAINY GROUX - OPS ENGINEERING

WATER FUEL SYSTEM MAINTENANCE

731-6127

CURTIS.HESTER.1@US.AF.MIL

SINCE 1994

SHOP # POTOSHNIK (SGT - 6127)

FIRE STATION OWS - BYPASSED - NOT INTACT. WASH WATER GOES TO IWS SYSTEM

BUILDING 1440 - LATE 1980s

- 1500 GAL TANK - SINCE 2007 APPROX 300 GAL HAS BEEN USED/EVAPORATED
  - IN MECHANICAL ROOM
  - CLOSED HEAD SYSTEM
- BAY 5 - SPECTRUM NOZZLE
  - LOW EXPANSION FOAM
  - HAND CONTROLLED
  - DELUGE SYSTEM - SPRINKLER HEADS ON ROOF WITH 3 CANNONS
  - ONLY BAY WITH FOAM SYSTEM - C130S - HISTORIC HOUSING
- BAY 3, BAY 4 - WATER SUPRESSION ONLY - CURRENTLY
  - CONVERTED TO WATER 1994 (APPROX)
    - FOAM SYSTEM PRIOR
- NO FOAM USAGE SINCE 1994
- OWS - FLUSH OUT
  - TO IWS SYSTEM

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/4/2015

PROJECT NUMBER: SHEET 2 OF 2

BLDG 1464 -

- FORMER AFFF SYSTEM - 500 GAL TANK
  - 2010 REMOVED
  - DRY SYSTEM CURRENTLY

BLDG 1467 - FUEL TRUCK HOUSING

- APPROX 300 GAL FOAM
- TWO BAYS
  - ROOF SYSTEM - OWS TO IW

JET A TANKS - FIRE TRUCKS PLUG IN FOR FIRE SUPRESSION

- LINE GOES UP SIDE AND WRAPS AROUND TOP RIM OF EACH TANK

BLDG 1845 - MISCLE ~~HAZ~~ HANDLING

- AFFF SYSTEM WITH LEAKING TANK
- 400 GALLON AFFF TANK (LEAKING)
- RUNNING WATER DURING TESTS, ISOLATE OUT AFFF - INSTALLED 1993
- CLOSED HEADS SYSTEM
- FLOOR DRAINS LEAD TO POND
  - LINED POND

3 DEACT / WATER FUEL TANK - 1987

- ~~PLUG~~ PLUG IN FIRE SUPRESSION

REV 11/01 FORM 3B

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/4/2015

PROJECT NUMBER: SHEET 1 OF 1

LEO SEMANA
ENVIRONMENTAL PROTECTION SPECIALIST
341 CES/CEIS
731-6163

BLDG 434 - 90 HAZ WASTE STORAGE
- WASTE AFFF STORED ON NON-HAZWASTE SIDE OF 90 DAY STORAGE
  - AT MOST 100 GALLONS WHILE CHARACTERIZED

SENT TO TSDF - 1535
- DROPPED OFF TILL TRUCK(S) HAUL OFF-SITE TO FINAL DISPOSAL

BLDG - 1440
- AFFF (DRAINS IN 3 BAY) CHANNELS TO OUTSIDE OWS UNDER SMOKING AREA
- APPROX 7 YEARS AGO DISCHARGE
  - KAREN CLAVIN - ENGINEERING
  - ACCIDENTAL DISCHARGE

CRASH SITE CLEAN UP
- REMOVED SOIL AND RESTORED SITE

SPOKE WITH LANA HEGLUND ABOUT 1440 OWS -
- NO INFORMATION ON SIZE OF TANK

REV 11/01 FORM 3B

CH2MHILL

SUBJECT: MALMSTROM AFB

BY: WIRTZ DATE: 2/4/2015

PROJECT NUMBER: SHEET 1 OF 1

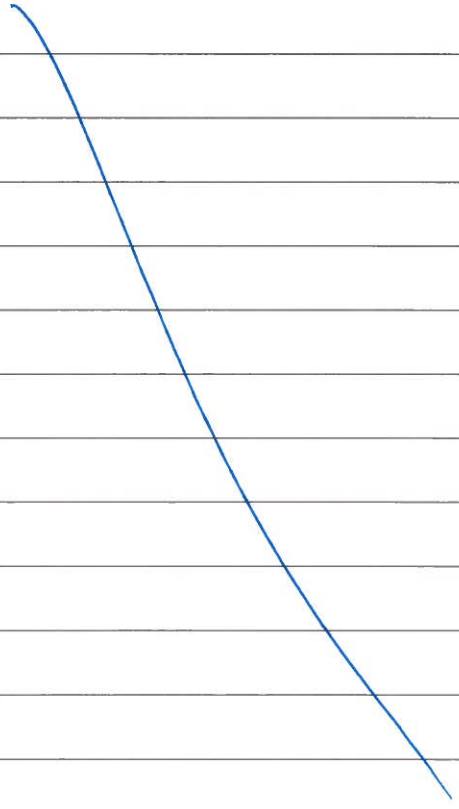
LANA HEDLUND
ENVIRONMENTAL ENGINEER
CE

MAY 2007 - CRASH
- NO RECORDS ON THE CLEANUP

BLDG 1467, FUEL TRUCK STORAGE RELEASE
1/30/2008
<5 GALLONS SPILLED DUE TO ACCIDENTAL TURNING ON OF AFFF PUMP. DISCHARGE CONTAINED INSIDE BUILDING AND DRAINED TO IW SYSTEM (CITY OF GREAT FALLS)

BLDG 1440 - OWS

SEE ATTACHED SPILL REPORT FOR 1467 SPILL



REV 11/01 FORM 3B

Malmstrom AFB
RELEASE INCIDENT FORM

If you have questions concerning the release or this form, please contact 341 CES/CEV

Name: RAYMOND RIMMEL | Location: Bldg 1467, Fuel Truck Storage | Date: 1/30/08

Date of Incident: 1/30/08 | Time of Incident: 0900 HRS | Duration: 1 minute

Pollutant: ☐ JP 8 ☐ MOGAS ☐ Diesel ☐ Chlorine ☒ Other: AFFF

Amount Spilled: < 5 gal | How estimated: Visual | % Recovered: 0

Description of Incident: While troubleshooting the AFFF panel with its power off, I pulled one of its relays out to check it (part#) and while doing this the AFFF pump and main fire pump turned on. We immediately shut down the main pump than the AFFF pump.

Cause: ☒ Human Error ☐ Procedure ☐ Equipment Failure ☐ Pressure Related ☒ Other: Maybe other possibilities

Threat/Damage to Human Life: ☐ Severe ☒ Minor ☐ None

Threat/Damage to Property: ☐ Severe ☒ Minor ☐ None

☒ Federal ☐ State ☐ Municipal ☐ Private

Describe Release Response: Dale Ackerman, Ray Rimmel, and Rick Fischer personally reported spill to CEV. Ray and Rick escorted Lana Hedlund to site for visual observation. Great Falls wastewater treatment plant and City public works office was notified of release by telephone by CEV. On base lift station was checked for presence of foam, non was apparent. Follow-up written notice of release was prepared and sent to City of Great Falls Public Works office.

IN DRAIN

Release Reported to: ☐ 911 ☒ CEV ☐ Command Post

Describe Clean-Up Action: Dale Ackerman will contain drips so that further solution will not enter the drain. He was going to look into shoveling up the portion that was released to pavement outside the building.

Long Term Remediation Required? ☐ Yes ☒ No

Off Base Affected? ☒ Yes ☐ No

Print Form

Submit by Email

Revised Sept 2007

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?

Malmstrom AFB
RELEASE INCIDENT FORM

If you have questions concerning the release or this form, please contact 341 CES/CEV

Name: RAYMOND RIMMEL | Location: Bldg 1467, Fuel Truck Storage | Date: 1/30/08

Date of Incident: 1/30/08 | Time of Incident: 0900 HRS | Duration: 1 minute

Pollutant: ☐ JP 8 ☐ MOGAS ☐ Diesel ☐ Chlorine ☒ Other: AFFF

Amount Spilled: < 5 gal | How estimated: Visual | % Recovered: 0

Description of Incident: While troubleshooting the AFFF panel with its power off, I pulled one of its relays out to check it (part#) and while doing this the AFFF pump and main fire pump turned on. We immediately shut down the main pump than the AFFF pump.

Cause: ☒ Human Error ☐ Procedure ☐ Equipment Failure ☐ Pressure Related ☒ Other: Maybe other possibilities

Threat/Damage to Human Life: ☐ Severe ☒ Minor ☐ None

Threat/Damage to Property: ☐ Severe ☒ Minor ☐ None

☒ Federal ☐ State ☐ Municipal ☐ Private

Describe Release Response: Dale Ackerman, Ray Rimmel, and Rick Fischer personally reported spill to CEV. Ray and Rick escorted Lana Hedlund to site for visual observation. Great Falls wastewater treatment plant and City public works office was notified of release by telephone by CEV. On base lift station was checked for presence of foam, non was apparent. Follow-up written notice of release was prepared and sent to City of Great Falls Public Works office.

IN DRAIN

Release Reported to: ☐ 911 ☒ CEV ☐ Command Post

Describe Clean-Up Action: Dale Ackerman will contain drips so that further solution will not enter the drain. He was going to look into shoveling up the portion that was released to pavement outside the building.

Long Term Remediation Required? ☐ Yes ☒ No

Off Base Affected? ☒ Yes ☐ No

Print Form

Submit by Email

Revised Sept 2007

APPENDIX C

RECORDS OF COMMUNICATION

This page was intentionally left blank.

HGL	Date: 10/27/14 Time: 0900	**COMMUNICATION RECORD**

Name of Base, State: Tyndall, FL	
Interviewer: Haysip, Clary, Jennings,	
Organization: CH2M Hill	**Phone:**
Position/role on this project: Team leader	**Email:**
Interviewee: Jody Bidle Fred Terryn Kevin Matlock John Hawk	
Organization:	**Phone:**
Position/Job Title:	**Email:**
How Long in this Postion?	
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 -
Aqisition 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
National Fire Security System
32-2001 AFI
Haz mat 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
Protene 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 commision 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

Mr. Hugo - Query database for AFFF usage
updated copy of inventory

Elsworth, Dias } SAC designed liner system — Tully
Single ~~liner~~ liner w/ Secondary Bentonite liner

Tyndall Silver Flag R+D

Montana 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 POL facilitys or fuel truck maintenance
Reserve ~~rqmt~~ requirements are the same as AF Guard can follow whatever criteria they ~~don't~~ 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 POL 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 surfactants ~~of~~ manufactured
Local end. 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 Info
Fred Tarlyn	Fire Program Manager	
Judy Biddle	Fire Protection Engineer	
JOHN HAWK	TEE ENGINEER	
Kevin Matlock	Fire Protection Manager	
Chris ~~Hay~~ Hayslip	Site lead	
JAMES CLARY	Project Manager - CH2M HILL	
Laurie Jennings	Project Manager HGL	
Craig Mellerski	Division Chief RDT&E	
Tracey Ramsey	HGL	
Fred Walker	AFCEC / COSM	
MARK H. YOUNG	AFCEC / CZOE	
RON PORTER	NOBLIS	
Cornell Long	AFIEC IMC	

Wirtz, Mike/BOI

From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Wednesday, February 18, 2015 1:27 PM
To: Wirtz, Mike/BOI
Subject: RE: Followup questions

There is a day care facility. Child development Center is Building 4100 which is in the housing areas. There is a youth center, Building 1145 also.

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Wednesday, February 18, 2015 1:05 PM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Subject: RE: Followup questions

Just got another question. Is there a school or day care facility located on base? If so, what building number(s)?

Michael Wirtz
Environmental Engineer, P.E.
Direct: 208-383-6281
Cell: 208-860-0030
Fax: 208-345-5310
mike.wirtz@ch2m.com

-----Original Message-----
From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Wednesday, February 18, 2015 10:57 AM
To: Wirtz, Mike/BOI
Subject: RE: Followup questions

Ok Mike, here is what I have for you:

1. What year (approximate) was the following constructed

a. Building 1440 - 1440 was placed in service in 1993

b. Building 1464 - 1464 was placed in service in 1959

c. Building 1467 - 1467 was placed in service in 1993

ASTs

41100 and 41102: Put into Service 1989, deactivated 1997, and on caretaker status contains 25,000 bbls (bbl is 42 gallons) or 1,050,000 gallons. These two are together in the POL yard by 410 and they held JP-8 fuel.

41101: Put into service 1959, deactivated unknown but later than 1997. It is out of round and can no longer contain fuels. Capacity is 11,000 bbls or 475,000 gallons and it formerly contained diesel fuel.

41120 and 41121: both active status, placed into service 1980. Capacity is 210,000 gallons each and contain jet fuel.

Hope that answers your questions.

Rob

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Wednesday, February 18, 2015 9:26 AM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Subject: RE: Followup questions

Rob, the 3 deactivated are located along the flightline near building 410. The two active are near building 1464. I am guessing they are around 150,000 gallons each.

Michael Wirtz
Environmental Engineer, P.E.
Direct: 208-383-6281
Cell: 208-860-0030
Fax: 208-345-5310
mike.wirtz@ch2m.com

-----Original Message-----
From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Tuesday, February 17, 2015 1:16 PM
To: Wirtz, Mike/BOI
Subject: RE: Followup questions

Mike
I will get that information, just got this email. Which ASTs are you referring to with the 5 jet fuel tanks? Where are they located?

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Tuesday, February 17, 2015 10:21 AM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Subject: Followup questions

Rob,

Could you answer the following questions for me for my report?

1. What year (approximate) was the following constructed

a. Building 1440

b. Building 1464

c. Building 1467

2. What is the volume of the five jet fuel ASTs (gallons).

a. 3 are deactivated

b. 2 are active

3. What year were the five jet fuel tanks constructed?

Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

Cell: 208-860-0030

Fax: 208-345-5310

mike.wirtz@ch2m.com

Wirtz, Mike/BOI

From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Wednesday, February 18, 2015 10:24 AM
To: Wirtz, Mike/BOI
Subject: RE: one more question

Pow wow Pond

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Wednesday, February 18, 2015 10:03 AM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Subject: one more question

Rob,

Does the recreation pond near the fire training area have a name?

Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

Cell: 208-860-0030

Fax: 208-345-5310

mike.wirtz@ch2m.com

Wirtz, Mike/BOI

From: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Sent: Tuesday, February 17, 2015 2:25 PM
To: Wirtz, Mike/BOI
Subject: RE: Follow up questions

Mike, I did some more digging and we are pretty sure the FTA was built in 1995.

Hope this helps.

Daniel Dodson, GS-11
Deputy Fire Chief
Malmstrom AFB, MT

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Tuesday, February 17, 2015 10:22 AM
To: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Subject: Follow up questions

Dan,

Was hoping you could answer a couple questions for me.

1. What year was the firefighting building constructed?

2. What year was the current FTA constructed?

Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

Cell: 208-860-0030

Fax: 208-345-5310

mike.wirtz@ch2m.com

Wirtz, Mike/BOI

From: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Sent: Tuesday, February 17, 2015 2:10 PM
To: Wirtz, Mike/BOI
Subject: RE: Follow up questions

Mike,
The fire training building was built in 2013.

I am not sure when The FTA was built. I believe it was in the early 1990's and it was converted to propane use from JP-4/JP-8 use after 1996, probably by 1998.

Daniel Dodson, GS-11
Deputy Fire Chief
Malmstrom AFB, MT

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Tuesday, February 17, 2015 10:22 AM
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Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

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Fax: 208-345-5310

mike.wirtz@ch2m.com

Wirtz, Mike/BOI

From: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Sent: Friday, February 06, 2015 8:50 AM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM; NACCARATO, RICKEY G GS-10 USAF AFGSC 341 CES/CEFP
Cc: Wirtz, Mike/BOI
Subject: RE: Review of Findings

Additional information you requested:

The original fire training pit was located some distance away to the north- north east about where the road crosses the field. I don't believe it was lined.

To my knowledge, the pond at the fire training pit does not drain into the IW system. It is self-contained.

Truck testing/spraying with water only is done on the ramp outside the fire station. However, occasionally the truck water tanks become pre-mixed and there is some foam sprayed on the ramp. Foam is checked at the fire training pit when needed for testing, etc.

Daniel Dodson, GS-11
Deputy Fire Chief
Malmstrom AFB, MT

-----Original Message-----
From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Friday, February 06, 2015 7:49 AM
To: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF; HESTER, CURTIS A WS-10 USAF AFGSC 341 CES/CEOIU; GROUX, STEPHANIE J GS-12 USAF AFGSC 341 CES/CEOER; SEMANA, LEO B GS-09 USAF AFGSC 341 CES/CEIEC; NACCARATO, RICKEY G GS-10 USAF AFGSC 341 CES/CEFP
Cc: Mike.Wirtz@CH2M.com; James.Clary@CH2M.com
Subject: FW: Review of Findings

All
Please review the findings from CH2M Hills AFFF assessment conducted over the past few days and reply with an either corrections or an affirmative email that all is correct for your area.

Thanks
Rob

Robert (Rob) Brown, P.E., GS-12
AFCEC/CZOM
Restoration Program Manager
Malmstrom AFB (341st CES)
39 78th ST N
Malmstrom AFB, MT 59402-7536

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Thursday, February 05, 2015 6:23 PM
To: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Cc: James.Clary@CH2M.com
Subject: Review of Findings

Rob,

Could you please distribute and confirm the following review of the following information. Can either send one email (forward this), or piece off each section and send to persons listed.

Fire Station/Fire Training Pit

Daniel Dodson

Assistant Fire Chief

Fire Station Bldg 349

- All foam on site is the low expansion foam
- No active airplanes so mission is to support the helicopters
- Historically there were numerous fire trucks that carried foam (no longer on-site)

o P2 - 2,300 gallon water, 200 gallon foam capacity

o P4 - 1,500 gallon water, 180 gallon foam capacity

o P19 - 1,000 gallon water, 50 gallon foam capacity

o P8 - pumper truck with 50 gallon foam capacity

- Two trucks currently contain foam

o P34 - 400 gallon water and 50/56 gallon foam capacity (two trucks)

- Trucks were usually stored inside one of the bays at the station, but could be staged outside from time to time
- One stall includes a vehicle wash that drains to an old OWS.

o OWS has not recently been cleaned out and drains to the IW system that connects to the City of Great Falls (no water treatment system on base)

o Foam on the trucks could have washed down the drain and to the IW system

o Condition of OWS is unknown

· When performing testing of the trucks pumping systems, the foam system (mixing with water) would be isolated out

o PLEASE CONFIRM - truck pump testing/spraying occurred where? On the flightline? Fire training are?

· AFFF is stored in 5-gallon buckets in a back storage room

o Approximately 220 gallons of AFFF is stored

§ Specific mix spec so multiple suppliers/manufacturers

o Base supply also stores approximately 200 gallons (I need to call and confirm the quantity)

· Foam trailer release

o Late 1990s (exact date unknown)

o A 600 gallon AFFF foam trailer was parked outside (southeast corner) of the fire station. The tank was backed into causing a rupture of the tanks and up to the entire contents (600 gallons) drained into a nearby stormwater drain that was unprotected. The stormdrain leads one of 6 stormwater outfalls on the northern boundary of the base that eventually lead to the Missouri River (approximately 1 mile away)

· Current Fire Training Area

o A fire training pit with mock airplane was built after the RFI for the original fire training area (FT-1) in 1997

o Propane is used to simulate a fire

§ Water is pumped into the lined pit to partially submerge the bottom of the pit to help create the effect of an actual fire as propane bubbles through the water before combustion

§ Water comes from a near by lined water retention pond approximately 100 feet from the pit

§ The pond is downgrade from the pit which allows the pit to gravity drain to the pond creating a semi-closed system. A drain to the pond is located on the north side of the pond with a gate valve that drains into the IW system. Any water draining from the pit that collects in the pond evaporates including any AFFF that is in the water from the training exercise

§ Foam has the potential to escape the outside of the lined pit by overspray and foot migration.

· Historic Canadian Crash Site

o May 2007 (confirmed by Lana Hedlund in CE

o A small Canadian jet (Snowbird CT 117) crashed (nose dive) near the fire training area. The crash site was small due to the nature of the crash. A single truck with foam was used during the initial response (1,000 gallons water and 30 gal foam).

o Since the crash was a Canadian jet, the cleanup was headed by Canada. Records were not found during inspection, however, Rob Brown was working with the firm that prepared the report and sampling probably only included analysis for petroleum (not foam constituents).

· Soil landfarm

o Originally created for the restoration of the original fire training area (FT-01) in 1997. Originally contained the majority of the soils removed from the FT-01 in 1997 (since removed and replaced with newer soils).

o Approximately 1853 cubic yards of soil from FT-01

o No sampling was conducted during the 1997 remedial action for foam constituents.

§ Driver was sampling for lead

§ Secondary driver was for petroleum

Buildings 1440, 1464, 1467, and 1845

Curtis Hester

Stephanie Groux

Building 1464 (3-bay hanger)

· 1,500 gallon AFFF AST located inside mechanical room

o Mechanical room includes the valves/piping that distributes the AFFF to the fire suppression system

o Originally fed to the three bays when airplanes were part of the mission (1996)

o Approximately 300 gallons of AFFF has been removed from the tank since 2007 due to evaporation/usage

o Testing of system would isolate out AFFF, only test with water (if testing at all)

· Currently, only Bay 5 (helicopter).

o Closed head system to isolate fire suppression to needed areas (floor drains to OWS)

o No pictures due to secure area

· Has 3 hand controlled cannons

· Bays 3 and 4 are water suppression systems (floor drains to OWS)

· OWS located outside the bays (manhole by smoking area)

o A small foam spill (<5 gallons) occurred in January 2008 (Lana Hedlund) that drained into OWS

- City of Great Falls was notified to inform that spill occurred and entered IW system

Building 1464

- Former AFFF system that has been removed (size of tank unknown)
- Removed in 2010
- No access to mechanical room due to faulty door
- Was informed that the tank was removed and only the cement support remains
- Currently a dry system
- Please confirm - floor drains in bay

Building 1467

- 300 gallon AFFF tank/system
- Two bays
- Roof sprinkler system only
- Floor drains to IW system

Building 1845

- AFFF with 400 gallon AFFF tank (installed in 1993) - Mechanical room
- Tank is leaking from two gaskets (see pictures)
- No floor drain, does not appear to have migrated out of the building (mechanical room)
- Isolate system during testing (no AFFF used)
- Roof sprinkler system in bay with floor drains that lead to a lined settling/evaporation pond outside the building

Large jet fuel storage tanks

- Five total

- 3 decommissioned

o 2 active

· Fire suppression is a hardline from the edge of the containment that goes to the top of the tanks and circle the top

o Fire trucks plug into the hardline

o Potential of AFFF spill at the plug in point as well as collecting in secondary containment

o No actual AFFF stored (only on trucks plugging into hardline)

Hazardous waste/Non-hazardous Waste

Leo Semana

Environmental Protection Specialist

Building 434 - 90-day storage yard

· Secondary containment

o Hazardous wastes stored in secondary containment structures on the west side of the yard

o Non-hazardous wastes (AFFF) stored in secondary containment structures on east side of yard

o Occasionally contain waste AFFF

§ Bad chemical

§ Possibly expired

· Before 90-day period or year, wastes are transported to TSD facility at Bldg 1535

· Temporarliy stored inside 1535 in secondary containment before being loaded unto truck and shipped off-site for disposal

Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

Cell: 208-860-0030

Fax: 208-345-5310

Wirtz, Mike/BOI

From: BROWN, ROBERT A GS-12 USAF AFMC 341 CES/CZOM
Sent: Thursday, February 12, 2015 2:23 PM
To: Wirtz, Mike/BOI
Subject: AFFF

Mike
I had a meeting with the Deputy CE here, and we were discussing the AFFF Assessment. He had some historic information that may be of interest to you, he has been on-base since 1989, maybe one of the longest around. He mentioned witnessing testing the AFFF systems in Building 1440 (large hangar) and how they just pushed foam out onto pavement outside and washing it away. I asked if he would be willing to talk to you and he said yes, so here is his contact information.

William (Bill) McLaughlin

Rob

Robert (Rob) Brown, P.E., GS-12
AFCEC/CZOM
Restoration Program Manager
Malmstrom AFB (341st CES)
8th ST N
Malmstrom AFB, MT 59402-7536

CH2MHILL

SUBJECT: BUILDING 1440

BY: MICHAEL WIRTZ DATE: 2/19/15

PROJECT NUMBER: SHEET 1 OF

FOLLOW-UP PHONE CALL WITH WILLIAM (BILL) MCLAUGHLIN

DEPUTY CE

BILL RECOLECTS SEEING AFFF FOAM BEING POSHED ONTO APRON OF BUILDING 1440. FOAM WAS ALLOWED TO EVAPORATE AND DRAIN INTO STORM DRAINS. WHEN ASKED SPECIFICALLY IF AFFF DRAINED INTO UNPROTECTED STORM DRAINS HE ~~X~~ SAID "YES."

WHEN ASKED IF AFFF WAS SEEN POSHED OUTSIDE HANGAR 1464 AND BUILDING 1467, HE HAS NO RECOLECTION OF SEEING ANY, BUT DIDN'T DOUBT IT HAPPENED.

BACK TO 1440, HE RECALLS THE RETENTION UNDER THE BUILDING NOT BEING AN OWS BUT JUST RETENTION FOR AFFF AND THAT IT OVERFLOWED AT LEAST ONCE

BILL HAS NO RECOLECTION OF AFFF BEING STORED AT BASE SUPPLY (BUILDING 416). REFERRED TO DANIEL DODSON.

Wirtz, Mike/BOI

From: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Sent: Tuesday, March 24, 2015 6:57 AM
To: Wirtz, Mike/BOI
Subject: RE: Fire station

We are authorized 47 personnel.

Daniel Dodson, GS-11
Deputy Fire Chief
Malmstrom AFB, MT

-----Original Message-----
From: Mike.Wirtz@CH2M.com [mailto:Mike.Wirtz@CH2M.com]
Sent: Monday, March 23, 2015 5:13 PM
To: DODSON, DANIEL S GS-11 USAF AFGSC 341 CES/CEF
Subject: Fire station

Daniel,

Got comments back for my final review of the AFFF investigation. Approximately how many people are stationed at the fire station?

Michael Wirtz

Environmental Engineer, P.E.

Direct: 208-383-6281

Cell: 208-860-0030

Fax: 208-345-5310

mike.wirtz@ch2m.com