FINAL 2022 FIVE-YEAR REVIEW FOR SITE SS001 AT BETHEL RADIO RELAY SITE (RRS), ALASKA

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ACRONYMS AND ABBREVIATIONS

°C .....degrees Celsius
µg/L .....micrograms per liter
AAC .....Alaska Administrative Code
ADEC.....Alaska Department of Environmental Conservation
AFCEC.....Air Force Civil Engineer Center
ARAR .....Applicable or Relevant and Appropriate Requirement
AST .....aboveground storage tank
ATV .....all-terrain vehicle
BIA.....Bureau of Indian Affairs
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act
COC .....contaminant of concern
DDT .....dichlorodiphenyltrichloroethane
DRO .....diesel-range organics
EPA .....United States Environmental Protection Agency
FS .....Feasibility Study
FYR.....Five-Year Review
GPS .....global positioning system
GRO .....gasoline-range organics
IC.....institutional control
IRA.....Interim Removal Action
IRP .....Installation Restoration Program
LTM .....long-term monitoring
LUC.....land-use control
mg/kg .....milligrams per kilogram
mg/L .....milligrams per liter
N/A.....not applicable
NAUL .....Notice of Activity and Use Limitation
NEC.....Notice of Environmental Contamination
NCP.....National Contingency Plan
NWR .....National Wildlife Refuge
O&M .....operations and maintenance
OU.....operable unit
PA .....Preliminary Assessment
PCB .....polychlorinated biphenyl
POL .....petroleum, oils, and lubricants
PVC.....polyvinyl chloride
RAO .....remedial action objective
RI.....Remedial Investigation
ROD .....Record of Decision

RRO .....residual-range organics
RRS.....radio relay site
SARA.....Superfund Amendment and Reauthorization Act
SI.....Site Inspection
TPH.....total petroleum hydrocarbons
UECA.....Uniform Environmental Covenants Act
USAF .....United States Air Force
USFWS .....United States Fish and Wildlife Service
UU/UE .....unlimited use/unrestricted exposure
WACS.....White Alice Communications System

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Air Force (USAF) has prepared this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (Title 40 Code of Federal Regulations Section 300.430(f)(4)(ii)), and considering United States Environmental Protection Agency (EPA) policy.

This is the second FYR for Site SS001 at the Bethel Radio Relay Station (RRS) in Bethel, Alaska (Figure 1). Site SS001 is currently inclusive of the Petroleum, Oils, and Lubricants (POL) Storage Area and the area formerly referred to as the PAD Area (Figures 1 and 2). The former PAD Area includes the permitted landfills of asbestos and debris disposal cells, and six historical Installation Restoration Program (IRP) sites (SS002, SS003, SS004, SS005, SS008, and SS010). Although historically considered separate sites, Site SS001 (POL Storage Area) and the PAD Area were administratively combined under the name Site SS001 and are now collectively referred to only as SS001 (USAF, 2017b).

The remedy for Site SS001 was documented in the 2011 Record of Decision (ROD) for Bethel RRS (USAF, 2011). The triggering action for this statutory review is the signatory date of the previous FYR. This FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use/unrestricted exposure (UU/UE). The CERCLA contaminants of concern (COCs) identified at Site SS001 are polychlorinated biphenyls in soil and friable asbestos buried in landfills. Non-CERCLA COCs identified at Site SS001 include total petroleum hydrocarbons (TPH) in soil at concentrations exceeding State of Alaska cleanup levels for gasoline-range organics (GRO), diesel-range organics (DRO), and residual-range organics, as well as DRO in groundwater. In addition to presenting the selected remedy for Site SS001, the 2011 ROD also documented site characterization uncertainties related to other unidentified contaminants that may be present in the landfills.

There are no Operable Units at Bethel RRS. However, 10 IRP sites (Sites SS001–SS010) were initially identified at Bethel RRS. One site (Site SS007) was removed from the IRP, and two sites (Sites SS006 and SS009) were closed with No Further Action under CERCLA in the 2011 ROD and have achieved "Cleanup Complete" status under Alaska State Regulations (USAF, 2011). Therefore, FYRs are not required for Sites SS006 and SS009. Former IRP site designations are shown in Figures 2 and 3 of the 2011 ROD (USAF, 2011).

The Bethel RRS Site SS001 FYR was performed by Ahtna Solutions, LLC, (Ahtna) on behalf of the Air Force Civil Engineer Center (AFCEC) under contract FA8903-22-C0016. Participants included AFCEC, Ahtna, and Alaska Department of Environmental Conservation (ADEC)

personnel with expertise in site investigation and remediation. The review began in September 2022.

Site Background

This section presents background information on the Bethel RRS site. The site chronology summarizing significant events and documents is provided in Appendix B.

Site Location and History

Bethel RRS is located in southwestern Alaska, 40 miles inland from the Bering Sea near the Kuskokwim River and the city of Bethel. The estimated population of Bethel, located 3.5 miles east of the installation, was reported to be 6,325 in 2020 (United States Census Bureau, 2022). The installation is accessible by road from Bethel. A locked gate on the access road to the east of the installation prevents vehicle access from Bethel but does not restrict access by foot or all-terrain vehicle. However, Site SS001 is surrounded by an exclusion fence with locked access gates that are repaired on an annual basis.

The Bethel RRS consisted of a White Alice Communications System (WACS), which was constructed in 1957 and activated by the USAF in 1958 (USAF, 2001). Bethel RRS was part of a larger WACS installation that linked Aircraft Control and Warning facilities into a network that relayed communications back to Elmendorf and Eielson Air Force Bases (USAF, 2011). The Bethel RRS buildings were located on a 14-acre parcel of land withdrawn from federal holdings for military purposes. The facility included the following structures: six 60-foot tropospheric-scatter antennas; two diesel aboveground storage tanks (ASTs) and associated fill stands; a POL pump house; a water tank; an equipment and power building; a facility support building; and a vehicle maintenance building. The facility was deactivated in 1979 and the buildings and structures were demolished in 1989 and 1990 (USAF, 2011).

Historical practices resulting in contamination occurred at the POL Storage Area and distribution center, also called “the POL Pad,” that provided fuels such as diesel and petroleum products to the Bethel RRS. The POL Storage Area was a 90-foot by 90-foot gravel pad north of the former PAD Area where two 550-gallon barrel ASTs, associated piping, and a pump station were located. A 1991 site investigation determined that a petroleum hydrocarbon release had occurred, likely associated with fueling operations and leaks, affecting the soil and groundwater (USAF, 2011).

Multiple disposal cells within the PAD Area were used to bury debris from historical remediation and abatement activities and have been identified to contain PCB-contaminated soil and friable asbestos. Additionally, the surface of the former PAD Area was used for a petroleum-contaminated soil treatment project. Following treatment, the area was regraded and capped with clean soil, obscuring the location of any known contamination (USAF, 2011).

Historical contamination and investigations are further detailed in the previous FYR (USAF, 2017c) as well as in the site chronology summarized in Appendix B. Figure 3, IRP Sites, and

Figure 4, Area of ICs, from the 2011 Bethel ROD are included with the figures at the end of this report.

Land and Resource Use

The USAF owns the Bethel RRS site, which is unoccupied. Land adjacent to the RRS is owned by Bethel Native Corporation, the United States Fish and Wildlife Service (USFWS), and Yukon-Kuskokwim Health Corporation (USAF, 2021). The USAF will likely retain management of the land into the foreseeable future due to the presence of landfills preventing UU/UE. Additionally, the USFWS has deemed the property unacceptable to be included in the adjacent wildlife refuge based on the presence of landfills (USAF, 2011).

Groundwater in the Bethel area is obtained from the floodplain and low-terrace alluvium deposits of the Kuskokwim River, approximately 3.6 miles east of Bethel RRS, in permafrost-free areas close to the river and from deep sands beneath the permafrost (USAF, 2011). The shallow aquifer at Site SS001 (in the area of the former POL Storage Area) comprises the seasonally active (suprapermafrost) groundwater impacted by DRO contamination. However, no drinking water wells exist in this aquifer at Bethel RRS.

The general flow of shallow suprapermafrost groundwater is estimated to be toward the south-southeast (USAF, 2011); however, surface topography and runoff characteristics, seasonal temperatures, and precipitation affect the gradient and quantity of this type of shallow groundwater. Other surface water resources at Bethel RRS include ponds, wetlands, and bogs located in marshy areas. Runoff from Bethel RRS is directed primarily south-southwest, where it eventually meets the tundra bog (USAF, 2011).

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: SS001, Bethel Radio Relay Station		
EPA ID: 199725X104101		
Region: 10	**State:** AK	**City/County:** Bethel/Unorganized Borough

SITE STATUS	
NPL Status: Non-NPL	
Multiple OUs? No	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: Other Federal Agency ***[If "Other Federal Agency", enter Agency name]*:** United States Air Force
Author name (Federal or State Project Manager): Ahtna Solutions, LLC, on behalf of the Air Force Civil Engineer Center (AFCEC)
Author affiliation: Contractor
Review period: 8/22/2022 – 11/10/2022
Date of site inspection: 9/12/2022
Type of review: Statutory
Review number: 2
Triggering action date: 4/6/2018
Due date *(five years after triggering action date)*: 4/6/2023

II. RESPONSE ACTION SUMMARY

This section summarizes the basis for taking action and site risks, response actions, and remedial action objectives, as well as the selected remedies and their status of implementation.

Basis for Taking Action

Table 1 summarizes the COCs that have been identified at Site SS001 and the applicable cleanup levels identified for each COC as established in the 2011 ROD (USAF, 2011). In addition to the identified COCs, friable asbestos is buried within SS001 (within the area formerly known as the PAD Area) and other, unidentified contaminants may be present in the SS001 landfills. Complete lists of the Applicable or Relevant and Appropriate Requirements (ARARs) are included in the Bethel RRS ROD (USAF, 2011).

Table 1: Summary of Site SS001 COCs and 2011 ROD Cleanup Levels

Site	COC	Maximum Concentration Detected	Applicable Cleanup Level [a]
SS001	Soil		
	PCBs	< 10 mg/kg [c]	1 mg/kg
	DRO [b]	-- [d]	250 mg/kg
	GRO [b]	-- [d]	300 mg/kg
	RRO [b]	-- [d]	10,000 mg/kg
	Groundwater		
	DRO [b]	12 mg/L	1.5 mg/L

Notes:
[a] Cleanup levels were established in the ROD (USAF, 2011) and consist of ADEC Method Two human health cleanup levels for the under-40-inch zone for soil and the 18 AAC 75.341 Table C groundwater cleanup levels for groundwater applicable at the time.
[b] These non-CERCLA contaminants are being addressed under State of Alaska laws and regulations.
[c] The exact concentration of PCBs in the contaminated soil buried in the landfill is unknown. However, the PCB concentrations in the soil were reported to be greater than 1 mg/kg but less than 10 mg/kg (USAF, 2011).
[d] Soil samples collected at SS001 (from the area formerly known as the PAD Area) during the RI were analyzed only for TPH, which was detected at a maximum concentration of 7,680 mg/kg. Therefore, it was assumed in the RI and in the ROD that there were exceedances of cleanup levels for DRO, GRO, and RRO.

Key:

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
DRO	diesel-range organics
GRO	gasoline-range organics
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
PCB	polychlorinated biphenyl
RI	Remedial Investigation
ROD	Record of Decision
RRO	residual-range organics

TPH total petroleum hydrocarbons
USAF United States Air Force

Risk Summary

The 2007 Remedial Investigation (RI) cumulative risk assessment performed for Site SS001 (the portion formerly known as the PAD Area) indicated that the contaminant levels along the perimeter of the site did not pose a risk to human and ecological receptors, but that a risk may still exist within the interior of the PAD Area due to the presence of buried PCB-contaminated soil, asbestos, and other potential contaminants in the capped landfill (USAF, 2011). Potential receptor populations include short-term workers who may be involved in repairs at the facility, recreational users, and local subsistence and recreational hunters. As determined in the 2011 ROD, only exposure from incidental ingestions and dermal contact with subsurface soil during trenching or other subsurface activity remains a potential exposure pathway for onsite, short-term workers. The potential for offsite migration by seeps into outlying wetlands creates potential exposure pathways for subsistence users through the consumption of berries and animals, and for recreation and subsistence users through dermal contact and ingestion of surface water. The existing soil cap and successful removal actions, further described in the following section, have eliminated all other exposure pathways for soil.

The shallow aquifer at Site SS001 (the portion formerly known as the POL Storage Area) consists of the seasonally active (suprapermafrost) groundwater and is affected by DRO contamination exceeding the ADEC Method Two cleanup level (USAF, 2011). DRO in groundwater above state-promulgated cleanup levels is, by definition, an unacceptable risk to human health and environmental receptors. However, the 2007 RI concluded that concentrations of contaminants in groundwater samples collected outside the perimeter of SS001 were below cleanup levels (USAF, 2010). The potential for offsite migration by seeps into the outlying wetlands remains a potentially complete exposure pathway for ecological receptors but the presence of the soil cap eliminates exposure to potentially contaminated onsite vegetation.

Based on site risks summarized in the 2011 ROD, SS001 requires action under State of Alaska petroleum cleanup regulations because DRO is present in groundwater above the DRO cleanup level as provided in Title 18 of the Alaska Administrative Code (AAC) Chapter 75.345 (18 AAC 75.345), Table C (USAF, 2011).

PCBs and friable asbestos (CERCLA hazardous substances) are known to be buried in the capped landfill at the PAD area. The selected remedy under CERCLA includes soil capping and land-use controls (LUCs) for buried PCB-contaminated soil and asbestos to prevent releases of hazardous substances and potential risks to human health and the environment. With these LUCs in effect, no further action under CERCLA was documented in the 2011 ROD.

Response Actions

There have been no enforcement actions at Site SS001. The following is a summary of responses that were performed at Site SS001 prior to the 2011 ROD.

During 1989 and 1990 demolition activities at Bethel RRS, two 55-barrel ASTs, associated piping, and a pump station that were located at the POL Storage Area were removed (USAF, 2011). In the late 1990s, the surface of SS001 (the portion of the former PAD Area) was used as a biocell soil treatment and landfarm operation for petroleum-contaminated soil removed from a Bureau of Indian Affairs (BIA) remediation project. Upon completion of the soil treatment/landfarming operations, SS001 (that portion formerly referred to as the PAD Area) was regraded and capped with clean soil (USAF, 2011).

Actions have been completed to contain TPH-contaminated soil, low-level PCB-contaminated soil, construction debris, and friable asbestos buried in the multiple disposal cells within the SS001 landfill. The SS001 landfill has been permitted by the State of Alaska. State of Alaska solid waste requirements are required to be maintained to ensure compliance with ADEC 18 AAC 60 (ADEC, 2022b) and 18 AAC 75 (ADEC, 2022a) (USAF, 2011).

The 2007 RI at SS001 also identified contamination at Sites SS006 (the former DDT [dichlorodiphenyltrichloroethane] Drum Disposal Area) and SS009 (the former Septic Tank Outfall Area). The RI results for SS006 indicated that DDT contamination above the applicable soil cleanup level was present in shallow soils, but that groundwater did not contain pesticides or PCBs above ADEC groundwater cleanup levels. At Site SS009, PCBs in soil at concentrations above the ADEC Method Two cleanup level was detected at two distinct areas, but not in sediment, surface water, or groundwater. During 2008–2009, an Interim Removal Action (IRA) was completed at both sites. Approximately 30 cubic yards of soil contaminated with DDT exceeding the ADEC Method Two cleanup level was excavated from Site SS006 and disposed of off site at a permitted landfill (USAF, 2010). At SS009, soil and concrete containing PCBs at concentrations exceeding ADEC Method Two cleanup levels were excavated and disposed off site at a permitted landfill. Approximately 70 cubic yards of remaining PCB-contaminated soil excavated from Site SS009 were transferred and stockpiled at Site SS001 (at the former POL Storage Area) and are addressed by the remedy selected for SS001 in the 2011 ROD (USAF, 2011). Confirmation soil samples collected at the conclusion of the 2009 IRA activities confirmed the successful removal of DDT- and PCB-impacted soil to below ADEC Method Two cleanup levels (USAF, 2010). The IRA was determined to be a final action and completes cleanup requirements for Site SS006 and SS009 (USAF, 2011).

Remedial Action Objectives

The Bethel RRS ROD included Sites SS001 (inclusive of the former POL Storage Area and the former PAD Area), SS006, and SS009 (USAF, 2011). The following remedial action objectives (RAOs) were developed for Bethel RRS in the ROD:

- Protect human health and the environment from exposure to contaminants that exceed cleanup levels.
- Protect against exposure to buried contaminated soil and landfill contents.
- Prevent use of or exposure to contaminated suprapermafrost groundwater.
- Ensure compliance with 18 AAC 60 (ADEC, 2022b) and 18 AAC 75 (ADEC, 2022a).

Selected Remedies

The selected remedies for Sites SS006 and SS009 were No Further Action under CERCLA and the status of "Cleanup Complete" under Alaska state regulations (USAF, 2011).

In June 2011, the Proposed Plan identifying the USAF's preferred remedies for Site SS001 was made available to the public, starting the period for public comment. The selected remedies for Site SS001 at Bethel RRS were chosen in accordance with Alaska state laws and regulations and in accordance with CERCLA, as amended by the Superfund Amendment and Reauthorization Act (SARA) of 1986 and, to the extent practicable, the NCP, where applicable. The ROD identified the USAF as the responsible party for administering and implementing the selected remedies (USAF, 2011).

The remedial alternatives and selected remedies for Site SS001 (inclusive of both the former POL Storage Area and the former PAD Area) were designed to address the following:

- Stockpile of PCB-contaminated soil
- Buried PCB-contaminated soil
- Buried friable asbestos
- Buried petroleum-contaminated soil
- DRO-contaminated groundwater

Remedy under CERCLA

The final remedy selected under CERCLA for Site SS001 was Offsite Disposal of the stockpiled, PCB-contaminated soil at the Former POL Storage Area, and Capping and LUCs of buried PCB-contaminated soil and asbestos at the area formerly referred to as the PAD Area (USAF, 2011).

The major component of the selected remedy under CERCLA is as follows:

- Dispose of the 70 cubic yards of PCB-contaminated soil that originated at Site SS009 in an offsite disposal facility approved to receive low-level PCB waste.
- Employ LUCs to maintain the soil cap, prevent direct exposure and water infiltration, and prevent the use of contaminated soil for restricted uses in the event of an excavation. The following specific LUCs were identified to meet the performance objectives:
  - Install fencing and signage around the existing soil cap to maintain the cap and prevent unauthorized access. Visually inspect the fencing and signage semiannually for the first

two years to determine if the LUCs associated with the fence and signage are being maintained.

- Visually monitor the soil cap for signs of settlement, subsidence, erosion, or other such events and inspect downgradient of the former operations pad for areas of distressed vegetation or other signs of contaminated seeps semiannually for the first two years, and then annually for the first three to five years or until ADEC approves discontinuation of visual monitoring. The USAF will prepare and submit LUC monitoring reports to ADEC after each monitoring event.
- Use the USAF dig permit and construction review process to accomplish the following: avoid activities that could breach the landfill cover, avoid ground-disturbing construction activities, ensure safe soil management procedures, and prohibit handling (e.g., excavation or transport) of contaminated soil without prior ADEC approval.
- Document ROD land use limitations and prohibitions in the Air Force Real Property Records, Bethel RRS General Plan, 611 Civil Engineering Squadron IRP Records, and Land Use Management Plan.

The LUCs for Site SS001 were to remain in place as long as the PCB-contaminated soil and asbestos remain buried (USAF, 2011).

Remedy under Alaska State Regulations

The remedy selected for Site SS001 pursuant to Alaska state regulations for DRO in groundwater was natural attenuation and LUCs. The major components of the selected groundwater remedy, as detailed in the ROD (USAF, 2011), are as follows:

- Conduct biennial groundwater sampling for DRO from well MW-19RRS for at least three consecutive sampling events, beginning in 2012.
- Use the USAF dig permit and construction review process to limit/prohibit excavation or drilling at Site SS001. Obtain ADEC approval before removing or disposing of contaminated soil or groundwater at the site.
- Document ROD-established land use limitations in the Air Force Real Property Records, Bethel RRS General Plan, 611 Civil Engineering Squadron IRP Records, and LUC Management Plan.

The ROD stated that the LUCs would restrict the withdrawal or use of groundwater at SS001 and would remain in place until contaminant concentrations were documented to be below the established groundwater cleanup levels. The groundwater cleanup level established in the ROD for DRO is 1.5 milligrams per liter (USAF, 2011).

The remedy selected for Site SS001 pursuant to Alaska state regulations for TPH in soil was a soil cap with LUCs. Under this remedy, contaminated subsurface soil and solid waste would remain in place, but exposure to these wastes would be restricted through LUCs (USAF, 2011). The status of the SS001 under Alaska state regulations is defined as Cleanup Complete with Institutional

Controls (ICs) (USAF, 2011). The ICs required under State of Alaska Regulations are the same as those described for SS001 under CERCLA.

Status of Implementation

The remedies selected for Site SS001 include ICs and/or LUCs. In August 2019, the USAF issued the revised LUC Management Plan for the Pacific Air Forces Regional Support Center Installation (LUC Management Plan) (USAF, 2019a), which includes Bethel RRS. Bethel RRS LUCs, managed under Site SS001, apply to the entire installation, providing coverage for all former IRP sites and the landfill where contaminants remain on site (USAF, 2019a). The LUC boundary figure and Table 2-1 from the updated LUC Management Plan, which describes the LUCs in effect, are provided in Appendix C. Figure 3, IRP Sites, and Figure 4, Area of ICs, from the 2011 Bethel ROD are included with the figures at the end of this report. The USAF filed a Notice of Environmental Contamination (NEC) for the SS001 property with the Alaska Department of Natural Resources Recorder's Office, District 402 Bethel, certified on 19 September, 2019 (USAF, 2019b). The NEC is included in Appendix C. The implementations status of the ICs/LUCs are summarized below in Table 2.

Table 2: Summary of Planned and/or Implemented ICs/LUCs

Media, Engineered Controls, and Areas that Do Not Support UU/UE Based on Current Conditions	ICs/LUCs Needed	Impacted Parcels	IC/LUC Objective	Title of LUC/IC Instrument, Documents, or Actions Implemented and Date
Protective soil cap and restrictions on excavation, digging, or other disturbance to soil are in place	Yes	SS001	Prevent direct exposure to contaminated soil. Prevent exposure to contaminated subsurface soil and solid waste remaining in place. Prevent water infiltration through soil cap (and potential offsite migration via runoff).	LUC Management Plan for the Pacific Air Forces Regional Support Center Installations, 2019. NEC for Site SS001 filed in 2019.
Fencing and LUC signs are installed, site inspections are required, and LUC reports are provided to ADEC	Yes	SS001	Prevent unauthorized access, ensure exclusion measures and soil cap integrity are maintained.	Soil cap repaired in 2016. The 2016 FYR recommended biannual inspections for next two years and engagement with community stakeholders. Gate and lock repairs occur annually as recommended in 2019. New gates installed in 2020 and 2022. NEC for Site SS001 filed in 2019.

Media, Engineered Controls, and Areas that Do Not Support UU/UE Based on Current Conditions	ICs/LUCs Needed	Impacted Parcels	IC/LUC Objective	Title of LUC/IC Instrument, Documents, or Actions Implemented and Date
Groundwater LTM is required and performance reports are provided to ADEC	Yes	SS001	Prevent use or exposure to supra-permafrost groundwater	LTM occurring annually until 2011 ROD RAOs are met. NEC for Site SS001 filed in 2019.

Key:

ADEC	Alaska Department of Environmental Conservation
FYR	Five-Year Review
IC	institutional control
NEC	notice of environmental contamination
LTM	long-term monitoring
LUC	land-use control
RAO	remedial action objective
ROD	Record of Decision
UU/UE	unlimited use/unrestricted exposure

The following paragraphs provide details on the status of implementation for the major components of the site remedies.

The remedy selected for the PCB-contaminated soil stockpile was removal and offsite disposal. In June 2011, removal of the PCB-contaminated soil stockpile from Site SS001 at the former POL Storage Area was initiated (USAF, 2012). The contaminated soil was excavated directly into 1-cubic-yard Super Sacks® for offsite shipment and disposal. Small breaches were discovered in the lower stockpile liner, so an additional 3–6 inches of soil beneath the liner was excavated at the recommendation of the USAF and ADEC. The Super Sacks containing all excavated soil as well as the stockpile liner and cover were placed in conex boxes and shipped off site for disposal. A total of 88.05 tons of contaminated soil and liner material was disposed of at the Columbia Ridge landfill in Oregon (USAF, 2012).

In October 2011, confirmation grid sampling was conducted over the footprint of the former stockpile. A total of five composite samples (6034811001–6034811005) were collected and analyzed for PCBs. PCB concentrations in the composite samples ranged from 0.05 milligram per kilogram (mg/kg) (6034811003) to 0.53 mg/kg (6034811004) (USAF, 2012). The post-excavation composite samples confirmed that residual PCB concentrations at Site SS001 (that portion containing the former POL Storage Area and the former temporary stockpile) are below the ADEC 1-mg/kg cleanup level. This remedial action is considered complete.

The remedy selected for Site SS001 (the former PAD Area portion) in the ROD is a soil cap with ICs and LUCs. Following the 2011 removal action and the demolition and offsite disposal of the remaining radio relay tower, site inspections occurred in 2012 and 2014. A depression caused by erosion or subsidence was noted in the southwestern area of the soil cap in 2014 (USAF, 2015). In August 2016, approximately 100 cubic yards of clean fill from a local borrow source was used to

bring the elevation in that portion of the cap up to grade to match the surrounding cover. The restored surface was graded at a slight angle to promote proper drainage and reduce the potential for future erosion. Additionally, the fence was repaired in August 2016 and signage confirmed to be present in accordance with the LUCs (USAF, 2017a).

Beginning in 2017, site inspections were increased to two times per year for the first two years (once in the spring, and once in the fall) to ensure that the exclusion measures are maintained. AFCEC and ADEC performed a site inspection in May 2017 and noted the fence and gates were in good condition and the 2016 cap repair and exclusion measures were functioning to prevent exposure to residual contamination. By the September 2017 inspection, vandalism to both access gates and signage was observed (USAF, 2018). During the June 2019 site inspection, both gates had been vandalized allowing for trespass, and despite repairs to the lock and chains, by a September 2019 site visit the gates were vandalized and in disrepair (USAF, 2019c). The northern gate was replaced in 2020. However subsequent site visits in 2021 and 2022 have confirmed persistent vandalism and trespass continue at the site (USAF, 2022; ADEC, 2022c).

Despite persistent vandalism at the site, LUC inspections have documented that the integrity of the soil cap remains sufficient to prevent exposure to contaminated soil through direct contact, to prevent exposure to contaminated subsurface soil and solid waste remaining in place, and to prevent water infiltration through the soil cap or potential offsite migration through runoff from the soil cap areas. Water diversion channels or swales are present along the perimeter of the soil cap areas within the exclusion fence. No surface water ponding has been reported since the 2016 soil cap repair. Native vegetation has progressively reestablished throughout the site, consisting mostly of alders on the soil cap and slopes. Around the southern gate entrance where the radio relay antennae were removed in 2011, sparse vegetation dominated by grass, lichens, and shrubs was observed. No signs of distressed vegetation, stained soils, or odor has been reported during previous site visits. Erosion has been noted outside the exclusion fence along the western portion of the Site SS001 boundary where frequent motorized-sport recreational use is evident. Findings of the FYR site inspection are discussed in Section IV, Site Inspection.

The remedy selected for Site SS001 (the former POL Storage Area portion) pursuant to Alaska state regulations for DRO in groundwater was natural attenuation and LUCs. There were two active monitoring wells at Site SS001: well MW-19RRS and well MW-23RRS. Well MW23-RRS historically contained concentrations of DRO in groundwater below the ADEC cleanup level of 1,500 micrograms per liter (µg/L) and was last sampled in 2007. The major component of the selected groundwater remedy was biennial groundwater sampling for DRO from well MW-19RRS (historically containing the highest DRO concentrations) for at least three consecutive sampling events. The monitoring program still necessitates the sounding of well MW23-RRS with an interface probe during long-term monitoring (LTM) events to monitor for the presence of free product.

In September 2012, the biennial groundwater monitoring program at SS001 was to be initiated. However, damage to the polyvinyl chloride (PVC) riser caused an obstruction in monitoring well MW-19RRS that prevented sampling (BEM-Bay West, 2013). In September 2014, field activities

were performed at SS001 in accordance with the selected site remedy that included decommissioning damaged well MW-19RRS, installing a replacement well (MW-19RRS-R), and collecting groundwater samples.

The first groundwater monitoring event for this replacement well occurred in 2014, with monitoring occurring most years since then. The sampling frequency was increased to annual events due to increasing concentrations of DRO observed in MW-19RRS-R during the 2016 and 2017 sampling events. Based on Mann-Kendall trend analysis of the past six sampling events at SS001, statistical evidence shows the DRO concentration trend is likely increasing (USAF, 2022). Further discussion of the 2017, 2019, 2020, and 2021 LTM sampling and results are provided in Section IV, Data Review.

Site management recommendations from the previous FYR and LUC reports include that the USAF conduct additional public outreach in Bethel to communicate the hazards associated with Site SS001. Outreach activities were limited by the COVID-19 pandemic.

Operations and Maintenance

No remediation systems are in operation at the Bethel RRS, however the past FYR considered the biennial groundwater sampling to be operations and maintenance (O&M) activities. Additional monitoring for Site SS001 in the ROD consisted of visual monitoring of the LUCs and cap inspections (USAF, 2011). To be consistent with the past FYR report, annual O&M costs are discussed in this section.

Using 2011 dollars, the ROD identified an estimated cost of $140,000 for three groundwater sampling events ($46,667 per event) and an annual O&M expenditure of $10,000 for LUC inspections. The actual annual O&M costs for Site SS001 are approximately $70,000 per year (R. Johnston, personal communication, 3 November 2022). These costs include replacement fencing materials, shipping, and personnel to repair the exclusion fence, in addition to groundwater sampling. Site groundwater monitoring and LUC inspections are performed at a greater frequency than outlined in the ROD, and at a greater annual cost than projected for Site SS001.

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III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR, the recommendations from the last FYR, and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2016 FYR

OU#	Protectiveness Determination	Protectiveness Statement
Sitewide (SS001)	Short-term Protective	The remedies at Site SS001 are protective of human health and the environment in the short term. There are no immediate threats from IRP Site SS001 at Bethel RRS, and the remedies are being implemented in accordance with the ROD and Alaska State regulations. Long-term, the Site SS001 remedy protectiveness may be impacted by vandalism of the site fencing, gate, and potential disturbance of the soil cap. Groundwater at Site SS001 is being monitored in accordance with the ROD. To improve short-term protectiveness, concerns raised by ADEC regarding the remedy performance including the efficacy of the exclusion measures and the integrity of the soil cap, are to be addressed through semiannual inspection of the site and community outreach. The long-term protectiveness of the remedies will be evaluated based upon the outcome of the semiannual inspections and community outreach within the next FYR period.

Key:
ADEC Alaska Department of Environmental Conservation
FYR Five-Year Review
IRP Installation Restoration Program
OU operable unit
ROD Record of Decision
RRS radio relay site

Table 4: Status of Recommendations from the 2016 FYR

OU#	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Sitewide (SS001)	The 70 cubic yards of PCB-contaminated soil stockpile was removed from Site SS001 (that portion formerly referred to as POL Storage Area) in accordance with the 2011 ROD.	Work with ADEC to obtain "Cleanup Complete with ICs" status for Site SS001 POL Storage Area under CERCLA.	Ongoing	The site status remains "active" in the ADEC Database, and ADEC has concerns regarding CERCLA contaminants remaining on the site including PCBs and DDT. The Site SS001 (POL Pad) and the PAD Area was administratively combined in 2017 (USAF, 2017) and are now regulated as one site under the name SS001. Determinations of site status will apply to the entire site.	N/A
Sitewide (SS001)	Site inspections were performed in 2012, 2014, 2015, and 2016. The ROD requires annual visual inspections of the soil cap for five years or until ADEC approves discontinuation of visual monitoring.	Visually monitor the soil cap (on a semiannual basis spring/fall) for signs of settlement, subsidence, erosion, or other such events and inspect downgradient of SS001 for distressed vegetation or other signs of contaminated seeps.	Ongoing	ADEC has not approved discontinuation of visual monitoring.	Site inspections were performed in 2017, 2019, 2020, 2021, and 2022.
Sitewide (SS001)	The exclusion fence continues to be breached by trespassers.	Continue inspections of the exclusion fencing during semiannual (spring/fall) visual inspections to assess if additional actions are required to minimize trespassing. Perform community outreach to engage the community and	Ongoing	Visual inspections are now performed annually, with repairs made on an annual basis. No outreach activities have been conducted.	Inspections were performed in 2017, 2019, 2020, 2021, and 2022.

OU#	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
		raise awareness about the contaminants onsite.			
Sitewide (SS001)	Erosion has been noted around the perimeter fence and east access gate. Repairs were performed in 2016, but continued monitoring is required.	Perform erosion improvements to minimize further erosion and repair eroded areas, as required.	Ongoing	Continued monitoring for erosion requiring repairs is ongoing.	Site inspections were performed in 2017, 2019, 2020, 2021, and 2022.

Key:

ADEC	Alaska Department of Environmental Conservation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDT	dichlorodiphenyltrichloroethane
FYR	Five-Year Review
IC	institutional control
N/A	not applicable
OU	operable unit
PCB	polychlorinated biphenyl
POL	petroleum, oils, and lubricants
ROD	Record of Decision

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IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement, and Site Interviews

Activities conducted during the FYR included community notifications and site interviews, data review, and site inspections to assess the protectiveness of the remedy.

A public notice was made available by newspaper posting in the *Bristol Bay Times/Dutch Harbor Fisherman* on 9/22/2022, stating that there was a FYR and inviting the public to submit any comments to the USAF. The results of the review and the report will be made available at the site information repository available electronically on the Air Force Administrative Record at https://ar.afcec-cloud.af.mil.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date**.** The following parties were interviewed, or interview responses were received, on the dates specified:

- Mr. Robert Johnston, AFCEC Remedial Project Manager; 3 November, 2022
- Mr. Timothy Sharp, ADEC Environmental Program Specialist; 6 October, 2022
- Yukon Delta National Wildlife Refuge (NWR) representative; 19 October, 2022

Multiple attempts were made to interview Bethel Native Corporation personnel; however no response was received. The results of the interviews that were conducted and correspondence received are summarized in the following paragraphs, and complete records are provided in Appendix E.

Mr. Johnston stated that the remedy at Site SS001 is functioning as intended, and he has not been made aware of any community concerns regarding Bethel RRS. He noted that a shooting range to the south-southeast of Site SS001 has resulted in an increase in site traffic within the vicinity of the site. Vegetation and erosion management recommendations were made in the 2021 LTM Report (USAF, 2022). Mr. Johnston noted that a contract for erosion control and seeding is in the funding process stage. In his interview, Mr. Johnston also noted that due to persistent vandalism and repeated damage to the site gates, there are ongoing discussions between ADEC and the USAF regarding alternatives to the fencing that would still maintain protectiveness at the site.

Mr. Sharp confirmed that LTM and IC reports have been submitted to ADEC as required. Mr. Sharp noted that vandalism at the SS001 site threatens the efficacy of the LUCs. In a follow-up to the interview questionnaire, Mr. Sharp provided details of a site visit conducted by ADEC in June 2022 where both gates were noted to be vandalized, allowing bypass of the exclusion measures (ADEC, 2022c). ADEC reported on the status of the LUC signs associated with the two gates. The northern LUC sign had damage from bullet holes but was legible. The LUC sign associated with the southern gate was on the ground due to the vandalized fencing but in good condition (ADEC, 2022c). Mr. Johnston confirmed issues identified during the June 2022 ADEC site visit were

addressed by an AFCEC contractor approximately two weeks thereafter (Robert Johnston, personal communications, 20 October 2022).

A Yukon Delta NWR representative reported that the NWR has no concerns regarding Site LF001 at the Bethel RRS (NWR representative, email communication, 19 October 2022).

Data Review

This FYR consisted of a review of relevant documents, which included the previous FYR report, and annual LTM and IC reports submitted during the period of this FYR. A complete list of the documents reviewed is included as Appendix A. This data review focuses primarily on the 2017, 2019, 2020, and 2021 LTM sampling activities and results. To support trend analysis, groundwater data from 2014 and 2016 are also included. Only well MW-19RRS-R has been sampled for DRO, per the ROD. Table 5 presents the results of DRO groundwater sampling compared to the cleanup level established in the ROD (USAF, 2011). The current ADEC cleanup level for DRO in groundwater is 1,500 µg/L, consistent with the 2011 ROD cleanup level (ADEC, 2022a).

Table 5: Historical DRO Groundwater Concentrations at Monitoring Well MW-19RRS-R

Year	DRO Concentration (µg/L)	Applicable Cleanup Level (µg/L)
2014	60.4 J	1,500
2015	Not Sampled	
2016	505	
2017	6,380	
2018	Not Sampled	
2019	850	
2020	1,250 J	
2021	1,520	

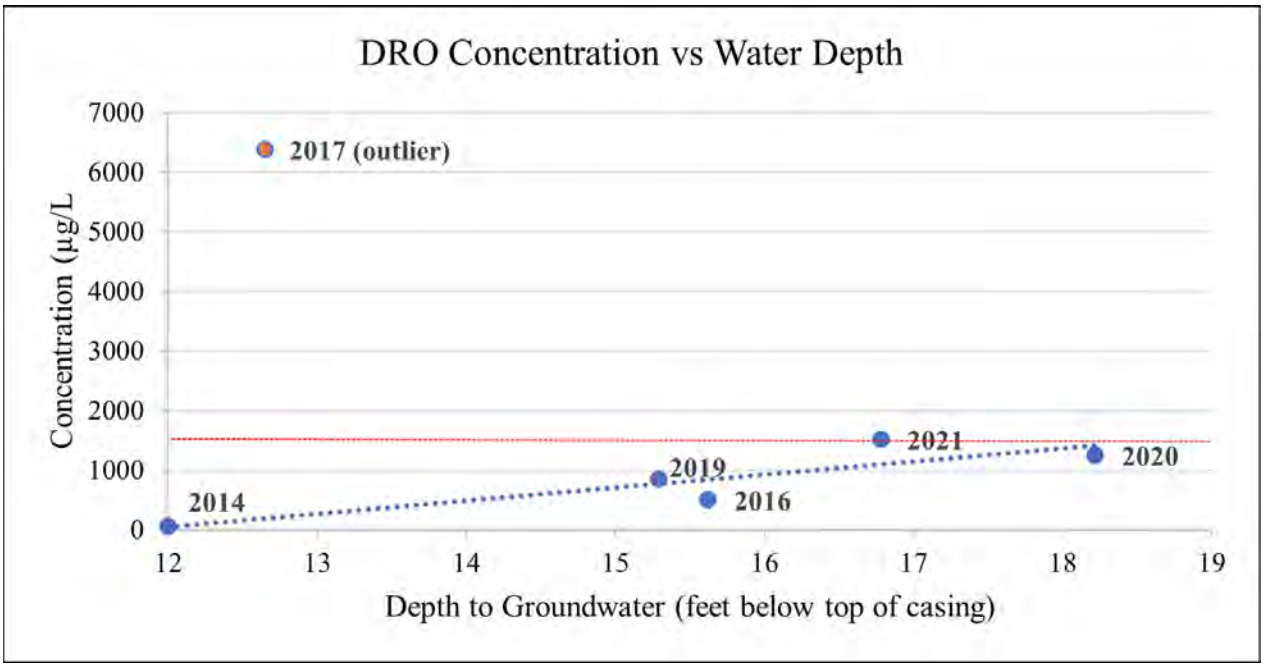
Notes:
The highest concentration between the primary/duplicate pair is shown. Historical concentration data source: LTM report (USAF, 2022)
The shaded value indicates the sample result is greater than the RAO.
The RAO for groundwater per the SS001 ROD is consistent with the ADEC groundwater cleanup level in 18 AAC 75.345 Table C (ADEC, 2022a).
The J qualifier indicates that the analyte was positively identified, and the quantitation is estimated.

Key:
µg/L micrograms per liter
AAC Alaska Administrative Code
ADEC Alaska Department of Environmental Conservation
DRO diesel-range organics
LTM long-term monitoring
RAO remedial action objective
ROD Record of Decision
USAF United States Air Force

The September 2017 monitoring event detected DRO concentrations above the applicable cleanup level for the first time since the LTM program was initiated in 2014. The 2017 sample from well MW-19RRS-R was reported with a DRO concentration of 6,380 µg/L in the primary sample and 6,540 µg/L in the duplicate sample; 10 times greater than the concentration reported the previous year. The biennial groundwater monitoring was continued because DRO concentrations indicated the suprapermafrost groundwater was not meeting the RAO and not indicative of a stable or decreasing DRO contamination trend.

The sampling events in June 2019 and September 2020 showed DRO concentrations below the cleanup level of 1,500 µg/L. However, the October 2021 sampling event resulted in DRO concentrations exceeding the cleanup level, with a DRO concentration of 1,520 µg/L in the duplicate sample.

A Mann-Kendall trend analysis was performed utilizing data from the six historical sampling events. The results of the Mann-Kendall analysis show the DRO concentration is likely increasing in well MW-19RRS-R with a Confidence Factor of 93.36 percent (USAF, 2022). If the 2017 concentration is considered an outlier, there may be a correlation between DRO concentrations and water depth at the time of sampling, r^2 = .76; however there still appears to be an increase in concentration over time (Graph 1).



GRAPH 1: DRO CONCENTRATIONS VS WATER DEPTH

Notes:
Dashed red line represents ADEC cleanup level of 1,500 µg/L (ADEC, 2022a)

Key:
µg/L micrograms per liter
DRO diesel-range organics

Site Inspection

The inspection of the site was conducted on 9/12/2022. In attendance were two field team members from Ahtna. All fieldwork was performed or supervised by qualified personnel, in accordance with 18 AAC 75.333 and 18 AAC 75.360 (ADEC, 2022a). The purpose of the inspection was to assess the protectiveness of the remedy.

The LUC engineering controls at the SS001 site include fencing, signs, and a protective soil cap (USAF, 2011). Inspection results were documented through the visual inspection checklist provided in Appendix F and georeferenced photographs provided in Appendix G. The locations of areas related to Site SS001 protectiveness and deficiencies of signs, gates, or other areas were captured with a sub-meter accuracy global positioning system (GPS) device utilizing the ArcGIS Field Maps application. Locations of interest related to RAOs at the site are shown on Figure 2.

Upon approaching the Bethel RRS installation, the gate to the installation and old BIA complex was unlocked and open. At the northern gate of the Site SS001 exclusion fence, the gate was locked but the panels and post were bent at irregular angles leaving a sizable gap between them that personnel could squeeze through. At the southern gate of the SS001 site, the exclusionary fencing immediately bordering the gate had been cut and laid down on the ground to allow vehicle passage through the site. The fence was folded over and rested on the ground while the posts were still standing upright. Barbed wire lining the top of the fence was present at the northern gate and along most of the northwest and southwest fence walls, but was absent around the southern gate fence line. Along the eastern portion of the exclusion fence line, the fence posts have frost-jacked resulting in a 2-foot gap between the fence bottom and ground surface. The fence was leaning at a 45-degree angle and was interlaced with alders.

Each of the four LUC signs were located and inspected. The signs were present at both access gates and along the northern and western exclusion fence. The signs at the northern and western fence were in good condition and legible, however the view of the sign along the northern fence line was obstructed by dense alders. The northern gate sign had bullet holes but was legible, and the southern gate sign was in good condition but still attached to the fencing that was resting on the ground.

Drainage culverts and swales appeared to be functioning to direct surface runoff and prevent erosion of the soil cap sidewalls. There was erosion of the road surface near the southern gate entrance where the radio relay antenna was removed in 2011 Sparse vegetation dominated by grass, lichens, and shrubs was observed in that area. Otherwise, native vegetation has reestablished throughout the site, consisting mostly of dense alders on the soil cap and slopes. Minor erosion channels (less than 1-foot wide and less than 0.5-feet deep) were noted along the southern fence, to the east of the retention pond. Both retention ponds were functioning with no observable damage. The drainage swale at the southwest corner of SS001 was functioning to prevent surface runoff from the soil cap to the all-terrain vehicle (ATV) trail that runs along the exterior of the north and west exclusion fence. Erosion and exposed liner were observed along the ATV trail but the sediment runoff appeared to be coming from the soil cover of the ATV trail rather than

originating from the cap area within the fence. Consistent with past LUC inspections, erosion was also noted outside the exclusion fence in the western section of the SS001 boundary where fresh ATV and dog tracks were visible in the unvegetated silty gravel and along the ATV trail (Figure 2).

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V. TECHNICAL ASSESSMENT

In accordance with CERCLA, the NCP, and current EPA guidance (EPA, 2001), a FYR should determine whether the remedy at the site is protective of human health and the environment. The technical assessment of a remedy examines three questions that provide a framework for organizing and evaluating data and information, and ensures that all relevant issues are considered when determining the protectiveness of the remedy. These questions are presented as follows.

QUESTION A: Is the remedy functioning as intended by the decision documents?

The selected remedy for PCB-contaminated soil, TPH, and asbestos buried at SS001 is soil capping, visual monitoring, and exclusion measures to maintain the functionality of the cap (to prevent direct exposure and water infiltration). Visual monitoring of the soil cap indicates it is functioning as intended as documented in LUC monitoring reports submitted to ADEC. Exclusion measures (fencing and locked gate) are not functioning to prevent unauthorized access and have increased the remedy implementation cost, however the USAF and ADEC are coordinating on this issue as intended in the 2011 ROD (USAF, 2011). Any unknown contaminants at SS001 that occur in subsurface soil are inaccessible because the integrity of the soil cap has been maintained.

The remedy selected under State of Alaska regulations for DRO-contaminated suprapermafrost groundwater is natural attenuation with LUCs. In accordance with this component of the selected remedy, groundwater monitoring is being performed to determine if passive environmental restoration will ultimately achieve the cleanup level (performance standard) in a reasonable time frame. Currently available data suggest that the contaminant concentrations are increasing, with the most recent sampling event for this FYR period showing concentrations slightly above the ADEC groundwater cleanup level. However, additional data will provide more confidence in trend analysis and help evaluate the correlation between DRO concentration and water depth during sampling.

ICs were implemented consistent with the selected remedy and address all areas of site-related contamination that are above levels that allow for UU/UE. The ICs are functioning as intended with land use limitations and prohibitions documented in the Pacific Air Forces Regional Support Center Installation LUC Management Plan (USAF, 2019a) and the NEC on record with the ADNR (USAF, 2019b). Groundwater LUCs are functioning to prevent exposure to DRO-contaminated suprapermafrost groundwater. Based on this FYR, the existing ICs are appropriate and are expected to remain adequate and effective.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

The RAOs used at the time of the remedy selection are still valid. There have been no changes in the potential exposure pathways at the site. The exposure assumptions used to develop the human health risk assessments remain valid.

There have been no changes to the ARARs for Site SS001. The soil and groundwater cleanup levels for Site SS001 COCs in the most recent version of the 18 AAC 75 regulations (ADEC, 2022a) are consistent with the cleanup levels established in the 2011 ROD (USAF, 2011). In addition, LUCs and ICs are in place to prevent exposures to onsite contaminants and other, unidentified contaminants that may be present under the Site SS001 soil cap area.

Although DDT is not a COC at the site, the ADEC soil cleanup level for DDT has changed since the ARARs were established in the 2011 ROD. At the time of the 2011 ROD, the DDT cleanup level was 21 milligrams per kilogram (mg/kg) for direct contact. The most recent ADEC cleanup level protective of human health is 24 mg/kg; therefore, the change does not affect the protectiveness of the remedy determined in the ROD. Soil samples collected at the conclusion of the 2009 IRA confirmed successful removal of the DDT-impacted soil to below the 2011 ROD cleanup level, and Site SS006 received a determination of No Further Action under CERCLA and Cleanup Complete under applicable Alaska Regulations.

DRO concentrations in suprapermafrost groundwater remain variable with a spike in concentration in 2017, followed by two consecutive sampling events showing concentrations below the applicable cleanup level and the most recent sampling event showing a concentration above the applicable cleanup level. Continued LTM of DRO in groundwater will determine the progress toward meeting the RAO.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

The outer perimeter of the site is vulnerable to melting permafrost. Permafrost is very sensitive to climate factors, with the “warm” permafrost typical of Bethel, Alaska, being particularly vulnerable. Warm permafrost is a fraction of a degree below freezing and is very sensitive to slight warming of the air. The historical annual temperature records for Bethel show a warming rate of 0.40 degrees Celsius (°C) per decade, which is predicted to almost double to 0.78°C per decade in the 21st century (Zhao & Yang, 2022). The exclusion fencing along the eastern side of the site, within the boggy tundra, is exhibiting damage from the freeze thaw cycle of the active layer. However, there has been no evidence of damage to the protective soil cap. Continued site inspections will further ensure the continued integrity of the soil cap remedy in the future.

VI. ISSUES/RECOMMENDATIONS

Issues and Recommendations Identified in the Five-Year Review:

Site SS001	**Issue Category:** Site Access/Security			
	Issue: The exclusion fence continues to be vandalized and breached by trespassers			
	Recommendation: The USAF, in cooperation with ADEC and as programming allows, should develop a plan to remove the fence while ensuring protectiveness of the remedy. Regulatory requirements, including final thickness of the soil cap, and any post-ROD changes to the remedy should be documented in an ESD. Community outreach to raise awareness of site contaminants and the importance of maintaining the soil cap integrity should be performed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	Other (AFCEC)	State	2024

Site SS001	**Issue Category:** Operations and Maintenance			
	Issue: Erosion has been noted around the perimeter of the western fence and the southern gate.			
	Recommendation: Apply native grass seed to the southern gate area and northwestern erosion area outside the exclusion fence. Repair the southwestern erosion area along the ATV trail to cover the exposed liner.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	Other (AFCEC)	State	2024

Site SS001	**Issue Category:** Institutional Controls
	Issue: The original NEC was recorded after to the promulgated Uniform Environmental Covenants Act (UECA), does not identify PCB contamination, and mentions fencing as a LUC.
	Recommendation: Prepare a Notice of Activity and Use Limitation (NAUL) to be recorded, in accordance with UECA, identifying PCB contamination and incorporating LUCs to be implemented.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	Other (AFCEC)	State	2024

Other Findings

In addition, the following are recommendations that were identified during the FYR but do not affect current and/or future protectiveness:

- Conduct annual site inspections at the site to verify IC effectiveness, soil cap integrity, and fence integrity.
- Continue groundwater monitoring annually to monitor DRO concentration trends.
- Prepare a fact sheet that summarizes the remedy, ICs, and the results of this FYR for the Bethel community.
- Install new LUC signs with correct designations for the DDT excavation area and the PCB excavation areas.
- Groundwater monitoring and LUC inspections are performed at greater frequency than outlined in the ROD, and at a greater annual cost than projected for Site SS001. Evaluate cost saving options in consultation with ADEC.

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedies at Site SS001 are protective of human health and the environment in the short term. There are no immediate threats from Site SS001 at Bethel RRS, and the remedies are being implemented in accordance with the ROD and Alaska state regulations. The remedy currently protects human health and the environment because the integrity of the soil cap is maintained through annual inspections and repairs as needed, and ICs are functioning to prevent exposure to subsurface and groundwater contaminants. In the long term, the Site SS001 remedy protectiveness may be impacted if suprapermafrost groundwater is not indicative of a stable or decreasing DRO contamination trend or the potential disturbance of the soil cap allows for contaminant exposure. Groundwater at Site SS001 is being monitored in accordance with the ROD but the exclusion fencing is not functioning to prevent unauthorized access. In order for the remedy to be protective in the long term, annual LTM and site inspections should be completed, community outreach conducted, and the integrity of the soil cap should be maintained.

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VIII. NEXT REVIEW

The next FYR report for Site SS001 at Bethel RRS is required five years from the completion date of this review.

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FIVE-YEAR REVIEW FIGURES

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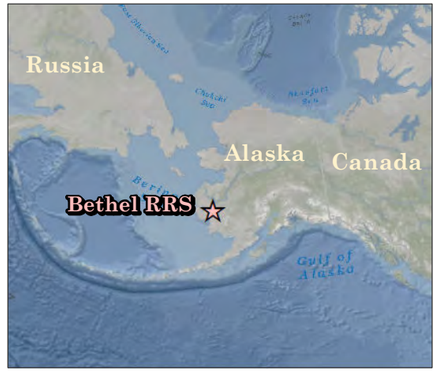

LEGEND

- Land Use Control Restriction
- Former POL Area (Based on 2011
- Former PAD Area (Based on 2011

Notes:
1. Bethel RRS land use controls, managed under site SS001, apply to the entire installation, providing coverage for all former ERP sites and a landfill where contaminants remain on site.
2. LUC boundaries depicted on this figure are preliminary pending final analysis of survey information. LUC boundaries will be updated once this information is available.
3. Boundary data are from 611th GeoBase or have been georeferenced into GIS from historical documents. Data could be incomplete and are of unknown accuracy.

ERP - Environmental Restoration Program
GIS - Geographic Information System
POL - petroleum, oil, or lubricant
ROD - Record of Decision
RRS - Radio Relay Station
LUC - Land Use Control

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Feet

2022 Five-Year Review Report for SS001 at Bethel Radio Relay Station, Alaska
U.S. Air Force Civil Engineer Center
Joint Base Elmendorf-Richardson, Alaska

Site Location and Vicinity

Figure 1

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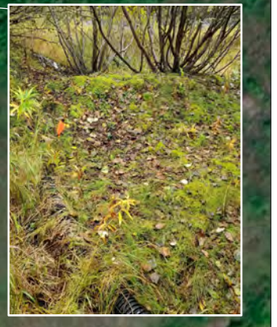

MW-23RRS

MW-19RRS-R

NORTHERN GATE, SIGN LEGIBLE

SOUTHERN GATE, DAMAGED SIGN ON GROUND

LEGEND

- LUC Sign
- Gate
- Exclusion Fence
- Land Use Control Restriction
- Former POL Area (Based on 2011 ROD)
- Former PAD Area (Based on 2011 ROD)
- Erosion Area
- Holding Pond

Notes:
1. Bethel RRS land use controls, managed under site SS001, apply to the entire installation, providing coverage for all former ERP sites and a landfill where contaminants remain on site.
2. LUC boundaries depicted on this figure are preliminary pending final analysis of survey information. LUC boundaries will be updated once this information is available.
3. Boundary data are from 611th GeoBase or have been georeferenced into GIS from historical documents. Data could be incomplete and are of unknown accuracy.

ERP - Environmental Restoration Program
GIS - Geographic Information System
POL - Petroleum, Oil, or Lubricant
ROD - Record of Decision
RRS - Radio Relay Station
LUC - Land Use Control

0 100 200
Feet

2022 Five-Year Review Report for SS001 at Bethel Radio Relay Station, Alaska
U.S. Air Force Civil Engineer Center
Joint Base Elmendorf-Richardson, Alaska

Site SS001 Locations of Interest

Figure 2

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RECORD OF DECISION SITE FIGURES

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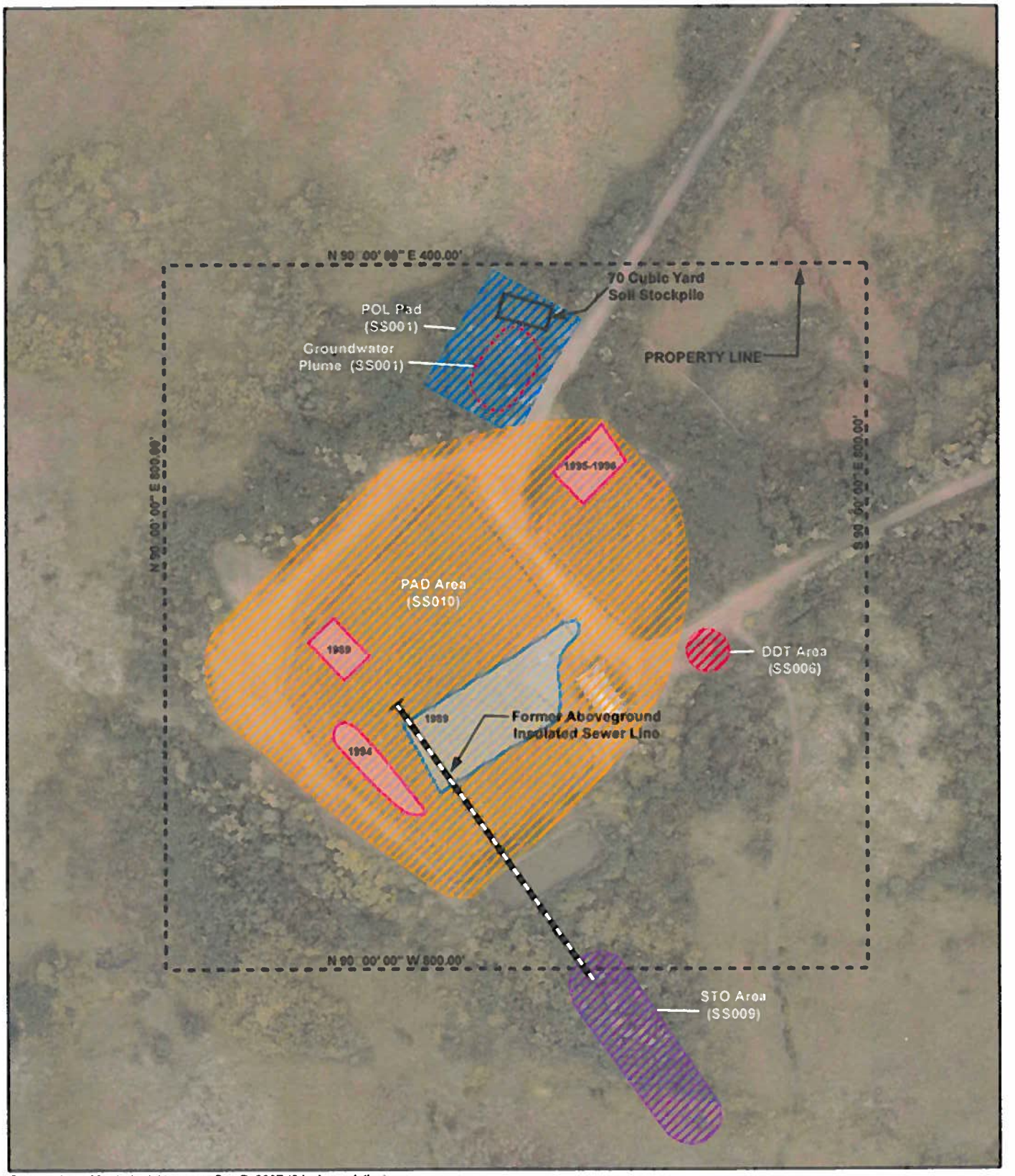

Source: Aero-Metric Aerial Imagery Sep 7, 2007 (6 inch resolution)

LEGEND

- Property Line
- General Debris Disposal
- Asbestos Disposal
- Soil Stockpile
- Groundwater Plume
- Former Operations Pad
- Former POL Pad
- DDT Drum Area
- Septic Tank Outfall

1 inch = 150 feet

0 150 300

Feet

Figure 3
IRP Sites
Bethel RRS, Alaska

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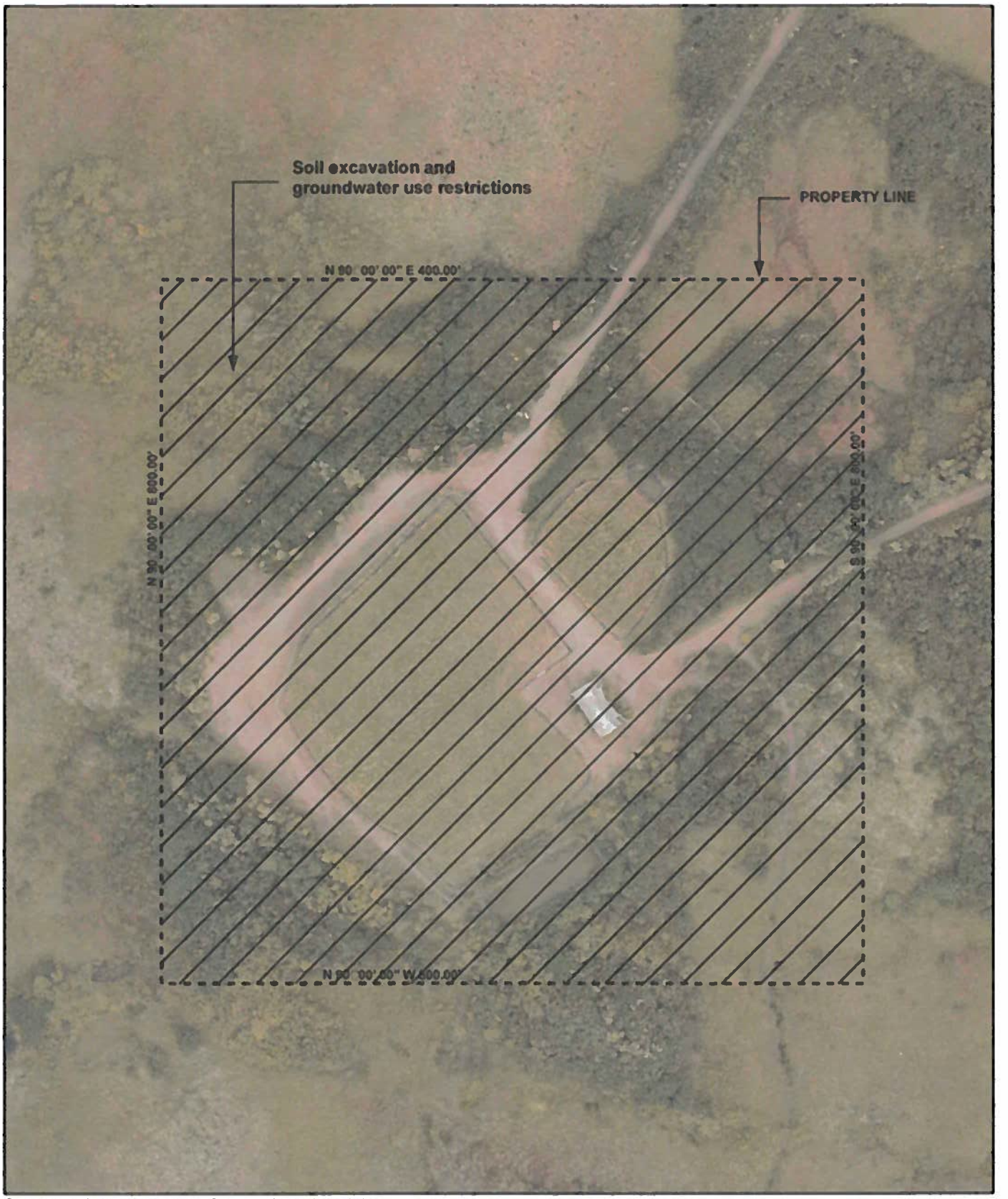

Source: Aero-Metric Aerial Imagery Sep 7, 2007 (6 inch resolution)

LEGEND

Area of Insitutional Controls (IC's)

Property Line

1 inch = 150 feet

0 150 300

Feet

Figure 4
Area of IC's
Bethel RRS, Alaska

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APPENDIX A

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APPENDIX B

SITE CHRONOLOGY

Event	Date
The USAF constructed the Bethel RRS facility.	1957
The USAF operated the Bethel RRS communications facilities.	1958–1979
An initial PA was conducted at Bethel RRS.	1989
A permitted landfill was created within SS001 (formerly known as the PAD Area).	1989
Demolition activities were performed at Bethel RRS to remove all structures and facilities at the RRS, with the exception of one antenna. Demolition debris, including friable asbestos, was buried in the landfill located within SS001 (in the area formerly known as the PAD Area).	1989–1990
An SI, which included soil and groundwater sampling, was performed at Bethel RRS.	1991
A second PA was performed to evaluate potential risks from COCs identified at Bethel RRS.	1994
PCB-contaminated soil from an adjacent remediation project was buried and capped at SS001 (formerly known as the PAD Area).	1995
Two additional asbestos cells at the landfill located within SS001 (formerly known as the PAD Area) were used.	mid 1990s
The surface of SS001 (formerly known as the PAD Area) was used as a biocell soil treatment and landfarm operation for petroleum-contaminated soil removed from an adjacent remediation project. Upon completion of the soil treatment/landfarming operations, the entire area was graded and capped with clean soil.	late 1990s
Soil and/or groundwater monitoring was performed at Site SS001 POL Storage Area.	1995, 1996, 1998, 1999, and 2000
A Clean Sweep Environmental Survey was conducted at Bethel RRS.	2000
An RI/FS was performed at Bethel RRS.	2007
DDT-contaminated soil was excavated from Site SS006 through an IRA, and disposed of off site. The IRA was determined to be the final action and completes cleanup requirements at Site SS006. No Further Action is required at SS006.	2008/2009
PCB-contaminated soil and concrete was excavated from Site SS009 through the IRA. All but 70 cubic yards of soil was disposed of off site at an approved landfill. The remaining 70 cubic yards were transferred to SS001 (that portion formerly known as the POL Storage Area). The IRA was determined to be the final action and completes cleanup requirements at Site SS009. No Further Action is required at SS009.	2008/2009
The Proposed Plan for Bethel RRS was released for public comment and public meetings were held.	June to July 2011
The Final ROD, which identified the selected remedy for SS001 (inclusive of the areas formerly referred to as the POL Storage Area and the PAD Area) at Bethel RRS, was signed.	August 2011
The remedial action at Site SS001, which included removal and offsite disposal of the PCB-contaminated soil stockpile, was conducted.	June to October 2011
A visual inspection of Site SS001 was performed.	September 2012
LUCs at Site SS001 were recorded in the 2012 LUC Management Plan, as required by the ROD.	December 2012
The biennial groundwater monitoring program at Site SS001 was initiated. Field work included decommissioning a damaged well; installing a replacement well; and groundwater sampling. In addition, a visual inspection of Site SS001 was performed,	September 2014

Event	Date
warning signs were installed, eroded areas (within the area formerly known as the PAD Area) were backfilled, and the exclusion fence and gates were repaired.	
The LUC Management Plan, which documents the LUCs in effect at Site SS001, was updated.	July 2015
A visual site inspection was performed at SS001 as part of the FYR.	August 2015
An IC and LUC inspection was performed at SS001. In addition, groundwater monitoring was conducted at SS001, exclusion fence and gate repairs were performed, and an erosional feature on top of the soil cap was backfilled.	July and August 2016
A Memo to Administrative File was added that clarified the classification of Site SS001 as inclusive of the POL Storage Area (formerly solely SS001), the permitted landfills, and the area formerly referred to as the PAD Area, which includes the six IRP sites SS002, SS003, SS005, SS008, and SS010. All of these areas were administratively combined into SS001 and are referred henceforth only as SS001 (USAF, 2017).	March 2017
An IC and LUC inspection was performed at SS001. Cap repair noted in good condition.	May 2017
An IC/ LUC inspection and groundwater monitoring was conducted at SS001, exclusion fence and gate repairs were performed	September 2017
An IC and LUC inspection and groundwater monitoring was performed at SS001.Both gates vandalized. Locks and chains replaced.	June 2019
An IC/ LUC inspection was conducted at SS001. Gates were vandalized and in disrepair.	September 2019
An IC/ LUC inspection and groundwater monitoring was conducted at SS001. Northern gate replaced.	September 2020
An IC/ LUC inspection and groundwater monitoring was conducted at SS001. Both gates vandalized.	October 2021
ADEC site visit performed. Both gates vandalized and allowing for trespass.	June 2022
USAF repaired the southern gate and fence.	July 2022
A visual site inspection was performed at SS001 as part of the FYR. Southern gate and fencing were torn down and in disrepair.	September 2022

Key:

COC	contaminant of concern
FS	Feasibility Study
IC	institutional control
IRA	Interim Removal Action
IRP	Installation Restoration Program
LUC	land-use control
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
POL	petroleum, oils, and lubricants
RA	remedial action
RI	Remedial Investigation
ROD	Record of Decision
RRS	Radio Relay Station
SI	Site Inspection
USAF	United States Air Force

APPENDIX C

LAND-USE CONTROL DOCUMENTATION

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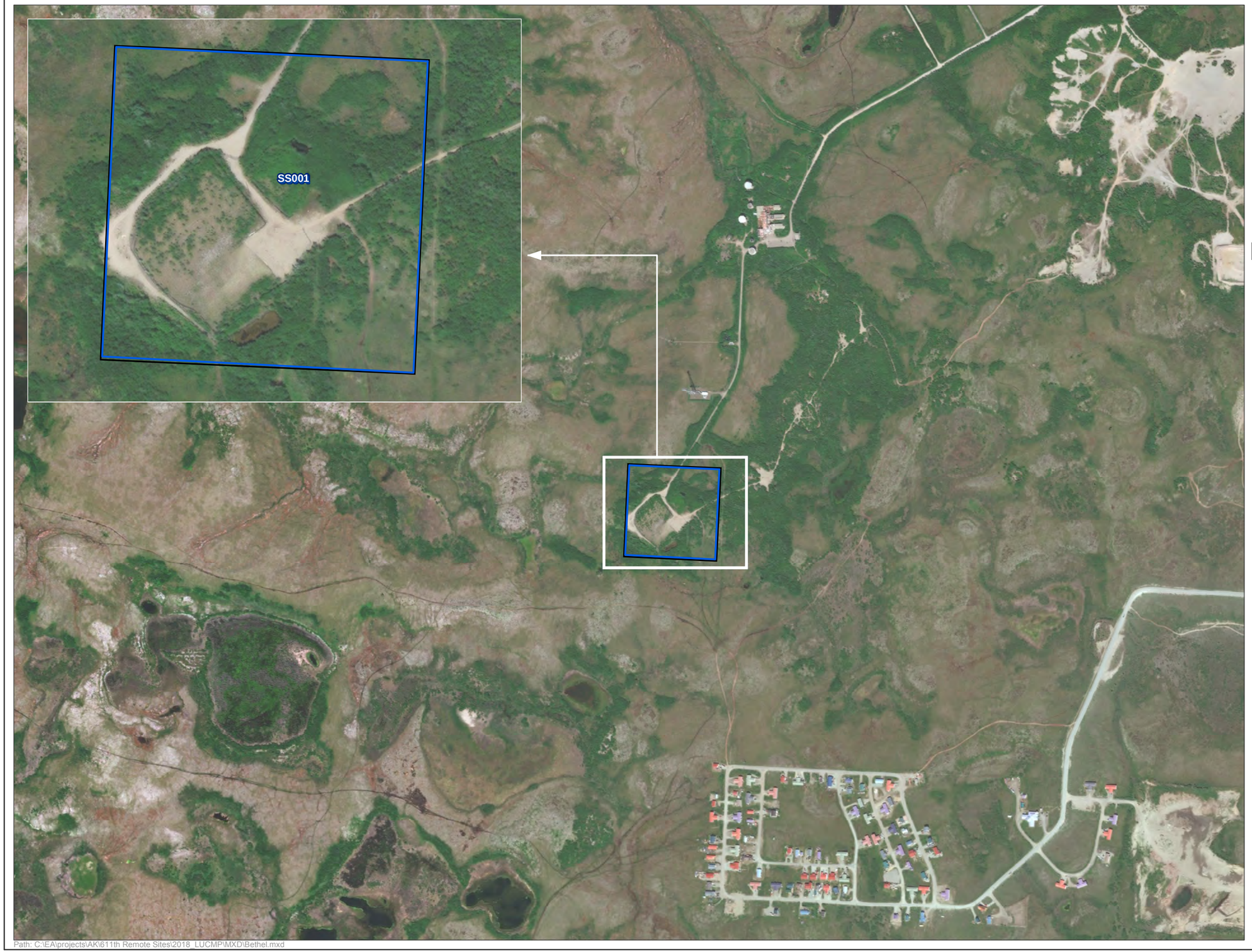
TABLE 2-1
Description of LUC[1] Types Currently in Effect at PRSC ERP Sites
Land Use Control Management Plan 2019, PRSC Installations, JBER, Alaska

Installation:	ERP Site(s)	Purpose and Objectives	Prohibitions/Restrictions	Engineering Controls	Expected Durations	Monitoring/ Inspections/ Reporting/ Maintenance	Administrative Elements
ALASKA INSTALLATIONS							
Barter Island LRRS	LF001 /LF004	• (None specified) (Old and New CERCLA Landfill Locations)	The property may not be suitable for some uses. Maintenance and repairs to the property might become necessary to prevent pollution problems at the site, and, any activity that results in damage to the final cover of the property must be corrected to control potential pollution problems.	Landfill cap	Five years of annual monitoring were completed in 2015	Fiver years of annual inspections were completed in 2015, and ADEC approved discontinuation of annual inspections and monitoring.	As per 18 AAC 60.396 (ADEC 2013), the landfill owner or operator must, for at least five (5) consecutive years, conduct visual inspections of the landfill at least once every 12 months as described in 18 AAC 60.800. By the conclusion of the fifth consecutive year of inspection, the owner or operator shall record a notation on the property deed. The owner of operator shall provide written notice to ADEC and the landowner that the deed notation has been recorded and that a copy has been placed in the operating record of the landfill.
Barter Island LRRS	SS011	Conditional Closure	Excavation / Soil Movement Restrictions			Institutional Controls established and entered into the databas 2013. 5YR required in 2018.	Conditional closure and ROD available in unsearchable format. https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/4036
Barter Island LRRS	SS013	• Protect human health and the environment through resource management, migration, and exposure controls	• No surface water use at or adjacent to site (including pond west of the Heated Storage building) • No inappropriate land use in the vicinity of the former Heated Storage building. • No unauthorized transport or disposal of soil or unauthorized digging/excavation	• Signs	• Surface water sampling until TCE and byproduct levels are demonstrated to be below AWQS • Maintenance of cap over PCB contaminated soil as long as PCB concentrations exceed 1 mg/kg • In general, ICs to remain in effect as long as the contaminated media exceeds ADEC unrestricted use criteria (18 AAC 75.341, method two cleanup levels).	• Surface water monitoring at least every 5 years until two consecutive sampling events indicate TCE and byproduct concentrations are below Alaska Water Quality Standards (18 AAC 70); results to be reported in Five-Year Review • Landfill cap maintenance • Prompt notification to ADEC of any institutional control deficiency/failure along with corrective measures • Five-Year Reviews	• Use of USAF construction review and dig permit systems (or similar) to prevent uses or activities inconsistent with RAOs • Notations regarding land use restrictions recorded in the appropriate Barter Island LRRS land records, including the Base Master Plan • Obtain ADEC concurrence for significant changes to use and activity restrictions, give prior notification to ADEC for transfer of property subject to institutional controls, or movement /disposal of contaminated soil
Barter Island LRRS	SS014	• Protect human health and the environment and allow for continued site use	• No unauthorized land use beneath the Garage building. • No unauthorized transport or disposal of soil or unauthorized digging/excavation	• Fencing to prevent access beneath the Garage building • Signs	• ICs to remain in effect as long as the contaminated media exceeds ADEC unrestricted use criteria (18 AAC 75.341, method two cleanup levels).	• Monitoring and maintenance of fencing is included in routine facility care • Annual reporting to ADEC and administrative record on institutional control monitoring • Prompt notification to ADEC of any institutional control deficiency/failure along with corrective measures. • Five-Year Reviews	• Use of USAF construction review and dig permit systems (or similar) to prevent uses or activities inconsistent with RAOs • Notations regarding land use restrictions recorded in the appropriate Barter Island LRRS land records, including the Base Master Plan • Obtain ADEC concurrence for significant changes to use and activity restrictions, give prior notification to ADEC for transfer of property subject to institutional controls, or movement /disposal of contaminated soil
Barter Island LRRS	SS022	Preliminary LUCs	TBD	TBD	TBD	TBD	TBD
Bear Creek RRS	LF001	• Prevent human exposure to PCB-contaminated soil exceeding the ADEC Method Two cleanup level of 1 mg/kg • Protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. • Maintain the integrity of the landfill cap and prevent inadvertent human exposure to, or handling of, potentially contaminated soils	• No excavation without prior ADEC notifiation and procedures to screen excavated soils for possible contamination	• Landfill cap	• LUCs will be maintained in perpetuity as long as the landfill remains in place.	• Will maintain the cap over the site in accordance with State of Alaska solid waste regulations. Cap maintenance will include inspections and periodic repair of the vegetated 18-inch soil cap placed over the site in 1997. • Will perform periodic inspections, monitoring, and reporting of the ICs annually for the first 5 years and then once every 5 years (Five-Year Reviews) to ensure that the remedy remains protective of human health and the environment. If any problems or deficiencies with the landfill cap integrity are detected, the USAF will perform the required maintenance to correct the deficiencies.	• Document the site's previous use as an unpermitted landfill • Delineate and survey the boundary of the institutional controls at Site LF001 to obtain a property description suitable for recording purposes - the IC boundary is expected to encompass the landfill area shown on Figures 2-2 and 2-3 of the 2011 ROD • Document the presence of the protective soil and vegetative cap • Document the IC at the District Recorder's office (including a map indicating IC locations, a survey, and GPS coordinates) • Provide the landowner with copies of the survey or figures showing the location and boundaries of the landfill and documents recorded; work with the landowner to incorporate the information into its land use planning tools • Require notification of ADEC prior to the commencement of any excavation activities within the landfill boundaries • Require that any person conducting excavations within LF001 include procedures to screen excavated soils for possible contamination; if encountered, manage contaminated soils in accordance with applicable State of Alaska regulations. • USAF to promptly notify ADEC if monitoring detects any condition, change of land use, or activity that is inconsistent with the ICs
Bethel RRS	SS001[2]	• Prevent direct exposure to contaminated soil • Prevent water infiltration through soil cap (and potential off-site migration of contaminants via runoff) • Prevent exposure to contaminated subsurface soil and solid waste remaining in place.	• No unauthorized access • No disturbance of soil/landfill cover • No unauthorized digging/excavation	• Fencing • Signs • Protective Soil Cap	• Biannual through 2018	• Site inspections are to occur twice per year for the first two years (2017-18) to ensure that exclusion measures are maintained.	• Use USAF dig permit and construction review process to help enforce restrictions on drilling/excavating • Document ROD land use limitations and prohibitions in USAF Real Property Records, Bethel RRS General Plan, 611 CES IRP Records and Land Use Management Plan • Property transfer requires ADEC approval prior • USAF will conduct additional public outreach in Bethel to communicate the hazards associated with Site SS001



Installation Boundary

ERP Sites and LUC Status

Land Use Control Restriction
(See Tables 1-2 and 2-1)

Notes:
1. Bethel RRS land use controls, managed under site SS001, apply to the entire installation, providing coverage for all former ERP sites and a landfill where contaminants remain on site.
2. LUC boundaries depicted on this figure are preliminary pending final analysis of survey information. LUC boundaries will be updated once this information is available.
3. Boundary data are from 611th GeoBase or have been georeferenced into GIS from historical documents. Data could be incomplete and are of unknown accuracy.
4. For more detailed land use restriction information, see individual site descriptions and summaries.

ERP - Environmental Restoration Program
GIS - Geographic Information System
RRS - Radio Relay Station
LUC - Land Use Control

0 500 1,000
Feet

Land Use Control Management Plan
Pacific Air Forces Regional Support Center Installations
Joint Base Elmendorf-Richardson, Alaska

Installation Map - Bethel RRS

Figure 7

Path: C:\EA\projects\AK\611th Remote Sites\2018_LUCMP\MXD\Bethel.mxd

ALASKA

2019 – 000768 – 0

Recording District 402 Bethel
09/19/2019 10:08 AM Page 1 of 5

THIS COVER SHEET HAS BEEN ADDED TO THIS DOCUMENT TO PROVIDE SPACE FOR THE RECORDING DATA. THIS COVER SHEET APPEARS AS THE FIRST PAGE OF THE DOCUMENT IN THE OFFICIAL PUBLIC RECORD.

DO NOT DETACH

May 8, 2018

ALASKA
2019 – 000128 – 0
Recording District 403 Kuskokwim
09/09/2019 01:36 PM Page 1 of 3

NOTICE OF ENVIRONMENTAL CONTAMINATION

RECORDING DISTRICT: BETHEL

As required by the Alaska Department of Environmental Conservation (ADEC), Grantee, pursuant to 18 AAC 75.375 the U.S. Air Force (USAF), Grantor, as the owner of the subject property, hereby provides public notice that site SS001 – Petroleum, Oil, and Lubricant (POL) Storage Area located at: Northing 2,476,379.604 feet, Easting 1,660,827.384 feet (Zone 7, Alaska State Plane), at the Bethel Radio Relay Station, near Bethel, Alaska, and more particularly described as follows:

Section 15 of Township 8 North, Range 72 West, Seward Meridian,

has been subject to a discharge or release and subsequent cleanup of oil or other hazardous substances, regulated under 18 AAC 75, Article 3, as amended October 27, 2018. The release and cleanup information is documented in the ADEC Contaminated Sites database file at:

https://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/SiteReport/2831

Site SS001 encompasses the former POL Storage area, a 90-by-90 foot gravel pad formerly used for storage and distribution of diesel and other petroleum products, as well as the operations area (formerly known as the PAD Area). The POL storage area had two 550-barrel ASTs and a pump station located on site. The PAD Area includes permitted landfills and six historical IRP sites that were combined into SS001. The landfills received demolition wastes including friable asbestos from demolition work in 1990, and PCB-contaminated soil in 1995 from an adjacent remediation project. The PAD Area was also used as a biocell soil treatment and landfarm operation before being graded and capped with clean soil. Monitoring wells installed in 1991 detected POL contaminant concentrations in the soil and water at the site above ADEC cleanup levels. Approximately 70 cubic yards of PCB contaminated soils were removed and disposed of offsite in 2011. A 2011 Record of Decision established Natural Attenuation with Land Use Controls (LUCs) as the Selected Remedy for the POL Storage area, and Soil Cap with LUCs as the Selected Remedy for the PAD Area. Site SS001 and the PAD Area were administratively combined under the name Site SS001 in 20017.

ADEC reviewed and approved, subject to the sustained management of the Institutional Controls, the cleanup as protective of human health, safety, welfare, and the environment. The LUCs for the POL Storage Area remain in effect until ongoing groundwater monitoring determines that ADEC cleanup levels have been met. At the PAD Area no further cleanup is necessary at this site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare, or the environment. ADEC determined, in accordance with site cleanup rules detailed in 18 AAC 75.325 – 390, that cleanup has been performed to the maximum extent practicable.

Attached is a site figure that shows the approximate boundary of the area of Institutional Controls. The following Land Use Controls apply specifically to the SS001 site (Hazard ID 2831):

- Installation and maintenance of fencing, gates and warning signage around the existing soil cap to prevent unauthorized access.
- Requirements to monitor the soil cap every 5 years for signs of settlement, subsidence, erosion or other such events and inspect down gradient for signs of contaminated seeps.
- USAF construction review and dig permit system is required for any future subsurface intrusive work to prevent disturbances at the POL Storage area or PAD Area that could breach the landfill containment and restrictions on ground-disturbing activities without prior approval from ADEC.
- Biennial groundwater sampling for diesel range organics for three consecutive sampling events beginning in 2012 to ensure decreasing contaminant concentrations.
- Performance of five year reviews to monitor site condition and the effectiveness of the remedy.
- Requirement for the Air Force to notify ADEC of violations of the LUCs or activities inconsistent with the LUCs or the LUC objectives, and identify corrective measures taken or planned.

Pursuant to 18 AAC 75.325(i)(1) and (2), ADEC approval is required prior to transporting soil or water from within the boundaries of the site. Any soil or water that is extracted or brought to the surface in the future must be characterized and managed following applicable regulations at that time. In addition, any work/dig permit must comply with the Pacific Air Forces Regional Support Center Operating Instruction (PRSCOI) 32-7001 Land Use Control Management. The Institutional Controls will remain in effect until the State of Alaska determines they are no longer required for protection of human health and ecological receptors.

In the event that contaminated media becomes exposed or accessible by land use activities, or other information becomes available which indicates that the site may pose an unacceptable risk to human health, safety, welfare or the environment, the land owner and/or operator are required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations; further site characterizations and cleanup may be necessary under 18 AAC 75.325-.390.

This Notice remains in effect until a written determination from ADEC is recorded that states that the soil, surface water and groundwater at the SS001 site has been shown to meet the most stringent cleanup levels under 18 AAC 75.325-.390 and 18 AAC 70 and that off-site transportation of contaminants is not a concern.

For more information on the contaminated site in this Notice of Environmental Contamination, please see ADEC Contaminated Sites Program file number 2407.38.010, Bethel Radio Relay Station – POL Storage Area and PAD (SS001), Bethel Radio Relay Station, ~5 miles W of Bethel, Bethel, AK 99559, Hazard ID No. 2831.

Charlie Crawford
CES-Insight

Return To: Charlie Crawford, CES-Insight, 1701 Shenandoah Avenue, NW, Roanoke, VA 24017

NOTICE OF ENVIRONMENTAL CONTAMINATION

RECORDING DISTRICT: BETHEL
FAIRBANKS, ALASKA

T8N, R72E, SECTION 15
SEWARD MERIDIAN
AREA SUBJECT TO RESTRICTED LAND USE
DUE TO ENVIRONMENTAL CONTAMINATION

ATTACHMENT 1

SEAL OF THE DISTRICT RECORDER OF THE STATE OF ALASKA FOURTH JUDICIAL DISTRICT

United States of America }
State of Alaska } ss

THIS IS TO CERTIFY that the foregoing is a full, true and correct copy of the document as it appears in the records and files of my office.

IN THE WITNESS WHEREOF, I have hereunto set my hand and have affixed my official seal at Fairbanks, Alaska, this 19th day of September 2019.

By _____ Recorder II

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APPENDIX D

COMMUNITY INVOLVEMENT MATERIALS

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The Bristol Bay Times & The Dutch Harbor Fisherman

CASE/PO/AIO: AHTNA ENGINEERING SERVICES, INC.
AD# or identifier: 31516

REMIT TO: **Anchorage Daily News**
300 W 31st Ave
Anchorage, AK 99503
Ph: (907) 257-4251
Fax: (907) 279-7579

INVOICE(S):

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA
STATE OF ALASKA, THIRD DISTRICT
BEFORE ME, THE UNDERSIGNED, A NOTARY PUBLIC THIS DAY PERSONALLY APPEARED **Lisi Misa** WHO, BEING FIRST DULY SWORN, ACCORDING TO LAW, SAYS THAT S/HE IS **Legal Sales** OF **The Bristol Bay Times/Dutch Harbor Fisherman** PUBLISHED AT **300 W 31ST AVE, ANCHROAGE AK ,** IN SAID THIRD DISTRICT STATE OF ALASKA AND THAT THE ADVERTISEMENT, OF WHICH THE ANNEXED OR ATTACHED IS A TRUE COPY, WHICH WAS PUBLISHED IN SAID PUBLICATION **The Bristol Bay Times/Dutch Harbor Fisherman** AND THEREAFTER FOR A TOTAL OF **1** CONSECUTIVE ISSUE(S), THE LAST PUBLICATION APPEARING ON **September 22, 2022**.

ATTACH PROOF OF PUBLICATION HERE

Lisi Misa

LISI MISA
LEGAL SALES

SUBSCRIBED AND SWORN BEFORE ME THIS 26th DAY OF September, 2022

Jada L. Nowling

JADA L NOWLING
NOTARY PUBLIC STATE OF ALASKA
MY COMMISSION EXPIRES ON JULY 24, 2024

Jada L. Nowling
ELECTRONIC NOTARY PUBLIC
STATE OF ALASKA
MY COMMISSION EXPIRES 07/14/2024

Teachers sleep in Dillingham school amid housing crisis

District scrambles for solutions as staffing shortages clash with limited housing availability

ISABELLE ROSS
KDLG News

Photo by Izzy Ross / KDLG

Science teacher Dan Bonser holds his cat, Nix, on Sept. 7 in the classroom where he and his family have stayed in since they arrived in Dillingham in August.

There was a lot of turnover in the Dillingham City School District last spring. The district hired 22 new staff members for this year — a quarter of the entire staff. But some of those teachers don't leave school after classes end for the day.

Dan Bonser moved from Oklahoma to Dillingham last month with his wife, Lisa. Their daughter, CJ, also moved with them and is an instructional aide for the special education program. Right now, the family lives in the school with their two cats.

One afternoon in early September, Bonser walked up the stairs in Dillingham's middle-high school to room 200. It's the middle school science room — where his family sleeps.

"Some of our bedding is over there. And then the first two totes over there — food," he said pointing across the classroom.

Each night, the family gets their clothes ready for the next day and inflates air mattresses they brought from Oklahoma. Bonser said the first few weeks of school have been tough.

"I've done a lot of different jobs in my life. And I've never been this exhausted," he said. "It's a lot."

This is Bonser's first year teaching, so he's getting used to planning lessons and working in a classroom. Sleeping in the school brings that stress to a whole new level.

"We're sleeping in a classroom. Luckily, you know, it's a sizable room, and that kind of stuff. But you know, we have to pack up everything every morning to make sure there's room for the class," he said. "It's taking its toll. There's no ifs, ands or buts about it."

Housing in Dillingham is extremely limited. There are no official resources for people looking to rent living space; a lot of people find housing through mutual connections or Facebook groups. Bonser said when they were offered the jobs, the school district said it would help them navigate the search.

"We have a bead on one house, but it needs to be connected to the sewer, and there's not enough plumbers to get that done and the homeowner's been waiting a long time for that to happen anyways," he said.

Another limitation is transportation. Housing farther away from school could mean buying a car in Anchorage and barging it over. That would cost between $3,000 - $6,000. The shipping company Alaska Marine Lines quoted car shipments from Anchorage to Dillingham at anywhere from $3,200 - $5,600.

"That's not including the price of the car. And that happened before we met our first paycheck," Bonser said. "So at some point, you're like, okay, how do we get about this? There's also being a family, we really do need at least two bedrooms. And, of course, we added the problem to bring the cats. So we've had a few turns down because of the cats."

Bonser said he got the impression that the school would do more to help teachers find somewhere to stay. But despite the strain, he said it has been nice to get to know other teachers who had to sleep at the school.

"We've had decent community meals with all the people staying in the school," he said. "We actually had a couple of game nights where a whole bunch of us got together, some of the teachers actually came in. Yeah, it's been pretty amazing, having a good little community at school."

The school district's new human resources director, Lindsay Henry, was able to find a place for herself and her dog. She said other new staff were able to find housing, too. But it's tricky when newcomers aren't familiar with the state.

"I think what is difficult for people who are coming who don't have a familiarity with Alaska, is that they hear about people working in the bush. And in most of those bush communities, they do provide housing, and Dillingham is kind of unique in that it's a Class A city and we don't have to provide housing for teachers," she said.

Henry said the district tells staff that housing is a challenge and tries to help them find something. Officials can send teachers phone numbers and the names of landlords in town.

"But we can't take on that liability or responsibility of actually negotiating housing for them. So it's a challenge in many ways," she said.

It's also competitive. Henry points out that a lot of organizations in Dillingham hire people from out of town and need housing for them. That includes the hospital, Fish and Game and the university.

Dillingham's housing shortage is acute, but it's not unique. Across the country, people are struggling to find places they can afford to rent or buy. In Alaska, the average home sales price jumped almost 9% last year. And in rural communities, the problems are compounded by the costs of shipping in building materials and the lack of construction workers and contractors.

"The common thread is — tight housing market, rising sales prices and limited availability. And that's home buying," said Rob Kreiger, an economist with the Alaska Department of Labor. "On the rental side of things, broadly speaking, rent's way up, vacancy rate's way down, which suggests a tight rental market, as well as a tight home buying market. And that's pretty much consistent throughout most of the areas that we have data for."

Kreiger said the state doesn't have a good handle on what the rental market is like in rural parts of Alaska. But in general, housing prices are high and there are limited homes for sale in rural areas.

"I think you have those two factors," Kreiger said. "I think that would probably sum it up for most of the kind of larger rural hubs as well."

The housing shortage in Dillingham is intertwined with another national shortage of teachers. Other schools have turned to teachers from other countries through the J-1 visa program. But that program also requires a plan for housing.

Dillingham's new superintendent, Amy Brower, spent five weeks staying at the school before she found a place to live. At a recent school board work session, Brower said there were several candidates who turned down job offers because they couldn't find anywhere to stay.

"We had some really good, high-quality candidates that wouldn't come because of housing," she said. "So we're at a point where, with the number of teachers that are not out there — and I said not — and the quality of teacher that we're looking for, we're going to have to find some way to do something to help get them here."

The administration is working with the fish processor OBI Seafoods to rent out crew quarters during the year. Brower said the school is working with the City of Dillingham to find long-term solutions as well. The district has discussed applying for grants to build new housing units or renovate existing ones. That could include an Alaska Housing Finance Corporation grant, which would allow a company to build housing teachers could then rent out.

Until then, some teachers will continue to search for a place to sleep — outside of the classroom.

Get in touch with the author at izzy@kdlg.org or 907-842-2200.

APPENDIX E

INTERVIEW RECORDS

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INTERVIEW RECORD
Bethel Radio Relay Station

Site Name: SS001	**EPA ID No.:** 199725X104101	
Subject: 2022 Five Year Review	**Time:** 09:00	**Date:** 11/3/2022
Type: ☒ Telephone ☐ Visit ☐ Email **Location of Visit:** n/a	☐ Incoming ☒ Outgoing	

Contact Made By

Name: Leslie Davis	**Title:** Deputy Project Manager	**Organization:** Ahtna Solutions, LLC

Individual Contacted

Name: Robert Johnston	**Title:** Remedial Project Manager	**Organization:** AFCEC/CZOP

Telephone: 907-552-7193 **Email:** robert.johnston.17@us.af.mil	**Street Address:** 10471 20th St. Ste. 326; PO Box 6898 **City, State, Zip:** JBER, AK 99506-2201

SUMMARY OF CONVERSATION

Are the ICs at Site SS001 functioning as expected?
Yes.

Do you know of any problems or difficulties that have been encountered that have impacted remedy implementation or progress at Site SS001?
None.

Have any problems been encountered that required, or will require, changes to the ROD?
Not at this time.

Are you aware of any community concerns regarding this site? If so, please give details.
No, no calls from the community.

Vandalism to the southeast gate has been reported in previous site inspections and observed during the FYR site inspection. Could removal of the gate and replacement with fence and/or bollards be a potential solution, leaving site access via the northern gate only? Have any other solutions been discussed?
Ongoing discussing between ADEC and USAF to eliminate the fencing.

Are you aware of any other events, incidents, or activities at the sites such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
No emergency responses. Behind the south gate there is fire range that wasn't there before and causing more traffic in the area.

Several vegetation/erosion management recommendations were made in the 2021 LTM Report, such as applying native grass seed and trimming of vegetation obstructing LUC signs. Could you please provide information regarding any plans to implement these recommendations?
Not for this year. Contract for erosion control and seeding is in funding process.

Do you have any general comments, suggestions, or recommendations regarding the management of these sites, remedy implementation, or ongoing work at the sites?
No.

Do we have your permission to use your name in the Five-Year Review report and document the results of your interview in the report? Yes.

INTERVIEW RECORD
Bethel Radio Relay Station

Site Name: SS001	**EPA ID No.:** 199725X104101	
Subject: 2022 Five Year Review	**Time:** n/a	**Date:** 10/6/2022
Type: ☐ Telephone ☐ Visit ☒ Email **Location of Visit:** n/a	☐ Incoming ☐ Outgoing ☒ n/a	

Contact Made By

Name: Leslie Davis	**Title:** Deputy Project Manager	**Organization:** Ahtna Solutions, LLC

Individual Contacted

Name: Tim Sharp	**Title:** Environmental Program Specialist	**Organization:** ADEC
Telephone: (907)451-2131 **Email:** tim.sharp@alaska.gov	**Street Address:** 610 University Ave **City, State, Zip:** Fairbanks, AK 99709	

SUMMARY OF CONVERSATION

What is your overall impression of the project? (general sentiment)
This is a site that is in long term groundwater monitoring annually until contaminants fall below state regulatory cleanup levels. The site is frequently trespassed upon and vandalized.

Has the USAF reported on the status of the ICs and LTM as required?
Yes

Do you know of any problems or difficulties that have been encountered that have impacted remedy implementation or progress at Site SS001?
Commonly there is vandalism at the premises that threaten the efficacy of LUCs.

Have any problems been encountered or changes in State laws and regulations that may impact protectiveness and required, or will require, changes to the SS001 ROD?
No.

Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please give purpose and results.
Yes, a site visit was conducted in June 2022, and reporting communication occurs every time a QAPP or LTM report is due.

Have there been any complaints, violations, or other incidents related to the site requiring a response by your office? If so, please give details of the events and results of the responses.
No.

Do you have any general comments, suggestions, or recommendations regarding the management of these sites, remedy implementation, or ongoing work at the site?
No.

Do we have your permission to use your name in the Five-Year Review report and document the results of your interview in the report?
Yes.

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Environmental Conservation

SPILL PREVENTION & RESPONSE
Contaminated Sites Program

610 University Avenue
Fairbanks, Alaska 99709
Main: 907.451.2143
Fax: 907.451.2155
www.dec.alaska.gov

File: 2407.38.010

October 19, 2022

Electronic Delivery Only
AFCEC CZOP
ATTN: Robert Johnston
10471 20th Street, Suite 343
Elmendorf AFB, AK 99506-2200

RE: ADEC Bethel Radio Relay Site Visit (June 2, 2022)

Dear Mr. Johnston:

The Alaska Department of Environmental Conservation (ADEC) conducted a site visit at the Bethel Radio Relay Site (RRS).

The site visit was conducted without Air Force or Ahtna personnel present. Only the northern half of the area covered by land use controls was observed due to an error in directions made by ADEC personnel. Both gates intended to prevent access from trespassers had been bypassed by removing the locking mechanism or cutting the chain link fencing. The statuses of the signs were as described in the 2021 Long Term Monitoring (LTM) Report, with the northern gate entrance sign showing bullet hole damage but mostly legible, while the southern gate sign is in relatively good condition but in on the ground due to the vandalized fencing.

A photograph log is included. If there are any questions, please contact me by phone at (907) 451-2131, or by email at tim.sharp@alaska.gov.

Sincerely,

Timothy Sharp
Environmental Program Specialist

Enclosure: Photograph Log

cc: Leslie Davis, Ahtna

Photograph Log for Bethel Radio Relay Site Visit

June 2, 2022
Photos taken by Tim Sharp

PHOTO 1: Signage at northern gate. Note bullet hole damage but mostly legible.

PHOTO 2: Northern gate latch was removed to allow trespassing.

PHOTO 3: Photo of clearing in northeast quadrant of site.

PHOTO 4: Southern gate has been extensively vandalized to allow for trespassing by vehicles. Note signage present on ground, but otherwise in good condition.

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From: [redacted]
To: Leslie Davis
Subject: Re: [EXTERNAL] RE: Ahtna connection email
Date: Wednesday, October 19, 2022 11:14:50 AM

Please says something generic like Yukon Delta NWR representative instead of using my name please.
Thank you

Get Outlook for iOS

From: Leslie Davis <ldavis@ahtna.net>
Sent: Wednesday, October 19, 2022 10:56:33 AM
To: [redacted]
Subject: RE: [EXTERNAL] RE: Ahtna connection email

Thanks for the response, [redacted]. Would it be okay if we use your name in the Five-Year Report? It would read something like this:
"[redacted] who works as a Wildlife Refuge Specialist, reported that the Yukon Delta National Wildlife Refuge has no concerns regarding Site LF001 at the Bethel RRS. ([redacted], email communication, 19 October 2022)"

Please let me know if that is acceptable to include in the report.
Thank you!
Leslie

From: [redacted]
Sent: Wednesday, October 19, 2022 8:22 AM
To: Leslie Davis <ldavis@ahtna.net>
Subject: Re: [EXTERNAL] RE: Ahtna connection email

Hi Leslie,
There are no concerns from the refuge about the radio tower.
Thank you for reaching out,

[redacted]
Wildlife Refuge Specialist
Yukon Delta National Wildlife Refuge
[redacted]
907-545-9261

From: Leslie Davis <ldavis@ahtna.net>
Sent: Friday, October 14, 2022 3:29 PM
To: [redacted]

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APPENDIX F

SITE INSPECTION CHECKLIST

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Five-Year Review Site Inspection Checklist

Installation: Bethel Radio Relay Station

SITE INFORMATION

Site ID: SS001 **Inspection Date:** 9/12/2022

Company/Personnel Conducting Inspection: Ahtna Solutions, LLC / Leslie Davis/ Joe Domine

Weather/temperature: 48F, Rain **GPS Check shot/Loc:** Yes, intersection of road.

Remedy Includes (check all that apply):

- ☒ **Access Controls**
- ☐ **Groundwater Containment**
- ☐ **Groundwater Pumping and Treatment**
- ☒ **Institutional Controls**
- ☒ **Landfill Cover/Containment**
- ☒ **Monitored Natural Attenuation**
- ☐ **Surface Water Collection and Treatment**
- ☐ **Other** _____

LAND USE

Were onsite residential or manned industrial facilities constructed in the past 12 months? (If yes, specify in comments) ☐ **Yes** ☒ **No**

Any evidence of land use change? (If yes, specify in comments) ☐ **Yes** ☒ **No**

ACCESS AND INSTITUTIONAL CONTROLS (acquire location and photos)

Fencing ☒ **Damaged** ☒ **Intact** ☐ **N/A**

Eastern gate frost-jacked and leaning at 45-degree angle; barb wire torn near southwest gate.

Gate(s) ☒ **Damaged** ☒ **Secured** ☐ **N/A**

Southern gate was in disrepair and fence completely torn down. Northern gate was secured with chain and lock, but still able to squeeze by.

Signage ☒ **Damaged** ☒ **In Place** ☐ **Missing** ☐ **N/A**

Sign at northern gate had bullet holes but was legible. Southern gate sign was legible but on the ground. The other two signs along the exlusion gate were in plance and good condition. Alders blocked view of NW sign

Other Security Measures (specify in comments)

☐ **In Place** ☐ **Missing** ☒ **N/A**

Evidence of possible trespass (specify in comments) ☒ Yes ☐ No

Vandalism evident (specify in comments) ☒ Yes ☐ No

ATV tracks entering the restricted area through vandalized southern fence. Norhtern sign vandalized with bullet holes.

Soil excavated in the past 12 months? ☐ Yes ☒ No

If yes,

Dig permit approved? ☐ Yes ☐ No

Excavated soil used on site for backfill? ☐ Yes ☐ No

Excavated soil transported off site? ☐ Yes ☐ No

Groundwater encountered during excavation? ☐ Yes ☐ No

Did excavation affect the integrity and function of any landfill caps?

☐ N/A ☐ Yes ☐ No

Any wells installed in the past 12 months? ☐ Yes ☒ No

If yes, did drilling through a shallow aquifer into a confined aquifer occur without AFCEC review of engineering controls and methods to prevent cross-contamination? ☐ Yes ☐ No

Is groundwater from this site used for drinking, irrigation, fire control, dust control, or any other purpose? ☐ Yes ☒ No

Soil LUC applies to this site ☒ Yes ☐ No

Groundwater LUC applies to this site ☒ Yes ☐ No

Site conditions imply LUCs are being enforced ☐ Yes ☒ No

If ICs/LUCs not enforced, explain below:

Exclusion fence unable to prevent trespass, however no damage to soil cap was evident.

GENERAL SITE CONDITIONS

Clutter or trash present ☒ **Yes** ☐ **No**

Trash present outside of the exlusion fence, especially in northwest corner of SS001 LUC boundary.
ATV tracks primarily on west and southwest corner of exterior of exlusion fence along boundary road.

Evidence of wildlife ☒ **Yes** ☐ **No**

Dog and moose tracks observed around perimeter of exclusion fence.

Road condition ☐ **Damaged** ☒ **Adequate** ☐ **N/A**

Road cover erosion observed at southeastern gate area.

LANDFILL COVERS ☒ **Applicable** ☐ **N/A**

Landfill Surface:

Settlement (low spots) ☒ **Location and Photo acquired** ☐ **Settlement not evident**

Areal extent _____ Depth less than 1-foot
Low spot in drainage swale running north/south along cap and former antennae area. No puddling observed.

Cracks ☐ **Location and photo acquired** ☒ **Cracking not evident**

Lengths _____ Widths _____ Depths _____

Erosion ☐ **Location and photo acquired** ☒ **Erosion not evident**

Areal extent _____ Depth_____
Erosion on landfill surface not evident. Silt erosion near former antennae area and associated trail towards southeastern gate, within exlusion fence.

Holes ☐ **Location and photo acquired** ☒ **Settlement not evident**

Areal extent _____ Depth_____

Vegetative Cover (Specify percent in comments):

☒ **Cover properly established** ☒ **No signs of stress**
☐ **Cover partially established** ☐ **Showing signs of stress**
☐ **Grass/Sedges** ☒ **Trees/Shrubs**

Majority of cap vegetation is alders extended 1-2 feet above fence height. 2016 repair area is revegetated with alders, willows, and fireweed. Cover is partially established in former anternna area with grass/sedge/lichens.

Alternative Cover (armored rock, concrete, etc.): _____ ☒ N/A

Bulges ☐ **Location and photo acquired** ☒ **Bulges not evident**

Areal extent _____ Height _____

Wet Areas/Water Damage ☒ **Not evident**

☐ **Wet Areas**	☐ **Location and photo acquired**	☐ **Areal extent**
☐ **Ponding**	☐ **Location and photo acquired**	☐ **Areal extent**
☐ **Seeps**	☐ **Location and photo acquired**	☐ **Areal extent**
☐ **Soft subgrade**	☐ **Location and photo acquired**	☐ **Areal extent**

☐ **N/A**

Slope Instability ☐ **Slides** ☐ **Location and photo acquired**

☒ **No evidence of slope instability**

Areal extent _____

Benches ☒ **Applicable** ☐ **N/A**

Flows Bypass Bench	☐ **Location and photo acquired**	☒ **N/A**
Bench Breached	☐ **Location and photo acquired**	☒ **N/A**
Bench Overtopped	☐ **Location and photo acquired**	☒ **N/A**
Letdown Channels	☐ **Location and photo acquired**	☒ **N/A**

Landfill Surface Comments:

All benches, swales, and diversion culverts were functioning as intended. Some damaged observed at diversion culvert north of former antenna area, but appears to still be functioning.

GROUNDWATER/SURFACE WATER REMEDIES ☒ **Applicable** ☐ **N/A**

Monitoring Wells

☒ **Properly Secured/Locked** ☐ **Functioning**

☒ **Routinely Sampled** ☒ **Good Condition**

☒ **All Required Wells Located** ☐ **Need Maintenance (specify in comments)**

Alders and willows are encroaching wells. Mainenance not recommend becuase may provide some protection against vandalism. MW-19RRS-R is routinely sampled.

Groundwater Extraction Wells, Pumps, Pipelines, Wellhead Plumbing, and Electrical

☐ **Good Condition** ☐ **All Required Wells Properly Operating** ☒ **N/A**

☐ **Need Maintenance (specify in comments)**

Surface Water Collection Structures, Pumps, Pipelines, and Electrical

☒ **Good Condition** ☐ **Need Maintenance (specify in comments)** ☐ **N/A**

Groundwater/Surface Water Comments:

Two holding ponds were observed in good condition - one south of exclusion fence and one within exlusion fence in the eastern portion of SS001.

Corregated black drain pipe observed protruding from base of cap through fence and towards the south holding pond. The end of drain pipe terminated before reaching the holding pond. No water or evidence of flow was observed from pipe. Minor erosion channels (less than 1-foot wide and less than 0.5 ft deep)noted along southern fence near holding pond.

Post-Data Collection GPS Check Shot: Yes.

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APPENDIX G

PHOTOGRAPHIC LOG

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Site SS001

Photo ID: BE004. View north. MW-19RRS-R secured with lock, tall alders encroaching. GPS antenna hanging above well in the alder.

Photo ID: BE005. View northwest. MW-23RRS secured with lock, surrounded by dense alders.

Photo ID: BE002. View south. Northern gate secured with locked chain. Prevents vehicles/ATVs access but not trespassers on foot.

Photo ID: BE007. View northeast. Erosion area outside of exclusion fence in the western portion of SS001 LUC boundary. Evidence of ATV, foot, and dog traffic. Does not affect protectiveness because the cap is protected by a berm and lined drainage channel.

Photo ID: BE009. View northeast. LUC sign along southwestern exclusion fence in good condition. Lined drainage channel surrounding soil cap area shown beyond fence in lower portion of photo.

Photo ID: BE010. View southeast. Erosion and exposed liner along ATV trail at the southern corner of exclusion fence. Does not affect protectiveness as the cap is protected by a berm and lined drainage channel. See photo ID: Index 12, below.

Photo ID: Index 12. View west. Lined drainage channel within exclusion fence at south corner adjacent to ATV trail. No sign of breaching contributing to ATV trail erosion.

Photo ID: Index 14. View east. Lined holding pond south of exclusion fence.

Photo ID: Index 19. View south. Black corrugated drain pipe protruding from southeast exclusion fence towards southern holding pond. Pipe terminates just before holding pond (orange flagging).

Photo ID: Index 20. View west. Southern gate with exclusion fence torn down. LUC sign on the ground but in good condition. ATV tracks and road erosion at photo right.

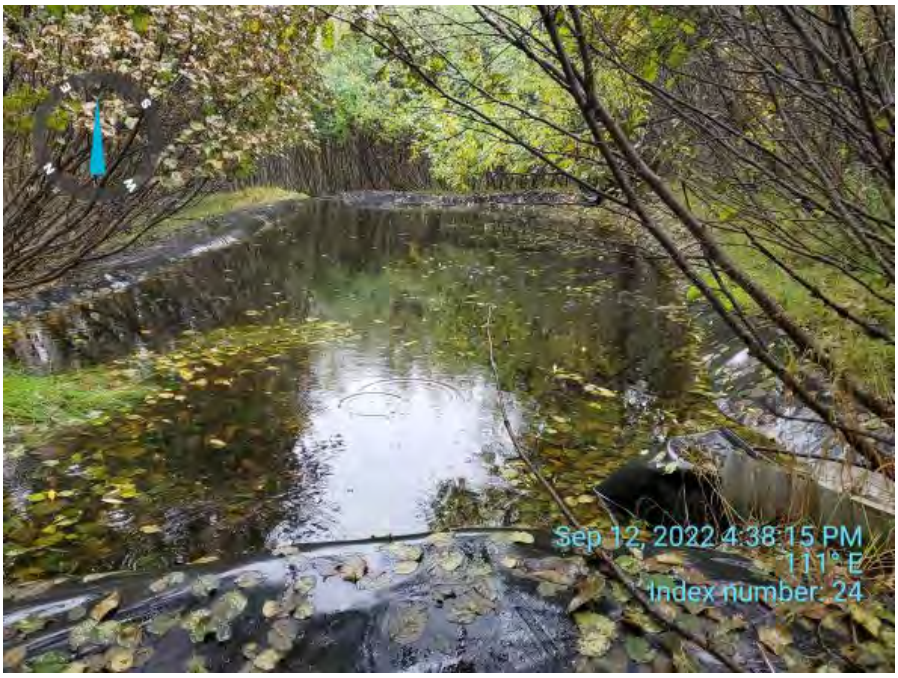

Photo ID: Index 24. View southeast. Eastern holding pond within exclusion fencing. Two functioning drainage culverts at west corners of pond liner.

Photo ID: Index 25. View southeast. Eastern exclusion fence with post frost-jacked and leaning at 45-degree angle. Alders entwined in fence.

Photo ID: Index 26. View southeast. Asbestos warning sign hung on eastern exclusion fence. Fence leaning at 45-degree angle.

Photo ID: Index 28. View southwest. Lined drainage channel within eastern exclusion fence area, in good condition. Photo shows dense, tall alder growth characteristic of eastern and western cap areas.

Photo ID: Index 32. View north. Drainage culvert along southern boundary of primary soil cap area. Corner of culvert shown protruding at photo right.

Photo ID: Index 34. View north. 2016 soil cap repair area showing native vegetation re-establishing.