

AIR FORCE CIVIL ENGINEER CENTER



2018 DECISION DOCUMENT FOR SOURCE AREA ZZ088

EIELSON AIR FORCE BASE, ALASKA

**Prepared for:
Air Force Civil Engineer Center
Contract No. FA8903-16-D-0030
Task Order No. 0003**

**FINAL
MAY 2021**

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ACRONYMS AND ABBREVIATIONS

354 CES	354th Civil Engineer Squadron
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AF	Air Force
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFFF	aqueous film forming foam
AS	Alaska Statute
AST	aboveground storage tank
bgs	below ground surface
COC	chemical of concern
CSM	conceptual site model
cy	cubic yard
DRO	diesel-range organics
EC	environmental covenant
EIAP	Environmental Impact Analysis Process
LUC	land-use control
MDC	maximum detected concentration
mg/kg	milligrams per kilogram
NR2	North Remote 2
USAF	U.S. Air Force
UECA	Uniform Environmental Covenants Act
UU/UE	unlimited use/unrestricted exposure

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1.0 SITE NAME AND LOCATION

Facility Name:	Eielson AFB, Alaska
Operable Unit/Site:	Source Area ZZ088 (not currently part of an Operable Unit)
Site Location:	North Remote 2 (mountain top communications facility, Eielson AFB, Alaska)
Latitude and Longitude:	65.403111°N, 144.601797°W
ADEC Site File Number:	107.38.119
ADEC Hazard ID Number:	26003
Facility Owner and Point of Contact:	The facility is owned by the United States government and managed by the USAF, whose point of contact is: Mr. Gary Fink USAF Restoration Program Manager 10471 20th Street, Suite 302 Joint Base Elmendorf-Richardson, Alaska 99506-2200 Phone number: 907-552-8757

The Alaska Department of Environmental Conservation (ADEC) provides regulatory oversight of the environmental restoration actions at Source Area ZZ088 in accordance with the *State-Eielson AFB Petroleum Site Restoration Agreement* signed April 2014 (U.S. Air Force [USAF] 2014b) and Article 3 of Alaska Administrative Code (AAC) Title 18, Chapter 75 (18 AAC 75) (ADEC 2018).

The USAF is managing remediation of contamination at Source Area ZZ088 in accordance with the State-Eielson Agreement (USAF 2014b) and the Defense Environmental Restoration Program (Title 10, §2701 et seq., of the U.S. Code; Executive Order 125080; 52 Federal Register 2923 [23 January 1987]).

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2.0 SITE BACKGROUND

Source Area ZZ088 is located at the North Remote 2 (NR2) facility, a mountain top communications facility owned by the USAF as part of the Joint Pacific Alaska Range Complex. The NR2 facility is located approximately 100 miles northeast of Fairbanks, Alaska and 6 miles south of Circle Hot Springs, Alaska (Figure A-1 in Appendix A). The NR2 facility consists of two structures, a tracking instrumentation substation and the integrated communications and power generation shelter. The facility also contains two aboveground storage tanks (ASTs) associated with the tracking instrumentation substation, three ASTs for the communication and power generation shelter, and two antenna towers. A brief timeline of environmental activities at ZZ088 is provided below:

- In July 2011, a fire destroyed the communications and power generation shelter. A spill report was submitted to ADEC on July 15, 2011 when the fire was discovered (USAF 2014a). The exact date the fire started is unknown, and it is believed to have burned out on its own. There is no known use of aqueous film forming foam (AFFF) at the site. The fire resulted in a surface release of molten lead from approximately 7,400 pounds of lead-acid batteries and one gallon of diesel fuel (USAF 2014a). An estimated 0.5 gallons of diesel fuel was recovered using absorbents and properly disposed of offsite.
- In 2012, the burned shelter, snow cover, and approximately 2 cubic yards (cy) of contaminated material (including all observed lead) were removed from an area approximately 18 feet long and 8 feet wide surrounding the remaining steel frame of the burned shelter. Five soil confirmation samples were collected from the excavated area at depths between 0.2 and 1.8 feet below ground surface (bgs) and analyzed for lead; the highest result was 35,500 milligrams per kilogram (mg/kg) (USAF 2014a). In the location of the diesel spill, approximately 1 cy of contaminated frozen soil was excavated before encountering frozen bedrock at 1.5 feet bgs (USAF 2014a). A confirmation sample was collected from the limit of the excavation and tested for diesel-range organics (DRO) with a result of 6,380 mg/kg (USAF 2014a).
- In 2013, a second cleanup effort was performed at the NR2 facility. The area around the remaining steel frame from the burned shelter was divided into eighteen 4- by 4-foot grid cells and excavated until all of the visible solid lead was removed from each cell; 5 cy of lead-contaminated soil were removed. Analytical samples were collected from the deepest part of each cell and were analyzed for lead. The analytical samples from nine of the 18 cells exceeded the site action level of 400 mg/kg for lead; the highest lead result was 10,100 mg/kg. At the location of the fuel spill, an additional soil sample was collected from 1 foot below the 2012 sample location to demonstrate that remaining DRO concentrations did not exceed the applicable ADEC cleanup level. Sample results indicated DRO present at a concentration of 148 mg/kg (USAF 2014a).

- In 2017, a site characterization was conducted at Source Area ZZ088 (USAF 2018). Four test pits were excavated and eight discrete soil samples, comprised of four surface and four subsurface samples at depths between 0.5 foot bgs and 2 feet bgs, were collected in areas adjacent to locations where analytical results from 2013 indicate that lead contamination was not delineated. Results indicated that contamination surrounding the steel frame structure is limited to the surface (top 3 inches); the highest lead result is 11,100 mg/kg. During the test pit excavations, 5 cy of potentially contaminated soil were excavated and removed from the site. X-ray fluorescence field screening was conducted to establish a 100 parts per million boundary as a conservative presence/absence delineation based on the 400 mg/kg cleanup level for lead for surface contamination (Figure A-2).

2.1 OPERATIONAL HISTORY

The tracking instrumentation substation was installed in 1995 and the integrated communications and power generation shelter was installed in 2007. The NR2 facility was designed to operate autonomously with only periodic maintenance and resupply visits. In 2011, the communications and power generation shelter burned down.

2.2 KNOWN OR SUSPECTED SOURCES OF CONTAMINATION

Surface leaks due to the burning of the communications and power generation supply shelter is the suspected primary source of contamination, an event which released lead from approximately 7,400 pounds of lead-acid batteries and 1 gallon of diesel fuel from a nearby AST (USAF 2014a). Molten lead dripped from the base of the shelter down onto the ground surface in the immediate vicinity of the frame, infiltrating through preferential pathways around the foundation legs and the unconsolidated rock fill below the structure. Airborne lead particles released during the fire settled on the ground surface in a wide area around the former shelter. As discussed above, the diesel contaminated soil was excavated and disposed of offsite. Lead is the only remaining contamination in soil at Source Area ZZ088.

2.3 CLIMATE

The NR2 facility is situated in a continental climatic zone that covers interior Alaska. Circle Hot Springs, Alaska experiences extreme seasonal fluctuations in both daylight and temperature. Temperatures range from average highs of 71 degrees Fahrenheit in July to average lows of -24.7 degrees Fahrenheit in January. Annual precipitation averages approximately 11 inches, with an average of 59 inches of total snowfall (Western Regional Climate Center 2018).

2.4 GEOLOGY

The NR2 facility is located at the edge of the Eagle-Circle District within the great central plateau province of interior Alaska. The central plateau is bounded to the north by the Brooks Range and to the south by the Alaska Range, with the Yukon River flowing through the center in a northwesterly direction (United States Geological Survey 1930). At the NR2 facility, the ground is comprised mainly of fractured bedrock with minimal amounts of soil.

2.5 HYDROGEOLOGY

The NR2 facility sits atop a mountain at an elevation of 3,519 feet above mean sea level (USAF 2014a) on weathered bedrock. The nearest surface water consists of two mountain streams located 0.5 miles to the north and the south; the northern stream drains north into Medicine Lake, while the southern stream connects to Upper Mouth Birch Creek. The depth to groundwater at the site is unknown.

2.6 CURRENT AND ANTICIPATED FUTURE LAND USE

Source Area ZZ088 is located on a remote mountain top and is currently comprised of two antenna towers, a tracking instrumentation substation, the remaining steel frame from the communications and power generation shelter, and five ASTs. The tracking and instrumentation substation is still operational, and the site is occasionally visited for maintenance and resupply, but there are no permanent residents or workers in the area. Reconstruction of the communications and power generation shelter using the existing steel

frame is under consideration. The selected remedy identified in this Decision Document will be assessed for protectiveness in the event of a land use change. The land is currently owned by the State of Alaska Department of Natural Resources (ADNR) and leased to the USAF (USAF 2014a).

3.0 ASSESSMENT OF SITE

Analytical results in soil from all site investigations have been compared to the 2018 ADEC human health cleanup levels and only those analytes exceeding the most stringent of Table B1, Method Two under 40-inch zone human health and Table B2, Method Two under 40-inch zone migration to groundwater cleanup levels were considered in developing the conceptual site model (CSM) described below (Section 3.1) (ADEC 2018). Maximum detected concentrations (MDCs) of chemicals of concern (COCs) are included in Section 3.2 and shown on Figure A-2. The extent of contamination is shown on Figure A-3 and discussed in Section 3.3.

3.1 CONCEPTUAL SITE MODEL

The CSM for Source Area ZZ088 was initiated using analytical data from previous investigations and then updated throughout the investigative process. The CSM graphic and scoping forms are provided in Appendix B; these will be updated upon completion of the remedial action.

The historical release mechanism at ZZ088 was a fire that resulted in the release of molten and airborne particulates of lead as well as a small amount of diesel fuel from a nearby AST. Since the release, the diesel fuel has been removed and disposed of offsite as part of investigation and remediation activities, but lead contamination remains. Exposure media and pathways at ZZ088 are incidental ingestion of soil and inhalation of fugitive dust for the lead contamination remaining on site.

Current and future receptors for soil media include commercial or industrial workers, construction workers, site visitors, recreational users, and trespassers. Residents, farmers, and subsistence harvesters or consumers are not included as future receptors due to the mountain top location and lack of vegetation, nearby surface water, and groundwater.

3.2 CHEMICAL OF CONCERN

Soil results from previous investigations were screened against the 2018 ADEC under 40-inch human health soil cleanup levels (ADEC 2018) to identify COCs, as discussed in the *Site Characterization Report for Source Area ZZ088* (USAF 2018). Lead was the only analyte retained as a COC (Table 3-1). The MDC of lead on site is 11,100 mg/kg, significantly above the 400 mg/kg cleanup level.

**Table 3-1
Soil COC at Source Area ZZ088**

COC	MDC (mg/kg)	Year of Maximum Detection
Lead	11,100	2017

Note:
For definitions, refer to the Acronyms and Abbreviations section.

3.3 LATERAL AND VERTICAL EXTENT OF CONTAMINATED AREA

The total volume of lead-contaminated soil remaining at ZZ088 is conservatively estimated to be 93 cy (Table 3-2). Lead-contaminated soil attributed to the shallow contamination surrounding the remaining metal frame is approximately 26.2 cy, and lead-contaminated soil under the remaining metal frame is approximately 66.7 cy.

**Table 3-2
Depth, Area, and Volume of Contaminated Soil at Source Area ZZ088**

Contamination Area	Depth of Contamination (feet)	Area of Contamination (square feet)	Estimated Volume of Contamination (cubic yards)
Surrounding Frame	0.25	2,830	26.2
Under Frame	6	300	66.7
Total		3,130	92.9

Note:
For definitions, refer to the Acronyms and Abbreviations section.

4.0 DESCRIPTION OF SELECTED REMEDY

This Decision Document presents the selected remedy for lead contamination in soil within Source Area ZZ088, which currently presents a potential risk to human health. Cleanup alternatives considered for ZZ088 were No Action, Excavation with Frame Removal, Limited Excavation with Cap, and Soil Stabilization, as documented in the *2017 Site Characterization Report for Source Area ZZ088* (USAF 2018). The selected remedy to address site contamination was chosen by the USAF in accordance with State of Alaska regulations (18 AAC 75). By signing this Decision Document, ADEC agrees that the selected remedy complies with state law. Details are provided in Section 4.1.

4.1 SELECTED REMEDY

The selected remedy to address lead contamination at ZZ088 is Limited Excavation with Cap. Remedy components are described below:

Excavation

- All lead-contaminated soil present to the outside of the metal frame at ZZ088 and above the lead cleanup level will be removed to the extent practicable. Contaminated soil is in an area where existing infrastructure would limit excavation.
- Existing sample results will guide initial excavation activities. X-ray fluorescence screening of soil will be used to advance the excavation until suspected clean boundaries have been achieved, at which time confirmation samples will be collected and analyzed for lead. Excavation will proceed to the extent practicable until analytical results indicate that contaminated soil removal is complete.
- Lead contamination surrounding the metal frame is in the surface soil. Excavation of contamination outside of the metal frame would be limited to the top 3 inches of soil and will be done by hand. Lead contamination is anticipated to extend to 6 feet bgs underneath the metal frame.

Concrete Cap

- All lead-contaminated soil under the metal frame at ZZ088 will be capped to prevent exposure to and eliminate human health risk from soil contamination. The soil beneath the frame structure will remain to preserve the structural integrity of the frame.
- Concrete was chosen for the cap material to account for the high winds and rocky nature of the area. The USAF intends to re-use the frame in the future; therefore, keeping the structural integrity of the frame intact is needed.
- The concrete cap would be approximately 12 feet x 24 feet x 2 feet. A small concrete mixing unit would be brought to the site, where the cap will be mixed and poured by hand. The cap

would be on the surface (approximately 24 inches thick), with the intent of eliminating the digestion and inhalation pathways.

Because some contamination would remain in place, land-use controls (LUCs) will be implemented to ensure protection of human health and an environmental covenant (EC), coordinated between USAF and DNR and signed by DNR, will be recorded into the appropriate public land records in accordance with the Uniform Environmental Covenants Act (UECA), Alaska Statute (AS) 46.04.300 through 46.03.390. LUCs will remain until the contaminated soil beneath the frame is completely removed, which will be accomplished at a later date after the site is decommissioned and made eligible for unlimited use/unrestricted exposure (UU/UE). Once contaminated soil beneath the metal frame is removed, confirmation soil sampling will occur at the extents of the excavated area to confirm all contamination above ADEC Human Health cleanup levels has been removed, to determine that the site is UU/UE eligible, and to determine if termination of the EC is appropriate. The EC will remain until the site is deemed UU/UE eligible, at which time the USAF, in coordination with DNR, will pursue approval from ADEC for termination of the EC. Signage is recommended as an institutional control to discourage human activity that may result in exposure to remaining lead contamination in soil at Source Area ZZ088. The proposed soil LUC area for ZZ088 is depicted on Figure A-3 (Appendix A).

4.2 CLEANUP LEVEL FOR LEAD AT ZZ088

The cleanup level for lead-contaminated soil at Source Area ZZ088 is 400 mg/kg, based on the ADEC Table B-2 under 40-inch human health soil cleanup (ADEC 2018).

4.3 REMEDIAL ACTION OBJECTIVES

The remedial action objectives for soil contamination at Source Area ZZ088 are listed below:

- Protect human health and the environment from risks associated with exposure to lead contamination in soil above the cleanup level.
- Limit or eliminate the potential for human exposure to lead contamination in soil above the cleanup level until site conditions support UU/UE.

5.0 WASTE MANAGEMENT

Waste generated during implementation of the selected remedy for Source Area ZZ088 will include excavated soil and decontamination water as well as general trash, such as sampling materials and used personal protective equipment. Excavated soil has the potential to be regulated under the Resource Conservation and Recovery Act and will need to be transported and disposed of in accordance with all federal, state, and local requirements. Specific details regarding disposal and treatment will be described in a future cleanup work plan, which will be provided to ADEC for review and approval prior to implementation of the remedy described in this Decision Document.

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6.0 LAND-USE CONTROLS

LUCs are legal, administrative, and/or physical mechanisms for implementing restrictions to land use and access in order to limit the exposure of future landowners and/or users of the property to hazardous or toxic substances and/or to maintain the integrity of the remedial action until the property is suitable for UU/UE. The USAF is responsible for implementing, maintaining, reporting on, and enforcing LUCs. The USAF retains ultimate responsibility for remedy integrity. LUCs are implemented in accordance with the *Air Force Land-Use Control Checklist for Active-Duty Bases on the National Priorities List* (USAF 2015):

Resource Uses and Risk-Exposure Assumptions.

- a. The State of Alaska has designated all groundwater of the state as potential drinking water. Eielson AFB does not currently use groundwater at or downgradient of the site as a drinking water source and does not plan on doing so in the future., Therefore, the drinking water pathway is incomplete and will remain incomplete.
- b. The Base General Plan designates land use at this source area as industrial for both current and future classification. However, for the purpose of this Decision Document, contamination at the source area was assessed for residential UU/UE.

Risks Necessitating the LUCs. Under the preferred alternative, residual soil contamination is not safe for either residential use or for industrial or construction workers involved in soil disturbance. LUCs are therefore necessary to preclude such uses and to control the disposition and use of any soil excavated from ZZ088.

Performance Objectives.

- a. Prevent access to or use of soil until the cleanup level is met.
- b. Prohibit the development or use of property for residential housing, elementary and secondary schools, or childcare facilities and playgrounds.

Location of LUCs. The proposed soil LUC area is shown on Figure A-3.

Duration of LUCs. LUCs will be maintained until the concentration of lead in soil is at a level that allows for UU/UE.

Description of each LUC and how it Achieves Specific LUC Performance. The internal procedures and regulatory requirements that Eielson AFB, in coordination with DNR when appropriate, will use to implement the LUCs include but are not limited to the following:

- a. **Base Civil Engineer Work Requests** – One tool for achieving the LUC performance objectives is Air Force (AF) Form 332 (AF332) or Base Civil Engineer Work Request. This form must be submitted and approved before the start of any construction project at Eielson AFB. One step in the approval process for this form is a comparison of the construction site with all constraints that are described in the Base General Plan. The AF332 serves as the document for communicating any construction constraints to the appropriate offices. Any constraints at the site will result in the disapproval of the form unless the requester makes appropriate modifications to the construction plans.
- b. **Excavation Permits** – Eielson AFB also uses the AF Form 103 (AF103), Base Work Clearance Request or Excavation Permit, to enforce soil disturbance restrictions. The requester submits the permit to the 354th Civil Engineer Squadron (354 CES) for any project that involves mechanical soil excavation, such as trench digging for underground utilities or soil excavation for building foundations. If constraints involving soil disturbance or worker safety exist at the excavation area, the permit describes the appropriate procedures that workers must implement before the start of excavation to prevent unknowing exposure to contamination.
- c. **Base Environmental Impact Analysis Process (EIAP)** – An EIAP is conducted pursuant to the National Environmental Policy Act, as promulgated for the USAF in 32 Code of Federal Regulations 989, to assess the potential environmental impact of any federal action initiated by or involving Eielson AFB. AF Form 813 (AF813) initiates the EIAP. Both AF332s and excavation permits are subject to an evaluation under the EIAP. The proponent of a proposed action is required to submit the AF332 or excavation permit with AF813 so that the appropriate environmental analysis of the proposed action and alternatives to the proposed action is accomplished prior to any construction or excavation activities. The EIAP works to ensure proposed construction and excavation sites take into account the constraints that are described in the Base General Plan and known to the AFCEC Environmental Restoration Installation Support Team. The EIAP also ensures that all environmental factors, such as LUCs, are considered in the selection of locations for construction projects.
- d. **Eielson AFB General Plan** – The Base General Plan is a long-range planning tool that designates current and future land uses. It also provides a framework for selecting the locations of future facilities needed to carry out the base mission. The Base General Plan describes the specific LUCs for each site, the reasons for the controls, and the areas where the controls are applied. For a LUC to remain protective, base personnel must have access to information concerning its existence, purpose, and maintenance requirements. The Base General Plan provides essential information to ensure that LUC management takes place and that the LUCs presence is effectively communicated.
- e. **Environmental Covenant** – In accordance with the UECA, AS 46.04.300 through 390, and with ADEC approval, USAF would coordinate with DNR to produce an EC to be signed

by DNR and recorded in all appropriate public land databases. The EC is a public record that outlines activity and land use restrictions required when a remedial decision resulting from an environmental response project results in residual contamination remaining at the site at concentrations that may not be safe for some uses, or an engineered feature or structure that requires monitoring, maintenance or operation and will not function if left undisturbed. The EC obligates the site owner and all interested parties to comply with the restrictions outlined therein. The EC is binding to all present and subsequent owners of the affected land and other parties using or interested in using the land. Enactment, modification, or termination of the EC must be provided to and approved by ADEC. The intent of enactment, modification, or termination of an EC must be submitted to all persons who signed the EC, all persons holding a recorded interest in the property that will be subject to the EC, persons in possession of the property prior to implementation, modification or termination of the EC, each municipality or local government in which the subject property resides, and any other persons required by ADEC.

General Performance Responsibility. The USAF is responsible for implementing, maintaining, monitoring, reporting, and enforcing LUCs.

Specific Performance Responsibility to Bind Contractors and Tenants. The USAF shall inform, monitor, enforce, and bind, where appropriate, authorized lessees, tenants, contractors, and other authorized occupants of the source areas regarding the LUCs affecting the source area.

Specific Performance Responsibility for Transferring Sites. Although the USAF may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the USAF shall retain ultimate responsibility for remedy implementation and protectiveness.

Notification and Corrective Measures Requirement. The USAF will notify ADEC as soon as practicable, but no longer than ten days after discovery, of any activity that is inconsistent with the land use control objectives or use restrictions, or any other action that may interfere with the effectiveness of the land use control. The USAF will take prompt measures to correct the violation or deficiency and prevent its recurrence. In this notification, the USAF will identify any corrective measures it has taken or any corrective measures it plans to take and the

estimated time frame for completing them. For corrective measures taken after the notification, the USAF shall notify ADEC when the measures are complete.

Notification of Transfers. The USAF must provide notice to ADEC at least six months prior to any transfer or sale of property containing LUCs so that ADEC can be involved in discussions to ensure that appropriate provisions are included in the transfer or conveyance documents to maintain effective LUCs. If it is not possible for the facility to notify ADEC at least six months prior to any transfer or sale, then the facility will notify ADEC as soon as possible but no later than 60 days prior to the transfer or sale of any property subject to LUCs. The USAF agrees to provide ADEC with such notice, within the same time frames, for federal-to-federal transfer of property accountability. The USAF shall provide either access to or a copy of the executed deed or transfer assembly to ADEC.

Concurrence Language. The USAF shall not modify or terminate LUCs, modify land uses that might impact the effectiveness of the LUCs, take any anticipated action that might disrupt the effectiveness of the LUCs, or take any action that might alter or negate the need for LUCs without 45 days prior to the change seeking and obtaining approval from ADEC of any required Decision Document modification.

Monitoring Language. The USAF will monitor and inspect all source areas subject to LUCs at least annually.

Reporting Language. The USAF will report annually, to ADEC on the frequency, scope, and nature of LUC monitoring activities, the results or such monitoring, any changes to the LUCs, and any corrective measures resulting from monitoring during the time period. The annual reports will be used to compile a periodic review that will be submitted to ADEC every 5 years or less.

The USAF will notify ADEC in advance of any changes to internal procedures associated with the remedy that might affect the LUCs. Implementation of these LUCs will replace interim

LUCs and will meet the requirements of the settlement agreement between the USAF, ADEC, and the U.S. Environmental Protection Agency (USAF 2013).

7.0 COMMUNITY PARTICIPATION

An Administrative Record has been established for Eielson AFB by the AFCEC Environmental Restoration Section. The Administrative Record is the legal record for the Environmental Restoration Program process at USAF installations and includes copies of all technical reports, regulatory correspondence, meeting minutes, and other documents relied upon for restoration decisions. The Administrative Record is accessible to the public and available electronically at <http://afcec.publicadmin-record.us.af.mil/>. The USAF contact for public affairs is Eielson AFB 354th Fighter Wing Public Affairs, which can be reached at 907-377-2116.

Upon finalization and approval of this Decision Document by the USAF and ADEC, it will be made available to the public by adding the document to the Administrative Record. The public will be informed of the availability of the final Decision Document by the USAF through a published notice in the Fairbanks Daily News-Miner. The notice shall include a brief description of the final Decision Document for Source Area ZZ088.

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8.0 REOPENER CLAUSE AND SIGNATURE BLOCK

The final compliance determination will be made by ADEC, in accordance with 18 AAC 75.380, utilizing the applicable cleanup level and maximum lead concentration remaining at Source Area ZZ088. After reviewing the final cleanup report, ADEC will determine if Source Area ZZ088 has been adequately characterized under 18 AAC 75.335 and has achieved the applicable requirements under the site cleanup rules. Once ADEC determines that Source Area ZZ088 has been adequately characterized within the limited ability to access soil contamination beneath possible obstructions and that ZZ088 meets the applicable requirements under the site cleanup rules, ADEC will issue a written determination that the cleanup is complete with LUCs. The determination may be reviewed and modified in the future if information becomes available indicating the presence of contaminants or exposures that may cause unacceptable risk to human health or the environment, or if there is a change in current land use. ADEC will, as necessary to ensure protection of human health, safety, and welfare as well as of the environment, require a responsible person to conduct additional actions that meet the requirements.

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AUTHORIZING SIGNATURES

This signature sheet documents the decision made for contamination at Source Area ZZ088. The USAF has selected the remedy for ZZ088.

This decision will be reviewed and may be modified in the future if information becomes available that indicates the presence of contaminants or exposures that may cause unacceptable risk to human health or the environment. If additional contaminants are discovered, the USAF and ADEC will determine compliance levels for soil and groundwater cleanup actions.

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Date: 2021.12.14 08:25:05 -06'00'

12/14/21

GREGORY C. MAYER, Col, USAF, P.E.
Deputy Director, Environmental Management
Air Force Civil Engineer Center


Date

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AUTHORIZING SIGNATURES

This signature sheet documents the decision made for contamination at Source Area ZZ088. The USAF has selected the remedy for ZZ088. By signing this declaration, ADEC concurs that proper implementation of the selected remedy will comply with State of Alaska environmental laws.

This decision will be reviewed and may be modified in the future if information becomes available that indicates the presence of contaminants or exposures that may cause unacceptable risk to human health or the environment. If additional contaminants are discovered, the USAF and ADEC will determine compliance levels for soil and groundwater cleanup actions.



Melinda Brunner, DSMOA Section Manager
Federal Facilities Section, Contaminated Sites Program
Alaska Department of Environmental Conservation

23 FEB 2022

Date

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9.0 REFERENCES

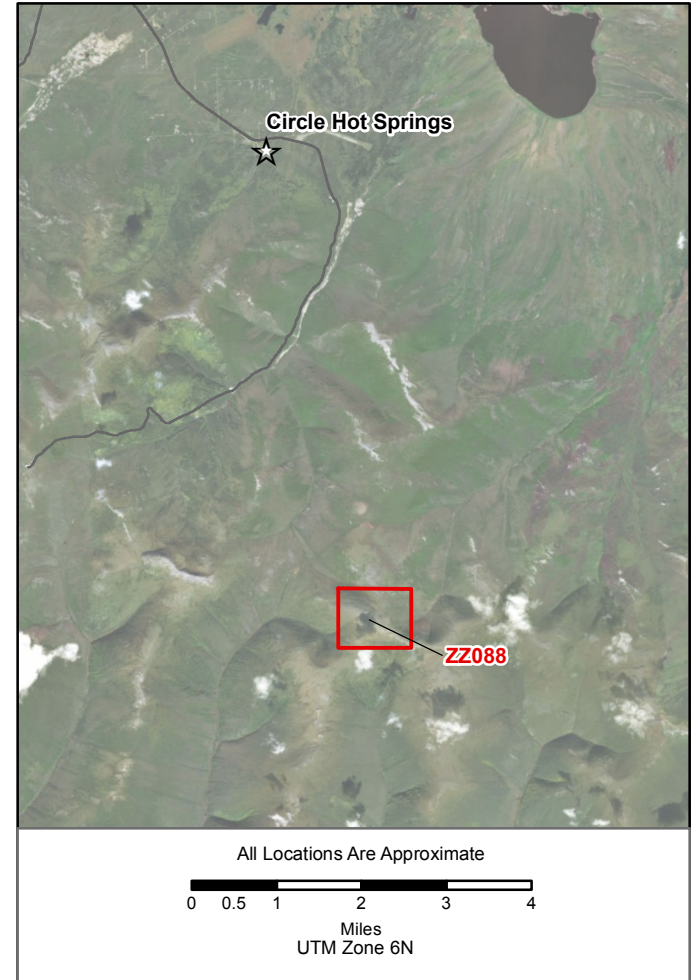
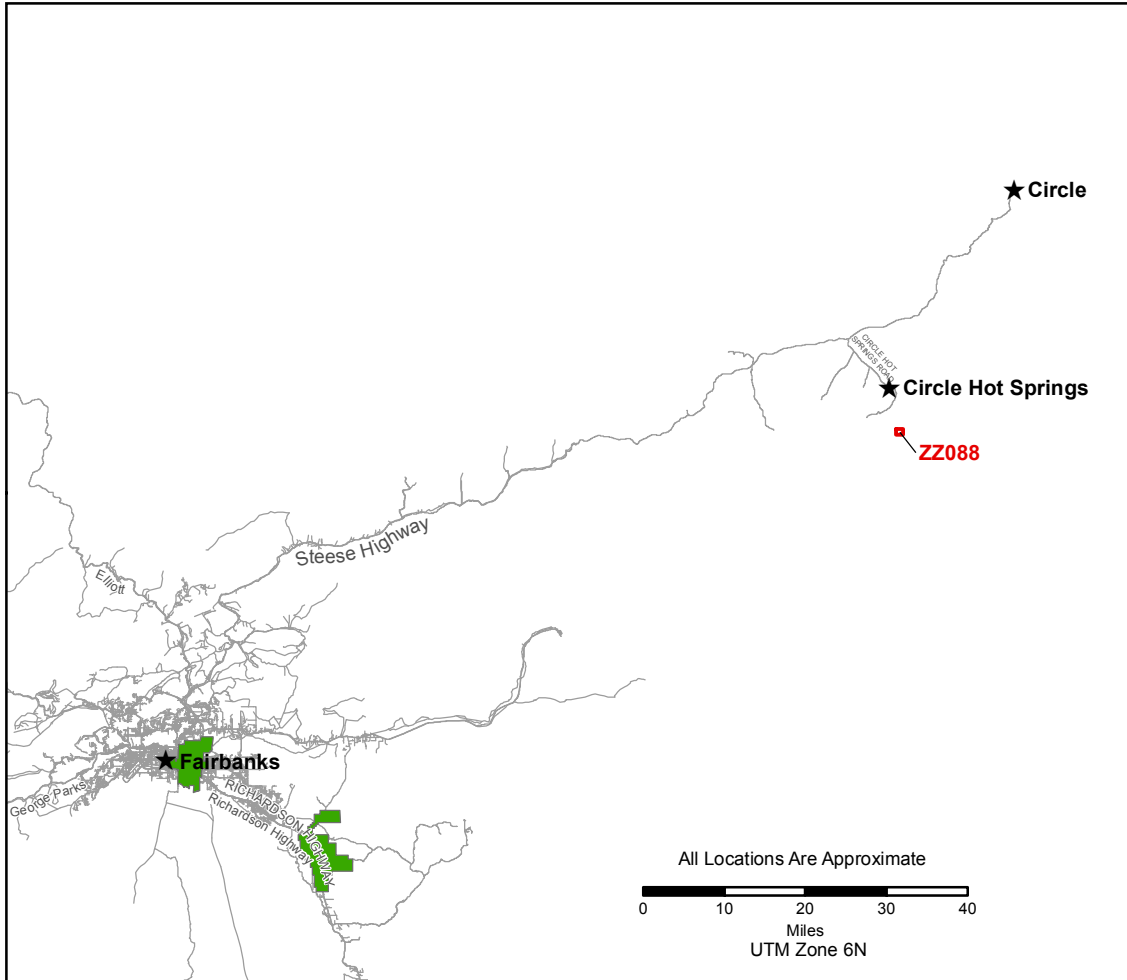
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<https://pubs.usgs.gov/bul/0816/report.pdf>. Accessed 16 August 2018.
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APPENDIX A

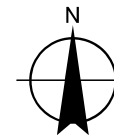
Figures

\\nand003\GIS_Data\AK_Eielson_AFB\GIS\MXD\AE13_ES_EIELSON\ZZ088_SLV_A2.mxd lindatkm



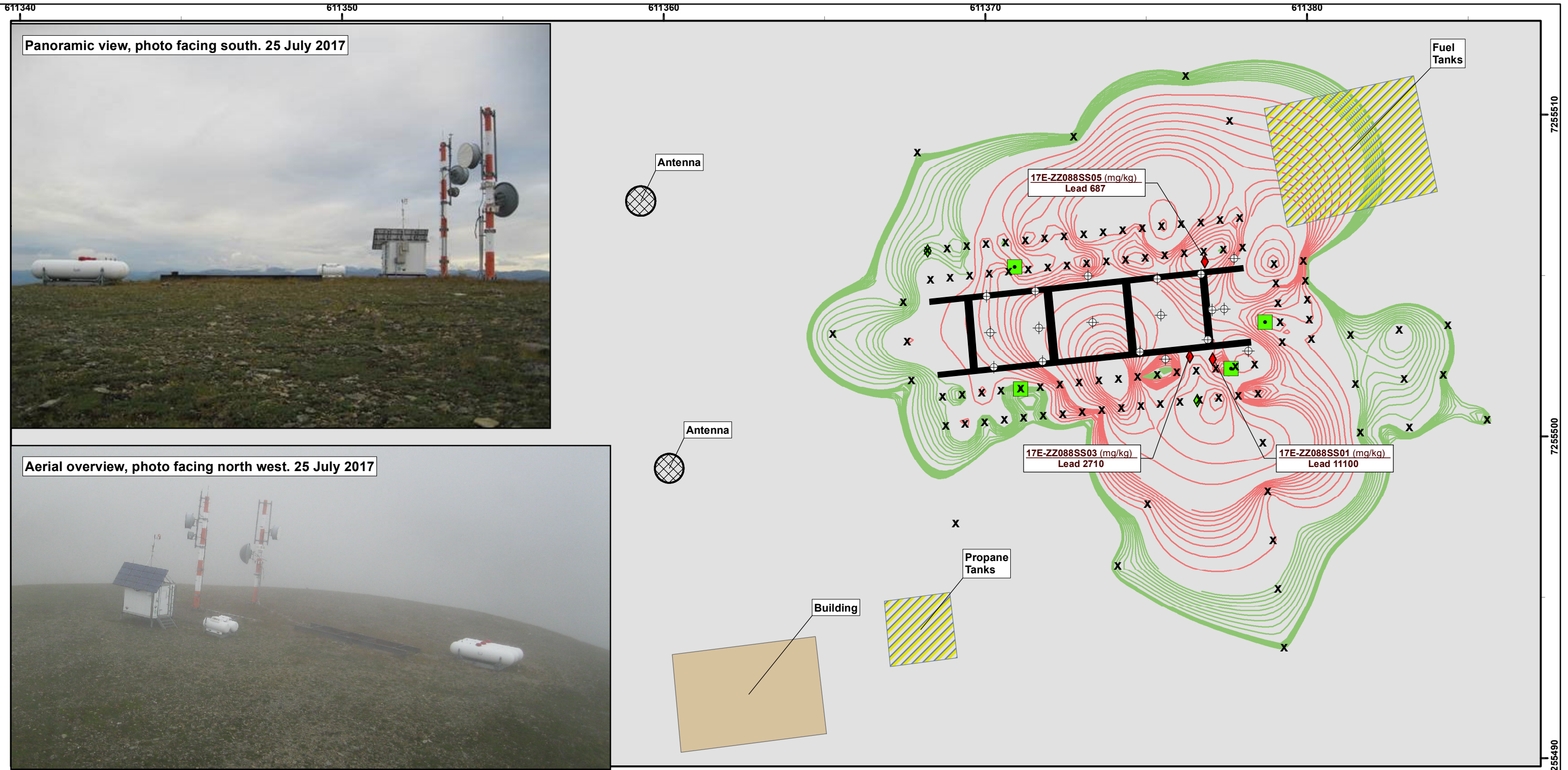
- ★ Town
- Source Area
- Road Centerline
- Installation Area

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the



**ZZ088 LOCATION AND VICINITY
2018 DECISION DOCUMENT
NR2 EIELSON AFB, FAIRBANKS, ALASKA**

JACOBS	DATE:	PROJECT MANAGER:	FIGURE NO:
	15 AUG 2018	A. BEAUSANG	A-1

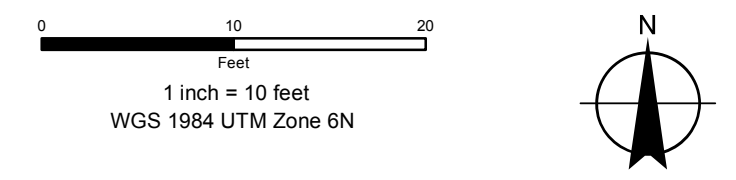
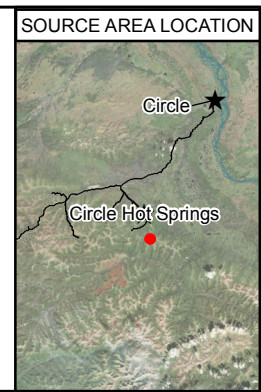


Panoramic view, photo facing south. 25 July 2017

Aerial overview, photo facing north west. 25 July 2017

- ⊕ Historic Sample (Approximate Location)
 - x Surface XRF Reading (Approximate Location)
 - ◆ Surface Soil Correlation Sample - Exceedance
 - ◇ Surface Soil Correlation Sample - No Exceedance
 - Test Pit - No Exceedance
 - Frame
 - ⊗ Antenna
 - ▨ Tanks
 - Building
- XRF Readings (ppm)**
- < 100
 - 101 - 10000

Note:
 The total estimated area of COC contamination is 3,130 square feet.
 For definitions, refer to the Acronyms and Abbreviations section.



JACOBS		
DATE: 22 AUG 2018	PROJECT MANAGER: A. BEAUSANG	FIGURE NO: A-2

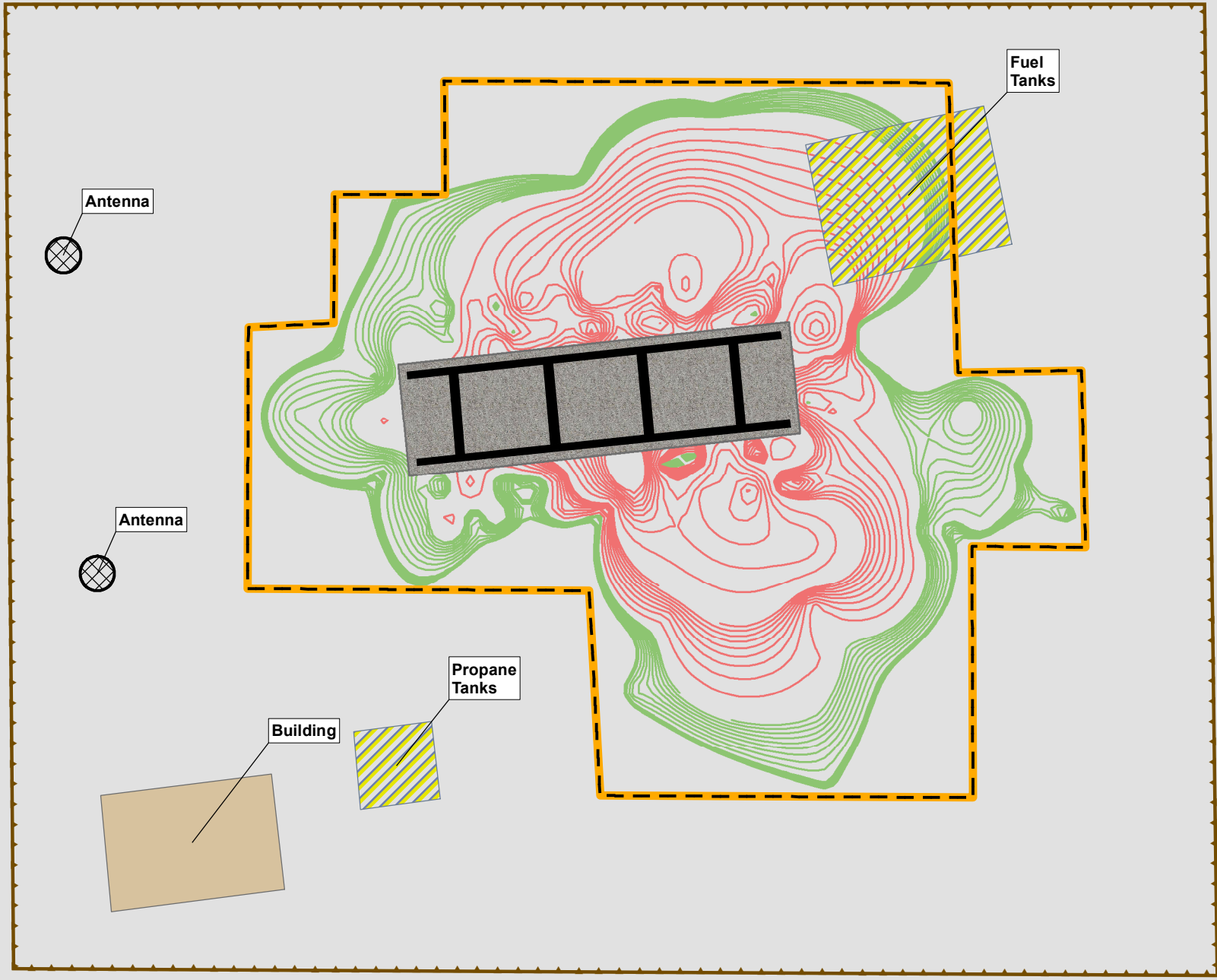
P:\AK_Eielson_AFB\GIS\MAXDAE13_ES_EIELSON2017_Results\AE13_ES_ZZ088.mxd lindahlkm

611340 611350 611360 611370 611380 611390

Panoramic view, photo facing south. 25 July 2017



Aerial overview, photo facing north west. 25 July 2017



7255510
7255500
7255490

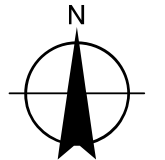
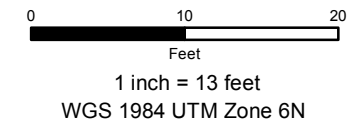
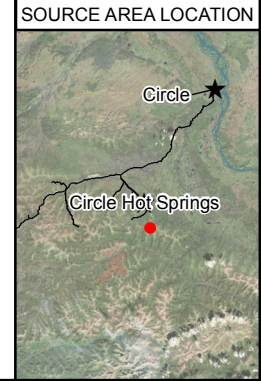
- Estimated Extent of COC Contamination in Soil
 - Proposed Soil Land Use Control Area
 - Concrete Cap
 - Frame
 - Antenna
 - Tanks
 - Building
- XRF Readings (ppm)**
- < 100
 - 101 - 10000

Notes:

Total estimated area of COC contamination is 3,130 square feet.

Total area of the concrete cap is 300 square feet.

For definitions, refer to the Acronyms and Abbreviations section.



ZZ088 LAND USE CONTROL AND COC CONTAMINATION EXTENT 2018 DECISION DOCUMENT EIELSON AIR FORCE BASE, ALASKA			
JACOBS	DATE: 22 AUG 2018	PROJECT MANAGER: A. BEAUSANG	FIGURE NO.: A-3

\\anccf03\GIS_Data\AK_Eielson_AFB\GIS\MXD\AE13_ES_EIELSON\2017_Results\A3_AE13_ES_ZZ088.mxd lindahkm

APPENDIX B
Conceptual Site Model

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Source Area ZZ088 - NR2 Burn Site

Completed By: Jacobs Engineering Group

Date Completed: 26 October 2017

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Check the media that could be directly affected by the release.	(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.
Media	Transport Mechanisms
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i> <input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Runoff or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input type="checkbox"/> Direct release to subsurface soil <i>check soil</i> <input type="checkbox"/> Migration to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Flow to surface water body <i>check surface water</i> <input type="checkbox"/> Flow to sediment <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Direct release to surface water <i>check surface water</i> <input type="checkbox"/> Volatilization <i>check air</i> <input type="checkbox"/> Sedimentation <i>check sediment</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____
<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i> <input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i> <input type="checkbox"/> Uptake by plants or animals <i>check biota</i> <input type="checkbox"/> Other (list): _____

(3) Check all exposure media identified in (2).	(4) Check all pathways that could be complete. The pathways identified in this column must agree with Sections 2 and 3 of the Human Health CSM Scoping Form.	(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.																								
Exposure Media	Exposure Pathway/Route	Current & Future Receptors																								
		Residents (adults or children) Commercial or Industrial workers Site visitors, trespassers, or recreational users Construction workers Farmers or subsistence harvesters Subsistence consumers Other																								
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion <input type="checkbox"/> Dermal Absorption of Contaminants from Soil <input checked="" type="checkbox"/> Inhalation of Fugitive Dust	<table border="1"> <tr> <td></td> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>C/F</td> <td>C/F</td> <td>C/F</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		C/F	C/F	C/F														C/F	C/F	C/F				
	C/F	C/F	C/F																							
	C/F	C/F	C/F																							
<input type="checkbox"/> groundwater	<input type="checkbox"/> Ingestion of Groundwater <input type="checkbox"/> Dermal Absorption of Contaminants in Groundwater <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																								
<input type="checkbox"/> air	<input type="checkbox"/> Inhalation of Outdoor Air <input type="checkbox"/> Inhalation of Indoor Air <input type="checkbox"/> Inhalation of Fugitive Dust	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																								
<input type="checkbox"/> surface water	<input type="checkbox"/> Ingestion of Surface Water <input type="checkbox"/> Dermal Absorption of Contaminants in Surface Water <input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																								
<input type="checkbox"/> sediment	<input type="checkbox"/> Direct Contact with Sediment	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																								
<input type="checkbox"/> biota	<input type="checkbox"/> Ingestion of Wild or Farmed Foods	<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>																								

Human Health Conceptual Site Model Scoping Form

Site Name:

File Number:

Completed by:

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources (*check potential sources at the site*)

- | | |
|--|---|
| <input type="checkbox"/> USTs | <input type="checkbox"/> Vehicles |
| <input checked="" type="checkbox"/> ASTs | <input type="checkbox"/> Landfills |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers |
| <input type="checkbox"/> Drums | <input checked="" type="checkbox"/> Other: <input type="text" value="Lead-Acid Batteries and Diesel Fuel"/> |

Release Mechanisms (*check potential release mechanisms at the site*)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge |
| <input checked="" type="checkbox"/> Leaks | <input checked="" type="checkbox"/> Burning |
| | <input type="checkbox"/> Other: <input type="text"/> |

Impacted Media (*check potentially-impacted media at the site*)

- | | |
|---|--|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*) | <input type="checkbox"/> Groundwater |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water |
| <input type="checkbox"/> Air | <input type="checkbox"/> Biota |
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Other: <input type="text"/> |

Receptors (*check receptors that could be affected by contamination at the site*)

- | | |
|--|---|
| <input type="checkbox"/> Residents (adult or child) | <input checked="" type="checkbox"/> Site visitor |
| <input checked="" type="checkbox"/> Commercial or industrial worker | <input checked="" type="checkbox"/> Trespasser |
| <input checked="" type="checkbox"/> Construction worker | <input checked="" type="checkbox"/> Recreational user |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods) | <input type="checkbox"/> Other: <input type="text"/> |

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.)

If the box is checked, label this pathway complete:

Complete

Comments:

Lead present in surface soil.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future?

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

No groundwater present at the site

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future?

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

Surface water is located approximately 0.5 miles to the north and south

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods?

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)?

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.)

If all of the boxes are checked, label this pathway complete:

Incomplete

Comments:

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.)

Are the contaminants in soil volatile (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminated soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures)

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)?

If both boxes are checked, label this pathway complete:

Incomplete

Comments:

The single building on-site is not an occupied building.

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

Check the box if further evaluation of this pathway is needed:

Comments:

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM₁₀). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

Check the box if further evaluation of this pathway is needed:



Comments:

The source area is exposed soil with known lead contamination and subject to high winds.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed:



Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.*)

APPENDIX C
Responses to Comments



March 23, 2021

DNR file ADL 421149
DEC file 107.38.119

Re: North Remote 2, Source Area ZZ088

Concerning the contamination at North Remote 2, Source Area ZZ088, the DNR-Division of Mining, Land, and Water (DMLW) Statewide Abatement of Impaired Land (SAIL) Section is the agency representing landowner interests related to contamination on general state land. The Department of Environmental Conservation (DEC), SAIL, and USAF will communicate and coordinate throughout the work plan development and cleanup process. Per your request, DNR will discuss with DEC the option to request a DSMOA agreement for time spent reviewing and commenting on any documents related to the site, in addition to any site visits or coordination as needed.

DNR requests that the work plan consider an alternative that results in complete removal of contaminated soil and off-site disposal at an appropriate disposal facility. This can be accomplished by temporarily removing or relocating the frame so that all contaminated soil on site can be removed and transported off-site to an appropriate disposal facility. After complete removal, the frame can be replaced. This would eliminate the need for an institutional control (IC) on the site and eliminate any requirement by USAF to maintain, monitor, and report on an IC into perpetuity.

If land use restrictions are required for DEC contaminated site closure, SAIL will need to receive a request (email or letter) from USAF to allow ICs or other land use restrictions at the site. SAIL will review the request and, when required or otherwise appropriate, write a decision and conduct public notice prior to providing landowner consent for the IC. The decision may include revisions to the original request, site-specific stipulations, and other terms necessary for approval, and will outline the expected financial assurance requirements and DNR costs to be paid by USAF.

At this time, DNR-DMLW consents to the 2018 Decision Document, for the purpose of awarding the contract to develop the work plan for North Remote 2.

If you have any questions, please contact me at the above address, at (907)451-2739 or by e-mail at alyssa.millard@alaska.gov.

Sincerely,

A handwritten signature in cursive script that reads "Alyssa Millard".

Alyssa Millard
Statewide Abatement of Impaired Land (SAIL) Section
Natural Resource Specialist

Cc via email: Patty Burns, DNR-DMLW-SAIL Section Chief
Melinda Brunner, DEC-SPAR-CS DoD Program Manager
Dennis Shepard, DEC-SPAR-CS Project Manager



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

610 University Ave
Fairbanks, Alaska, 99709-3643
Main: 907.451.2180
Fax: 907.451.5105
www.dec.alaska.gov

May 11, 2021

File No: 107.38.119

Kristina Smith
Installation Restoration Program
AFCEC CZOP
2310 Central Avenue, Suite 213
Eielson AFB, AK 99702

Re: DEC review of the *Final 2018 Decision Document for Source Area ZZ088, Eielson Air Force Base, Alaska, dated April 2021*.

Dear Ms. Smith:

The Alaska Department of Environmental Conservation (DEC) has completed a review of the above referenced document. Based on a backcheck of the *Final 2018 Decision Document for Source Area ZZ088, Eielson Air Force Base, Alaska, dated April 2021* and responses to DEC comments. DEC is accepting most responses, However, DEC has identified two remaining issues requiring revision. See the two new comments (14 and 15) in the enclosed comment matrix.

If you have any questions, please do not hesitate to contact the DEC project manager at (907) 451-2180, or by email at dennis.shepard@alaska.gov.

Sincerely,

Dennis Shepard
Remedial Project Manager

cc via email: Joe Price, AFCEC
Mike Boese, AFCEC
Roy Willis, AFCEC
Nicole Drenning, AFCEC
Dustan Bott, EPA
Axl Levan, DEC
Melinda Brunner, DEC

Enclosure: DEC Comment Matrix

DEC Comments on Decision Document for Source Area ZZ088, Eielson Air Force Base, Alaska, Draft, October 2018

May 11, 2021

Reviewer: Alaska Department of Environmental Conservation (DEC)

Comment No.	Page	Section	Comment/Recommendation	Response	DEC Accept/Reject	Review of Response
1.	2-1	2.0	First bullet: How was the fire extinguished? Did it burn out on its own? Was AFFF used?	<p>According to the 2014 ZZ088 North Remote 2 (NR2) Report, the NR2 communications and generator shelters were destroyed by a fire in July 2011. A spill report was submitted to ADEC on July 15, 2011 when the fire was discovered (USAF 2014a).</p> <p>The exact start date of the fire has not been found in any documents, leading to the belief that the fire burned out on its own, and that the burnt shelters were found at a later date. There is no known use of AFFF at the site.</p> <p>The first bullet of Section 2.0 has been updated to state,</p> <p>“In July 2011, a fire destroyed the communications and power generation shelter. A spill report was submitted to ADEC on July 15, 2011 when the fire was discovered (USAF 2014a). The exact date the fire started is unknown, and it is believed to have burned out on its own. There is no known use of AFFF at the site. The fire resulted in a surface release of molten lead from approximately 7,400 pounds of lead-acid batteries and one gallon of diesel fuel (USAF 2014a).”</p>	Accept	N/A

DEC Comments on Decision Document for Source Area ZZ088, Eielson Air Force Base, Alaska, Draft, October 2018

May 11, 2021

Comment No.	Page	Section	Comment/Recommendation	Response	DEC Accept/Reject	Review of Response
2.	2-4	2.6	Does the USAF own the land or does DNR own the land and the USAF is leasing it? The 2014 Draft Letter Report states this is DNR land that is leased by the USAF. Please confirm.	<p>The North Remote 2, 2013 Clean-up Report states that the Alaska Department of Natural Resources (DNR) owns the land, and the USAF leases the land from DNR. The last sentence in Section 2.6 has been updated to state:</p> <p>“The land is currently owned by the State of Alaska Department of Natural Resources (DNR) and leased to the USAF (USAF 2014a). The current land lease is set to expire at midnight July 14, 2019 (ADNR 2018).”</p>	<p>Clarification: ICs cannot be placed on a property without landowner concurrence. Please discuss with DNR and reference in this document. DEC will not sign this decision document without landowner concurrence.</p>	<p>Clarification. The DNR Division of Mining, Land, and Water (DMLW) State Abatement of Impaired Land (SAIL) Section issued the attached letter, dated March 23, 2021 (DNR file ADL 421149; DEC file 107.38.119), providing consent of the ZZ088 Decision Document. Per the consent letter, a request will be submitted to DNR DMLW SAIL via letter or email prior to implementation of ICs.</p> <p>Previously added text to Section 2.4 will be revised to state the following, “The land is currently owned by the State of Alaska Department of Natural Resources (DNR) and leased to the USAF (USAF 2014a). The current land lease is set to expire at midnight July 14, 2019 (ADNR 2018).” DEC Accept 5/11/2021</p>
3.	4-1	4.1	Excavation, 1 st dash: Please clarify in the text that the excavation will occur outside the metal frame as the 2013 sampling shows exceedances both inside and	<p>Agree. The first dash under Excavation in Section 4.1 has been updated to state: “All lead-contaminated soil present outside of the metal frame at ZZ088 and above the lead cleanup level will be removed to the extent practicable. Contaminated soil is in an area</p>	Accept	N/A

DEC Comments on Decision Document for Source Area ZZ088, Eielson Air Force Base, Alaska, Draft, October 2018

May 11, 2021

Comment No.	Page	Section	Comment/Recommendation	Response	DEC Accept/Reject	Review of Response
			outside, but still surrounding the metal frame.	where existing infrastructure would limit excavation.”		
4.	4-1	4.1	Excavation, final dash: The 2017 XRF info showed there was contamination in the top three inches outside of the frame. Please clarify this in the text. The excavations done in 2013 showed contamination left at depths greater than 3" inside the frame.	Agree. The last dash under Excavation in Section 4.1 has been updated to state: “Lead contamination surrounding the metal frame is in the surface soil. Excavation of contamination outside of the metal frame would be limited to the top 3 inches of soil and will be done by hand. Lead contamination is anticipated to extend to 6 feet bgs underneath the metal frame.”	Accept	N/A
5.	6-1	6.0	Has a Notice of Environmental Contamination been filed for this land?	A Notice of Environmental Contamination has not been filed for this land. The Air Force will determine if one is needed following ZZ088 Decision Document approval.	Reject: UECA applies to this site per AS 46.04.300-390. UECA requires landowner concurrence from DNR. DEC will not sign this decision document without landowner concurrence.	Agree. The DNR DMLW SAIL issued a letter, dated March 23, 2021 (DNR file ADL 421149; DEC file 107.38.119), providing consent of the ZZ088 Decision Document. Per the consent letter, a request will be submitted to DNR DMLW SAIL via letter or email prior to implementation of ICs. The text in Section 4.1 was revised to incorporate requirements of the UECA, AS 46.04.300-390, into the remedy. The revised text (Section 4.1, last paragraph) reads as follows (italicized text is new): “Because some contamination would remain in place, land-use controls (LUCs) will be implemented to ensure protection of human health <i>and an environmental covenant (EC) coordinated between</i>

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						<p><i>USAF and DNR and signed by DNR, will be recorded into the appropriate public land records in accordance with the Uniform Environmental Covenants Act (UECA), Alaska Statute (AS) 46.04.300 through 46.03.390. LUCs will remain until the contaminated soil beneath the frame is completely removed, which will be accomplished at a later date after the site is decommissioned and made eligible for unlimited use/unrestricted exposure (UU/UE). Once contaminated soil beneath the metal frame is removed, confirmation soil sampling will occur at the extents of area to confirm all contamination above ADEC Human Health cleanup levels has been removed, to determine that the site is UU/UE eligible, and to determine if termination of the EC is appropriate. The EC will remain until the site is deemed UU/UE eligible, at which time the USAF, in coordination with DNR will pursue approval from ADEC for termination of the EC.”</i></p> <p>The following text in Section 6.0, under “Description of each LUC and how it Achieves Specific LUC performance,” (pp. 6-2 and 6-3)</p>

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						<p>was modified to include a description of the EC:</p> <p>“The internal procedures <i>and regulatory requirements</i> that Eielson AFB, in coordination with DNR when appropriate, will use to implement the LUCs include but are not limited to the following:”</p> <p>“e. <i>Environmental Covenant</i> – <i>In accordance with the UECA, AS 46.04.300 through 390, and with ADEC approval, USAF would coordinate with DNR to produce an EC to be signed by DNR and recorded in all appropriate public land databases. The EC is a public record that outlines activity and land use restrictions required when a remedial decision resulting from an environmental response project results in residual contamination remaining at the site at concentrations that may not be safe for some uses, or an engineered feature or structure that requires monitoring, maintenance or operation and will not function if left undisturbed. The EC obligates the site owner and all interested parties to comply with the restrictions outlined therein. The EC is binding to all present and subsequent owners of the affected land and other parties using or interested in using the land. Enactment, modification, or termination of the EC</i></p>

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						<p><i>must be provided to and approved by ADEC. The intent of enactment, modification, or termination of an EC must be submitted to all persons who signed the EC, all persons holding a recorded interest in the property that will be subject to the EC, persons known to have unrecorded interest in the property, and persons in possession of the property prior to implementation, modification or termination of the EC, each municipality or local government in which the subject property resides, and any other persons required by ADEC.”</i></p> <p>DEC Accept 5/11/2021</p>

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6.	6-1	6.0	Resource Uses and Risk Exposure Assumptions: a. It is unclear why the distance from Eielson proper is referenced.	Clarification. The distance from Eielson proper to Source Area ZZ088 is referenced to illustrate that the drinking water pathway is incomplete and will remain incomplete due to the distance from Eielson AFB.	Clarification: The distance of the source area from Eielson Air Force Base does not in any way affect the drinking water pathway. The drinking water pathway is incomplete because groundwater is not used at or downgradient of the site.	Agree. The distance of the source area from Eielson Air Force Base will be removed from the text. The first bullet under Resource Uses and Risk-Exposure Assumptions has been modified as follows: a. The State of Alaska has designated all groundwater of the state as potential drinking water. Eielson AFB does not currently use groundwater at or downgradient of the site as a drinking water source and does not plan on doing so in the future, therefore, the drinking water pathway is incomplete and will remain incomplete.

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7.	6-1	6.0	Risks Necessitating the LUCs: Unless groundwater has been sampled and shown to not be impacted by the contamination, LUCs need to control groundwater use as well.	<p>Clarification. ZZ088 is on top of a mountain at an elevation of 3,519 feet above mean sea level (amsl) on weathered bedrock. Groundwater was not encountered during historical investigations and 2017 site characterization. During the 2012 excavation, frozen bedrock was encountered at 1.5 feet bgs.</p> <p>Based on a topographic map of the area, the nearest surface water body - Medicine Lake (and the likely elevation of groundwater)- is at approximately 750 feet amsl. Therefore, depth to groundwater is over 2000 feet bgs. Thus, the migration to groundwater pathway is not complete.</p> <p>In the second bullet in Section 2.0, the second to last sentence has been updated to:</p> <p>“In the location of the diesel spill, approximately 1 cy of contaminated frozen soil was excavated before encountering frozen bedrock at 1.5 feet bgs (USAF 2014a).”</p>	<p>Clarification: This comment appears to describe why a groundwater LUC is not necessary, yet there are groundwater LUCs in the decision document. Please reconcile the text of the document and comments.</p>	<p>Clarification. The groundwater LUCs in the document were originally added in response to ADEC comments 8 and 9. However, based on the responses to comment 7 (this comment), groundwater LUCs are not necessary. Therefore, references to groundwater LUCs have been removed from the text. Comments #8 and #9 have been altered to reflect that the drinking water pathway and migration to groundwater pathway are incomplete, and that groundwater LUCs are not necessary at Source Area ZZ088. DEC Accept 5/11/2021</p>

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8.	6-1	6.0	Performance Objectives: Add preventing access to/use of groundwater.	Agree. The text “Prevent access to or use of the groundwater.” has been added to the second line (b) in the Section Performance Objectives.	Accept	See response to Comment #7. The text “Prevent access to or use of the groundwater,” has been removed from the second line (b) of the Performance Objectives (Section 6.0) since the drinking water and migration to groundwater pathways are incomplete. DEC Accept 5/11/2021
9.	6-2	6.0	Description of LUCs, a: change the statement regarding use of groundwater for drinking water to include a prevention of use of the groundwater for other purposes, such as dust suppression, etc.	The section <i>Description of LUCs</i> has been removed and replaced with <i>Description of Each LUC and How It Achieves Specific LUC Performance</i> to reflect standard USAF LUC language. In the Base Civil Engineer Work Requests (a) section, the following sentence has been added as the last sentence in the paragraph: “The Base Civil Engineer Work request process will also prevent any use of potentially contaminated groundwater for drinking water or any other uses that may spread contaminants.” The text of Section 6.0 has been updated throughout to reflect standard USAF LUC language.	Accept	See response to Comment #7. The text, “The Base Civil Engineer Work request process will also prevent any use of potentially contaminated groundwater for drinking water or any other uses that may spread contaminant,” has been removed from the Base Civil Engineer Work Requests (a) section to reflect that the drinking water pathway and migration to groundwater pathways are incomplete. DEC Accept 5/11/2021

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10.	6-2	6.0	Why are signs not proposed as LUCs? Signs at the site may be an effective way of notifying site visitors/recreational visitors that lead contamination in soil is present.	Agree. Signage as an institutional control would be effective in notifying site visitors that lead contamination is present in soil. The following has been added as the second to last sentence in the last paragraph of Section 4.1: “Signage is recommended as an institutional control to discourage human activity that may result in exposure to remaining lead contamination in soil at Source Area ZZ088.” The reference for ADEC <i>Guidance on Using Institutional Controls in Oil and Other Hazardous Substance Cleanups</i> has been added to Section 9.0 (ADEC 2011).	Accept	N/A
11.	6-3	6.0	Monitoring and Reporting Language: please change the text to describe that annual reports will be used to compile a periodic review that will be submitted to DEC every 5 years or less.	Agree. In the Reporting Language section under Section 6.0, the following sentence was added to the end of the paragraph. “The annual reports will be used to compile a periodic review that will be submitted to ADEC every 5 years or less.”	Accept	N/A
12.	9-1	9.0	Current version of 18 AAC 75 is dated October 27, 2018. Please update reference.	Agree. 18 AAC 75 has been updated to the October 27, 2018 version.	Accept	N/A
USAF and Jacobs Initiated Changes						
13.	7-1	7.0	The first sentence was changed to the following, “An Administrative Record has been established for Eielson AFB by the 354			DEC Accept 5/11/2021

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			CES <u>AFCEC</u> Environmental Restoration Section.			
14.	8-1	8.0	Text states: “The determination may be reviewed and modified in the future if new information becomes available indicating the presence of contaminants or exposures that may cause unacceptable risk to human health or the environment” Please remove “new”.	Agree. The word "new" will be removed from the sentence as suggested.		
15.	Authorizing Signatures		Please confirm Authorized Signatory for AFCEC/CZ Director, Environmental Management Directorate. It is DEC’s understanding that Suzanne Bilbrey is no longer at this position.	Agree. The authorized signature for AFCEC Environmental Management will be updated.		