FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Final
November 2022

Prepared by

United States Air Force
Joint Base Elmendorf-Richardson, Alaska

LOPEZ.JUDY.M.1291747988 Digitally signed by LOPEZ.JUDY.M.1291747988 Date: 2023.01.27 08:35:18 -06'00'

JUDY M. LOPEZ, P.E., GS-15, DAF
Director, Environmental Management
Air Force Civil Engineer Center

Date

(This page intentionally left blank.)

Table of Contents

List of Abbreviations and Acronyms iii
I. INTRODUCTION 1
Site Background 2
FYR Review Summary Form 5
II. RESPONSE ACTION SUMMARY 7
Basis for Taking Action 7
Response Actions 8
Status of Implementation 10
LUC Summary 11
III. PROGRESS SINCE THE LAST REVIEW 13
IV. FYR REVIEW PROCESS 15
Community Notification, Involvement & Site Interviews 15
LTM Data Review 15
2020 FYR Site Inspection 16
V. TECHNICAL ASSESSMENT 17
QUESTION A: Is the remedy functioning as intended by the decision documents? 17
QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid? 17
QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy? 18
VI. ISSUES/RECOMMENDATIONS 19
VII. PROTECTIVENESS STATEMENT 21
VIII. NEXT REVIEW 23

Appendices

Appendix A Reference List
Appendix B Groundwater Use Determination – ADEC Approval, 2013
Appendix C ROD Figures
Appendix D Hot Spot Sampling Results – Drainage Channels, 2014
Appendix E Land Use Control Management Plan Installation Figure and LUC Types, August 2019
Appendix F FYR Site Inspection Checklist and Photographs, September 2020
Appendix G Community Involvement Materials
Appendix H Interview Records
Appendix I Response to Comments by Regulators

LIST OF TABLES

Table 1 Site SS006 COCs and ARARs
Table 2 Site SS006 COCs and ROD Cleanup Levels
Table 3 Site SS006 ROD Cleanup Levels and Current ADEC Cleanup Levels

LIST OF FIGURES

Figure 1 Vicinity Map
Figure 2 Location Map
Figure 3 Site Map

List of Abbreviations and Acronyms

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AFCEC	Air Force Civil Engineer Center
ARAR	Applicable or Relevant and Appropriate Requirement
BFA	Beach Facility Area
BTV	Background Threshold Value
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
COPEC	contaminant of potential ecological concern
Delta-BHC	delta-hexachlorocyclohexane
ECs	Engineering Controls
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
FYR	Five-Year Review
GIS	Geographic Information System
ICs	Institutional Controls
LSRS	Land Status Record System
LTM	Long-Term Monitoring
LUC	Land Use Control
mg/kg	milligrams per kilogram
MOU	Memorandum of Understanding
MTFA	Mountain Top Facility Area
PCBs	polychlorinated biphenyls
PCE	tetrachloroethylene
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRS	Radio Relay Station
SI	Site Investigation
Stantec	Stantec Consulting Services, Inc.
TCE	trichloroethylene
USAF	United States Air Force
USFS	United States Forest Service
UU/UE	unlimited use/unrestricted exposure
VOCs	Volatile Organic Compounds

(This page intentionally left blank.)

I. INTRODUCTION

This report provides the U.S. Air Force's (USAF's) First Five-Year Review (FYR) for Environmental Restoration Program (ERP) Site SS006 at the former Duncan Canal Radio Relay Station (RRS), Alaska (**Figure 1**). The USAF has prepared this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, and with the National Contingency Plan (40 Code of Federal Regulations [CFR] Section 300.430(f)(4)(ii)), and considering U.S. Environmental Protection Agency (EPA) policy and the Alaska Department of Environmental Conservation (ADEC) state laws and regulations. This FYR is being conducted by the USAF with concurrence by the United States Forest Service (USFS) in accordance with the parties' interagency agreement (USAF 2014).

The purpose of a FYR is to evaluate the implementation and performance of site remedies to determine if the remedies are and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYRs such as this one. In addition, FYRs identify issues found during the review, if any, and document recommendations to address them.

Fourteen ERP sites were originally identified at the former Duncan Canal RRS. Thirteen of these sites have been closed by ADEC and are classified as "Cleanup Complete" on ADEC's Online Contaminated Site Database (ADEC, 2020). This document will focus on the final open ERP site that contains CERCLA hazardous substances identified as contaminants of concern (COCs): Site SS006 (Demolition Debris Area).

The remedial action at Site SS006 is being performed under CERCLA to protect public health or welfare or the environment due to the presence of CERCLA hazardous substances, and the 2014 Record of Decision (ROD) (USAF, 2014). This is the first FYR for Site SS006. The final remedy selected included Institutional Controls (ICs), engineering controls (ECs), containment, and long-term monitoring (LTM) of surface and subsurface soil through annual cap inspection and maintenance.

The triggering action for this statutory FYR is the implementation of feasible remedy components in 2015 (Bhate, 2016a). This report has been prepared because hazardous substances or contaminants regulated under CERCLA and/or by the State of Alaska remaining at the site are above levels that allow for unlimited use and unrestricted exposure (UU/UE). Also, the selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy (USAF, 2014).

The Forest Service (USFS) has been delegated the President's response and enforcement authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as the lead cleanup agency for all areas on National Forest System Lands that are subject to CERCLA. Pursuant to Section 2(e) of Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), the President has delegated to the Secretary of Agriculture lead Federal agency authority under Section 104 of CERCLA with respect to remedial actions for releases or threatened releases of hazardous substances at sites not on the NPL and removal actions other than emergencies, where either the release is on or the sole source of the release is from USDA lands.

This FYR was led by Stantec Consulting Services, Inc. (Stantec) on behalf of the Air Force Civil Engineer Center (AFCEC) under Contract Number FA8903-16-D-0032, Task Order FA8903-19-F-0031. Participants included AFCEC, Stantec, the USFS and ADEC staff with expertise in site investigation and remediation. The review began in August 2020.

Site Background

The former Duncan Canal RRS is located on the west side of the Lindenburg Peninsula on Kupreanof Island, Alaska, approximately 670 miles southeast of Anchorage (Figure 1). The former RRS facility is within the Tongass National Forest and is located on USFS-managed land. The nearest settlement/city is Petersburg, Alaska, located about 8 miles east/northeast of the facility on the north tip of Mitkof Island and across the Wrangell Narrows Waterway.

In 1960, the USAF established the Duncan Canal RRS as part of the Aircraft Control and Warning System RRSs constructed across Alaska. In 1960, the USAF and USFS established a Memorandum of Understanding (MOU) allowing the USAF to construct and operate the facility at Duncan Canal (USAF, 1960). The facility was used as a radio link between sites at Smuggler Cove and Hoonah, Alaska. Originally known as White Alice Communication Systems (WACS) facilities, the Alaska Air Command re-designated the WACS facilities as RRSs in 1969.

The former Duncan Canal RRS was divided into two areas: the Mountain Top Facility Area (MTFA) and the Beach Facility Area (BFA) (**Figure 2**). The BFA is located on the shore of Duncan Canal and historically contained a dock, seaplane ramp, a fuel pump station, and a fuel storage tank. The MTFA is located approximately 2 miles east of Duncan Canal at an elevation of about 2,500 feet above mean sea level on a glacially weathered mountain peak. The two areas are connected by an approximately 5-mile long winding, gravel road, maintained by the USFS. The former MTFA facility contained the RRS and supporting structures, including: a composite building (which included a dormitory, a maintenance building, a generator room, and a garage), a radio relay building, two sets of billboard antennas, a water storage tank and reservoir, a septic tank, and four fuel storage tanks. The Duncan Canal RRS was deactivated in 1976, and all facility buildings and structures were demolished or removed in 1986. In 1987, the MOU between the USAF and USFS was terminated and, the land was transferred back to USFS management (USFS, 1987). AT&T Alascom, Inc. currently operates a commercial communications repeater facility at the MTFA and uses Site SS006 for a helipad and access to their facility (S. Krause, personal communication, AFCEC, 9 September 2020).

The MTFA of the former Duncan Canal RRS is situated on a ridge with valleys to the north and south. Surface water in the northern valley includes Duncan Creek and drainages to the south, which both flow in a westward direction, and a creek within the southern drainage, informally named House Rock Creek. Several unnamed drainages from the MTFA are tributaries to these two streams. Ohmer Slough is visible just north of the BFA, as depicted on Figure 2. Wetlands and muskeg are also present near the BFA (USAF, 2009).

The former Duncan Canal RRS is located within a temperate coastal rainforest adjacent to a large shallow bay (Duncan Canal) and contains several habitats: beach, rainforest, and low muskeg and

bogs. Numerous species of small and large terrestrial and marine mammals, birds, and saltwater and freshwater fish occupy the area. No permanent residences are present within 4 miles of the former Duncan Canal RRS. The area around Duncan Canal receives occasional recreational and subsistence use, including the harvest of forest products, camping, hunting, and fishing (USAF, 2009).

Site SS006 is located at the MTFA (**Figure 3**). The debris cell at Site SS006 was created during decommissioning of the facility in 1986 for placement of construction debris and excavated rock and soil from the demolition activities.

Bedrock is shallow at the MTFA, at an average of about 4 feet below ground surface. As such, previous investigations have indicated that groundwater is not encountered or is seasonal at the site. A groundwater use determination, prepared in 2010 (USAF, 2010) and approved by ADEC in 2013 (Weston, 2013), concluded that groundwater at the site is virtually nonexistent since the site is located on shallow bedrock at the mountain summit. Seasonal surface water does not exceed applicable ADEC Water Quality Criteria (18AAC70), which is identified as a chemical specific ARAR in the ROD. Also, evidence of groundwater use has not been identified in the vicinity of the former Duncan Canal RRS, and no groundwater drinking wells exist within the area of potential downgradient groundwater influence.

A Reference List for this report is provided in Appendix A. The ADEC-approved Groundwater Use Determination for the MTFA is provided in Appendix B and discussed further in the Remedial Action Objectives section of this report.

More detailed background information on Site SS006, the subject of this FYR, is provided below.

Site SS006 – Demolition Debris Area

Site SS006 is the Former Demolition Debris Area located in the southernmost part of the MTFA along a rock wall (Figure 3). Site SS006 consists of a debris burial cell containing construction debris and soil removed from the MTFA during deconstruction in 1986. At that time, all former Duncan Canal RRS facilities were demolished, and soil at Site SS006 was removed down to bedrock and placed in the debris cell. The debris cell measures approximately 120 feet by 175 feet by 20 feet at the maximum depth. The debris was covered with 5,000 cubic yards of rock and soil from the facility in a 3-foot lift. It is bound by rock outcrops on the east, lower relief areas on the north and south ends, and bedrock sloping up to the north. Three small seeps emanate from both ends (one from the southern end and two from the north) but are in an area of steep terrain and generally only accessible by foot. These seeps do not discharge to a surface water body (USAF, 2005; 2009).

The ROD specifies that the debris cell at Site SS006 contains an estimated total volume of 105 cubic yards of subsurface and surface soil impacted by metals, volatile organic compounds (VOCs), and pesticides. An estimated 15 cubic yards of contaminated soil is present in the run-off channels; this contamination likely stemmed from the run off channels that were present prior to the cap being installed in 2014. An estimated 473 cubic yards of hazardous debris, and an estimated 3,400 cubic yards of potentially uncontaminated buried demolition debris is present at

the site with cover material containing rock fragments that range in size from gravel to large boulders (USAF, 2014).

The volumes of soil and debris stated in the ROD were based on the 2010 Feasibility Study (USAF, 2010) and are understood to be calculated volumes based on prior sampling results and geotechnical investigations.

FYR Review Summary Form

SITE IDENTIFICATION		
Site Name: Duncan Canal RRS Site: SS006		
EPA ID: Not applicable		
Region: 10	**State:** AK	**City/County:** Kupreanof Island, Petersburg Borough, Alaska
SITE STATUS		
National Priority List (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]*:** USAF		
Author name (Federal or State Project Manager): Stantec, on behalf of AFCEC		
Author affiliation: Contractor		
Review period: 8/3/2020 - 2/26/2021		
Date of site inspection(s): 9/14/2020		
Type of review: Statutory review		
Review number: First		
Triggering action date: 4/1/2016		
Due date *(five years after triggering action date)*: 4/1/2021		

(This page intentionally left blank.)

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Response actions selected in the 2014 ROD (USAF, 2014) for Site SS006 was determined to be warranted under CERCLA to protect the public health or welfare and the environment from actual or threatened releases of hazardous substances, pollutants, or contaminants into the environment. Concentrations of metals (arsenic, cadmium, and chromium), pesticides (dieldrin, delta-hexachlorocyclohexane [BHC], and endrin aldehyde), and VOCs (trichloroethylene and tetrachloroethylene) in surface and subsurface soil exceeded SS006 cleanup levels established in the 2014 ROD, according to ARARs and potential human health and ecological exposures. Therefore, Site SS006 warranted remedial action under CERCLA and/or Alaska State law to establish controls to protect human health and the environment until cleanup standards that are protective of unrestricted use are reached.

Appendix C provides figures showing soil, sediment and surface sample locations and concentrations from the 2014 ROD based on the Site Investigation (SI) conducted for Site SS006 in 2009 (USAF, 2009). **Table 1** lists the COCs and ARARs from the ROD.

Risk Summary

Screening level baseline human health and ecological risk assessments were conducted as part of the 2009 SI to assess risk at Site SS006. The risk evaluations were also used to develop appropriate cleanup levels for the identified COCs (USAF, 2009). Summaries of the human health and ecological risk assessment results are provided below.

Human Health Risk

The human health risk evaluation indicated that three Resource Conservation and Recovery Act (RCRA) metals (arsenic, cadmium, and total chromium) were retained as contaminants of concern because concentrations in surface soil exceeded ADEC cancer or non-cancer risk-based soil screening levels of 1×10^{-5} and 1 respectively and/or the site-specific background threshold values (BTVs). According to the ROD, arsenic exceedances are due to localized areas of elevated results. Other COCs were retained due to exceedances of ADEC Method Two cleanup levels (delta-BHC [delta-hexachlorocyclohexane], trichloroethylene [TCE], tetrachloroethylene [PCE], and endrin aldehyde) in surface and subsurface soil, but were not evaluated during the risk assessment. No risk from carcinogenic contaminants was determined to be present during the risk assessment. Although total chromium and cadmium were at concentrations exceeding ADEC Method Two migration to groundwater cleanup levels, groundwater is not present at the site therefore, this is not a viable pathway that presents a risk to human health.

Ecological Risk

The ecological risk evaluation indicated that one pesticide (dieldrin) was retained as a contaminant of potential ecological concern (COPEC) because concentrations in the drainage channel sediments exceeded ecological soil screening levels defined for the risk analysis. Overall, the potential risk to ecological receptors from exposure to COPECs is expected to be low because the forage habitat at Site SS006 is limited. (USAF, 2009).

The ROD (USAF 2014) stated that the maximum concentrations of dieldrin exceeded EPA Region 5 ecological screening levels as well as the upper sediment benchmark. Dieldrin was retained as a COC.

Response Actions

Response actions completed prior to the 2014 ROD for Site SS006 are described below. Post-ROD remedial activities are described below in the Status of Implementation section of this report. In 1984, the USAF performed a hazardous materials removal action at Site SS006 consisting of removing 151 drums of hazardous materials and 34 drums of contaminated soil. Hazardous materials removed included:

- 550 gallons of lube oil
- Several lead acid batteries
- Assorted aerosols
- Five gallons of transformer oil (considered polychlorinated biphenyls [PCBs])
- PCB capacitors and transformers
- 115 gallons of antifreeze
- Various other unspecified cleaning agents and liquids.

The hazardous materials and contaminated soil were sent to Defense Reutilization Marketing Organization facilities in Fort Lewis, Washington, and Elmendorf Air Force Base, Alaska.

In 1986, all structures were decommissioned at the MTFA, including: buildings, the radio relay antennas, fuel and water storage tanks the water reservoir, the pier, and the concrete loading ramp. At Site SS006, soil was removed down to bedrock and the demolition debris was placed into a buried debris cell. This is estimated to consist of: potentially uncontaminated demolition debris (~3,400 cubic yards), contaminated soil (~105 cubic yards), and hazardous debris (~473 cubic yards), as described in the Site Background section.

In 2005, a Preliminary Assessment/Site Inspection (PA/SI) was conducted at the MTFA to determine the location of the debris cell, assess the quality of the soil used as the debris cell cover, and evaluate whether contaminants were leaching from the debris cell (USAF, 2005). The debris cell was confirmed to be located along a constructed rock wall that appeared to have been created to level the area during MTFA construction. A total of eight surface soil, surface water, and sediment samples were collected for analysis of: petroleum constituents, VOCs, polycyclic aromatic hydrocarbons (PAHs), PCBs, pesticides, herbicides, and RCRA metals in and around the debris cell. Only one sediment sample collected northwest and downgradient of the debris cell contained concentrations above screening criteria for diesel range organics (DRO), dichlorodiphenyl dichloroethane (DDD), and dichlorodiphenyl trichloroethene (DDT) based on ADEC Method Two cleanup levels (for DRO) and National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRTs) threshold effects levels for freshwater sediment (for DDD and DDT).

In 2009, a SI was conducted at the former Duncan Canal RRS to determine the nature and extent of contamination at four sites, including Site SS006 (USAF, 2009). A geophysical survey using ground-penetrating radar (GPR) was conducted to define the extent of buried debris, and samples

were collected to assess contaminant concentrations in surface and subsurface soil in and around the debris cell and in sediment and surface water in drainage channels below the seeps. Also included in the scope for the SI was a background soil evaluation used to define Background Threshold Levels (BTLs) for metals in soil at the former Duncan Canal RRS and screening level human health and ecological risk assessments. The results of the GPR survey indicated that the buried debris was generally present only within the northern half of the area and that bedrock appeared to be shallow (2 to 4 feet below ground surface) in the southern half. Surface water samples were all below constituent screening levels. Based on screening of the laboratory results for the soil samples collected at Site SS006 during the SI and results of the risk evaluations, the ROD identified COCs, ARARs, and applicable cleanup levels for residual contamination at the site. The COCs and applicable cleanup levels, including BTLs (as appropriate), are provided in **Table 2**. Summaries of the human health and ecological risk assessment results are provided above in the Risk Summary section.

Remedial Action Objectives

Remedial Action Objectives (RAOs) provide a general description of what the cleanup will accomplish and were established for human health and environmental protection under both CERCLA and Alaska state law, as applicable.

The 2014 ROD established RAOs for Site SS006, as follows:

- Prevent human exposure via the ingestion, dermal contact, and inhalation pathways to contaminated soil and prevent mammalian and avian species exposure through the ingestion pathway and terrestrial plants exposure through direct contact pathway from soil containing the following:
    - RCRA metals at concentrations exceeding: arsenic above 10.08 mg/kg, total chromium above 46.78 mg/kg, and cadmium above 5.0 mg/kg.
    - VOCs at concentrations exceeding PCE above 0.024 mg/kg and TCE above 0.02 mg/kg.
    - Pesticides at concentrations exceeding Dieldrin above 0.0076 mg/kg, Endrin Aldehyde above 0.29 mg/kg, and delta-BHC above 0.0064 mg/kg.

Performance of the remedial action at the site is based on satisfaction of the RAOs and protection of human health and the environment.

Remedy Components

The 2014 ROD defined the selected remedy for Site SS006 for the Duncan Canal RRS. As defined in the ROD, the selected remedy includes: Engineering Controls (ECs), Containment, ICs, and LTM for subsurface and surface soil. The USAF will ensure ICs will be maintained until concentrations of contaminants in soil are at such levels that will allow for UU/UE per ADEC at which time the frequency of inspections and reports, if mutually agreed upon by ADEC, USAF and USFS, may be reduced (USAF, 2014).

The major components of the selected remedy listed in the ROD are:

- Installing an impermeable containment cap over the debris cell, including proper drainage promoting surface water runoff away from the surface of Site SS006.

- Excavating approximately 15 cubic yards of contaminated soil in the drainage channels based on the SI results with concentrations exceeding the ROD-specified cleanup levels and disposing the soil offsite at an EPA-approved facility.
- Surveying and recording IC boundaries in appropriate agency records.
    - Documenting use limitations and exposure restrictions in the USFS Land Status Record System (LSRS) and in the Geographical Information System (GIS) compatible with USAF and USFS GIS data systems.
    - A Notice of Environmental Contamination approved by USAF and USFS will be placed in the Alaska Department of Natural Resources' land records.
- Installing proper signage indicating buried debris and contaminated soils are present beneath the containment cap and restricting excavation activities.
- Conducting annual inspections for the first 5 years following remedy implementation to verify cap condition and correct any identified deficiencies, followed by FYR inspections conducted every 5 years.
- Conducting CERCLA FYRs starting 5 years after implementation of the remedy and continuing as long as the debris is in place, or until sampling indicates that contaminant concentrations are below approved cleanup levels, and UU/UE conditions are met (USAF, 2014).

The LTM includes cap inspections and maintenance conducted annually for the first 5 years following completion of the cap installation and containment in 2015, with a CERCLA FYR in the fifth year. Subsequently, LTM will continue every 5 years until sampling indicates that contaminant concentrations are below approved cleanup levels for UU/UE.

The selected remedy does not reduce the levels of residual contamination within surface and subsurface soil at Site SS006 following implementation of the remedial action through treatment and, therefore, does not satisfy the statutory preference for treatment as a principal element of the remedy. Because the selected remedy for SS006 will result in hazardous substances remaining in soil above levels at the site that allow for UU/UE, a FYR will be conducted until UU/UE levels are met to confirm that the remedy continues to be protective of human health and the environment. No further sampling of the contaminated soil below the impermeable cap is planned due to the presence of debris and also to preserve the integrity of the cap.

Status of Implementation

Remedial activities at Site SS006 at the former Duncan Canal RRS since initiation of the 2014 ROD include construction of an impermeable cap during the remedy implementation in 2014-2015, and maintenance of ECs and ICs during LTM/site inspections in 2016, 2017, 2018, and 2020. As agreed, with ADEC and USFS, excavation of the (approximately 15 cubic yards) contaminated soil in the drainage channels was not conducted, it was determined not to be implementable, due to steep terrain and inaccessibility for heavy equipment.

In accordance with the 2014 ROD, construction of the cap over the debris cell at Site SS006 was completed in August 2015 (Bhate, 2016a). From base to ground surface, the cap is comprised of: a 2-inch base layer of fill, a 2- to 3-inch base layer of sand, a geosynthetic clay layer, a 40-mil high-density polyethylene liner, a 2- to 3-inch sand layer, and a 16-inch (minimum) top layer.

Upon completion of cap construction, two warning signs were installed at the southwest and northwest edges of the cap. Afterwards, the site was seeded with an approved native seed mixture and fertilized. The final surface of the cap was surveyed by a State of Alaska licensed surveyor based on North American Datum 1983 State Plane Alaska. The topography of the cap's final grade and survey data are provided in the *Summary of 2014-2015 Field Activities Report, Remedy Implementation* (Bhate, 2016a).

In September 2014, 11 sediment samples were collected from three drainage channels downgradient of Site SS006 and analyzed for RCRA metals and pesticides for a "hot spot" sampling event (Jacobs, 2015). These samples were obtained to confirm the previous sampling results conducted as part of the SI in 2008 and to assess whether the sediment removal action specified in the ROD was warranted. Dieldrin was detected in two samples, but no pesticide concentrations exceeded the ADEC Method Two migration-to-groundwater cleanup levels. Four metals concentrations (arsenic, cadmium, chromium, and nickel) exceeded either ADEC Method Two, migration-to-groundwater cleanup levels (Table B1) or site-specific BTVs in each of the drainages. **Appendix D** provides the sediment sample locations and concentrations exceeding project cleanup levels.

LUC Summary

The remedy selected in the ROD for Site SS006 includes ICs which are a type of Land Use Controls (LUCs) that uses legal mechanisms to restrict land uses and potential exposures. These state all use limitations and exposure restrictions will be documented in the USFS LSRS and will require ADEC and USFS approvals prior to any excavation. The LUCs are recorded by the USAF in their Land Use Control Management Plan (USAF, 2019) for the 611th Air Support Group Installations, which includes the Duncan Canal RRS (Appendix E). They are not however currently in USFS LSRS as required by the ROD.

The ROD also states that the USAF will coordinate with USFS to confirm proper implementation, monitoring, and maintenance of the ICs, in accordance with State of Alaska 18 AAC 75.375. The USFS point of contact for ICs at SS006 is the USFS Alaska On-Scene Coordinator, Alaska Regional Office.

LUC inspections have been conducted as part of the annual monitoring events at Site SS006 in 2016, 2017, 2018 and 2020 during this FYR monitoring period. Inspection observations are provided in the respective monitoring reports (Bhate, 2016b; 2017; USAF, 2018). **Appendix F** provides the site inspection checklist and photographs for the 2020 FYR site inspection conducted by Stantec. Summaries of the findings are also provided in the LTM Data Review section.

(This page intentionally left blank.)

III. PROGRESS SINCE THE LAST REVIEW

This is the first FYR for Site SS006 at the former Duncan Canal RRS ERP.

Issues were identified during the first FYR that affect the long term protectiveness of the remedies at Site SS006. Recommendations are provided in Section VI for follow-up action during the 2020-2025 review period.

(This page intentionally left blank.)

IV. FYR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available by newspaper posting in the *Petersburg Pilot* on Thursday, August 20, 2020 stating that there was a FYR for Site SS006 at the former Duncan Canal RRS and inviting the public to submit any comments to the USAF (Appendix G**)**. No comments were received. The FYR report will be made available in the Duncan Canal RRS Administrative Record, a copy of which is available online at https://ar.afcec-cloud.af.mil/.

During the FYR process, interviews were conducted with various parties associated with Site SS006 at the former Duncan Canal RRS via phone questionnaire to document any perceived problems or successes with the remedy that has been implemented to date. Because Duncan Canal RRS is an inactive site, it does not have a facility manager. Therefore, an interview was conducted on September 9, 2020, with Mr. Stephen Krause, Remedial Project Manager for AFCEC. Attempts to arrange an interview with a representative of the USFS were unsuccessful. An interview was also conducted on September 19, 2020, with Ms. Anne Marie Palmieri, ADEC Project Manager. The complete interview records are provided in Appendix H.

The two interviewees stated that the remedy at Site SS006 at the former Duncan Canal RRS is functioning as expected. The only issues that have been encountered that has impacted the ROD-defined remedy implementation or progress was the inability to implement excavation of the drainage ditches due to steep terrain and inaccessibility for heavy equipment and the USFS not including LUCs in the USFS LSRS. These issues are also discussed in Sections V and VI of this report.

LTM Data Review

LTM events/site inspections for Site SS006 were conducted in 2016, 2017, 2018, and 2020 at the former Duncan Canal RRS installation. Each monitoring event included an inspection of the integrity and condition of the containment cap and IC signage, and documentation of the overall condition of the site, including any evidence of trespassing and vandalism. A site visit was not conducted in 2019 due to contracting issues with the consultant performing the monitoring. The LTM reports were reviewed and are summarized below (Bhate, 2016b; 2017; USAF, 2018). Appendix F provides the site inspection checklist and photographs for the 2020 FYR site inspection conducted by Stantec.

No new or previously undetected potentially toxic, or mobile, transformation products have been identified; therefore, at this time, the COCs remain the same as specified in the ROD (USAF, 2014).

A summary of the results of monitoring activities that occurred during each annual event covered during this review period is provided below.

2016 Long Term Monitoring Event:

- The condition of the containment cap was observed to be acceptable with no notable surface defects, such as depressions, water ponding, erosion, cracks, or animal burrows.
- Grass was reseeded and fertilized to promote additional vegetation coverage over the cap because the grass growth was observed to be sparsely distributed.
- The IC signage remained intact with no damage.

2017 Long Term Monitoring Event:

- The condition of the containment cap was observed to be acceptable with no notable surface defects, such as depressions, water ponding, erosion, cracks, or animal burrows.
- Native grass was observed to be growing on the site.
- The IC signage had deteriorated significantly. Both signs were removed and replaced.

2018 Long Term Monitoring Event:

- The condition of the containment cap was observed to be acceptable with no notable surface defects, such as depressions, water ponding, erosion, cracks, or animal burrows.
- Native grass was observed to be growing on the site.
- The IC signage that was replaced in 2017 was intact and in good condition.

2020 FYR Site Inspection

The FYR site inspection was conducted at Site SS006 on September 14, 2020 as part of the 2020 LTM and LUC activities. The purpose of the inspection was to evaluate site conditions, inspect the existing debris cell cap, and assess the status of the ECs and ICs designed to restrict unauthorized access. The site inspection observations indicated that the implemented remedy appears effective and is functioning as designed with no apparent changes to the integrity and condition of the containment cap. Grass on the cap is showing good vegetative growth and the IC signage is intact and undamaged. The access road to the site is used by hunters, but there was no evidence of trespassing onto the site. Details of the 2020 FYR site inspection, including the FYR site inspection checklists and photographs, are provided in Appendix F.

The debris shown in Appendix F, photo figures 8 and 9 (rusted metal pipe) was laying on the surface of the cap and may have been associated with a previous sign post.

The debris noted in Appendix F photo figures 11 and 12 is located at the edge of the south limit of the cap where it meets the vertical rock face. There was no evidence of localized soil disturbance indicating erosion in this area. There was no observed erosion of the cap during the 2020 site inspection. Runoff from the site is directed toward two swales: one to the northwest, directing flow to the west; and one to the northeast, directing flow to the east. No erosion of the soils was noted within the swales.

V. TECHNICAL ASSESSMENT

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

The remedy as described in the ROD for Site SS006 has not been fully implemented. The review of documents, ARARs, risk assumptions, and the results of the 2020 FYR site inspection indicates that the implemented portions of the remedy are functioning as intended by the ROD (USAF, 2014). The containment cap is in good condition and revegetation is progressing well. Required remedy components have been implemented except for the following activities: the three drainage channels have not been excavated and the USFS LSRS has not been updated. In addition, according to the ROD 'A Notice of Environmental Contamination approved by USAF and USFS will be placed in the Alaska Department of Natural Resources' land records. An environmental notice has not yet been filed. The implemented remedy meets the RAOs for containment of migration of contamination from the debris cell and restriction of site use. No activities were noted during the site inspections that would violate the LUCs. The LUCs will remain in place until analytical sample results indicate that residual contamination meets the cleanup levels for UU/UE. Issues that could affect the protectiveness of the remedy are provided in Section VI of this report.

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

The exposure assumptions and RAOs used at the time of the remedy selection at Site SS006 are still valid. However, revised human health risk-based cleanup levels for the migration-to-groundwater pathway, which incorporate changes to toxicity data, were promulgated since the ROD was signed. In 2017, ADEC issued updates to 18 AAC 75.345 Method Two (Table B1) that included revisions to soil cleanup levels for the migration-to-groundwater pathway for COCs identified in the ROD. The current migration to groundwater cleanup levels (latest amendment dated November 7, 2020) for cadmium, PCE, and endrin (used as a substitute for endrin aldehyde in the risk assessment) are now greater than the 2014 ROD cleanup levels. However, the migration-to-groundwater cleanup levels for TCE and dieldrin are lower.

Delta-BHC is not listed in the current Method Two (Table B1) soil cleanup levels, and was also not included in the April 2012 version of Table B1, as stated in the ROD. The soil cleanup levels for alpha-BHC were used as a substitute for delta-BHC in the ROD, due to the absence of toxicity data for delta-BHC. This is often used for screening purposes during site investigations but, when used to set clean-up standards will result in conservative cleanup requirements and this should be reevaluated.

Additionally, ADEC 18 AAC 75.341 states that due to the prevalence of naturally occurring arsenic and chromium III throughout Alaska, arsenic and total chromium detected at a site are considered background concentrations unless anthropogenic contribution from a source, activity, or mobilization by means of another introduced contaminant is known or suspected. Based on historical USAF activities, there are no suspected man-made sources of arsenic and total chromium at Site SS006.

Table 3 presents the ROD cleanup levels and current ADEC soil cleanup levels for the migration-to-groundwater pathway for the COCs. The changes to the human health toxicity data for the chemicals listed above do not impact the protectiveness of the remedy because of the

presence of the containment cap and absence of a groundwater pathway. In the drainage ditches, cadmium is the only COC where residual concentrations exceed the migration to groundwater soil cleanup levels specified in the ROD and in the amended regulations.

Changes in Exposure Pathways

There have been no changes in the physical conditions at Site SS006 during this FYR reporting period that would adversely affect the protectiveness of the remedy. However, the 2013 ADEC-approved Groundwater Use Determination (Appendix B) indicated that groundwater is generally not present at the site and, therefore, groundwater was eliminated as a current or potential future source of drinking water at the site. However, the migration-to-groundwater ADEC Method Two soil cleanup levels (Table B1) were retained in the ROD to protect nearby surface water bodies from possible contaminant migration (USAF, 2014).

Placement of the containment cap during remedy implementation was to prevent possible rainwater leaching of contaminants from the debris cell to drainage channels and downgradient surface water bodies. However, COCs were not detected in down-gradient surface water samples collected during the SI. Therefore, the migration-to-groundwater exposure pathway that established the soil cleanup levels for the remedy at Site SS006 should be revised in line with the approved groundwater use determination for this location. As discussed in Section VI, USAF is recommending that the ADEC Method Two over 40-inches zone soil cleanup levels, which are based on a human dermal contact, ingestion, and inhalation exposure pathway are more applicable to current site conditions and that the ROD be amended. As shown on Table 3, comparison of these recommended cleanup levels with maximum concentrations observed during the SI and the 2014 sampling in the drainage channels indicate that residual contamination associated with the debris cell and in the drainage channels, would no longer exceed ADEC cleanup levels. Although Arsenic and Total Chromium both exceed their ADEC cleanup values, both metals occur in high concentration in Alaska, and since no anthropogenic source has been identified at the site, they should be considered background. Under this scenario, remedy implementation would be complete.

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

No additional information has been identified that calls into question the protectiveness of the Site SS006 remedy at the former Duncan Canal RRS.

VI. ISSUES/RECOMMENDATIONS

This section identifies issues affecting the protectiveness of the remedies at Duncan Canal ERP Site SS006.

Site: SS006	Issue Category: Remedy Performance		
	Issue: Based on the 2013 ADEC-approved Groundwater Use Determination, groundwater at the site was eliminated as a current or potential future source of drinking water. The cleanup levels specified in the ROD for SS006, are however based on migration-to-groundwater. An impermeable cap at the site is maintained and inspected to protect human health and the environment by preventing physical contact with contaminated soil, preventing contaminated dust from being transported by wind from the site, and preventing additional contamination from migrating to surface water. LUCs are maintained to prevent disturbance of the impermeable cap. .		
	Recommendation: The ADEC Method Two, over 40-inch zone soil cleanup levels, which are based on human dermal contact, ingestion, and inhalation exposure pathways, are more applicable to current site conditions. The ROD should be amended to include the most recent promulgated ADEC Human Health exposure pathway cleanup levels as referenced in 18 AAC 75.341 (ADEC, 2020). An Explanation of Significant Difference should be prepared to justify this change and amend the ROD.		
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Milestone Date**
No	Yes	USAF/USFS	9/30/2024

Site: SS006	Issue Category: Remedy Performance		
	Issue: As part of the selected remedy for SS006, approximately 15 cubic yards of soil was required to be excavated from the drainage channels. This excavation could not be conducted during the 2014 remedial action due to the steep terrain, which made the drainage channels inaccessible to heavy equipment. The requirement to remove this soil is due to the migration to groundwater cleanup levels for the site.		
	Recommendation: An Explanation of Significant Difference will be prepared to justify removal of this remedy component or amend the CULs for soil from migration to groundwater to direct contact based on the Ground Use Determination and the fact that adjacent surface water does not contain constituents in excess of ADEC CULs.		
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Milestone Date**
Yes	Yes	USAF/USFS	9/30/2024

Site: SS006	Issue Category: Remedy Performance		
	Issue: Components of the ICs identified in the ROD have not been fully implemented.		
	Recommendation: Update the USFS LSRS, and file the environmental notice.		
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Milestone Date**
Yes	Yes	USAF/USFS	9/30/2024

The following recommendations that do not affect the protectiveness of the site remedy at Site SS006 at the former Duncan Canal RRS were identified during this FYR:

Site	Issue	Recommendation
SS006	Dieldrin was identified as a contaminant of potential ecological concern in sediment based on comparison to ecological risk screening levels established in the ecological risk assessment (USAF, 2009). However, the ROD-specified cleanup level for dieldrin was based on human health exposure to soil (migration to groundwater) instead of ecological exposure. Dieldrin was not detected in sediment samples collected from the drainage channels in 2014 or in surface water samples in 2009, indicating that both ecological screening levels (provided in the 2009 risk assessment) and ADEC human health soil screening levels for migration-to-groundwater were not exceeded during the most recent sampling event.	Dieldrin was only found in the initial investigation and has not been detected since. Whether the ROD cleanup standards are amended, inclusion of Dieldrin as a contaminant at the site should be investigated.
SS006	The 2014 ROD used the soil cleanup level for alpha-BHC as a substitute for delta-BHC, but did not state the justification for this decision, there is still no toxicity information associated with delta-BHC.	Delta-BHC as a site COC should be reviewed. Whether the ROD cleanup standards are amended, inclusion of delta-BHC as a contaminant at the site should be investigated.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statements		
Site: **Former Duncan Canal RRS: Site SS006**	*Protectiveness Determination:* **Short-term Protective**	*Planned Addendum Completion Date:* **Not Applicable**

Protectiveness Statement: The remedy for Site SS006 at the former Duncan Canal RRS as currently implemented is short-term protective. The containment cap is limiting migration of contaminants from the debris cell to adjacent drainages and downgradient surface water bodies, LTM events are being performed to assess the condition of the containment cap and overall site conditions. The soil concentrations do not meet UU/UE requirements, however LUCs are in place to restrict the movement or disruption of contaminated soil and site access.

In order for the remedy to be protective in the long-term, the following actions need to be implemented in accordance with the ROD: 1) completion of an environmental notice, and 2) update of the USFS LSRS.

Material in the three drainage channels, that exceeded the migration to groundwater cleanup levels, has not been removed, but there is not a complete pathway to groundwater for contaminants. The ROD requirement to remove this material should be reinvestigated to confirm that its removal is required to achieve the protectiveness required.

(This page intentionally left blank.)

VIII. NEXT REVIEW

The next FYR for ERP Site SS006 at the former Duncan Canal RRS will be completed 5 years from the USAF signature date on this FYR report, unless an Explanation of Significant Difference removes this requirement.

(This page intentionally left blank.)

TABLES

(This page intentionally left blank.)

Table 1. Site SS006 COCs and ARARs

Medium	COC		ARAR
Surface Soil	RCRA Metals	Arsenic	Site-specific background threshold value[1].
		Total Chromium	
		Cadmium	ADEC Method Two Soil Cleanup Levels (18 AAC 75.341)[2]
	Pesticides	Dieldrin	
		Delta-BHC	
	VOCs	TCE	
		PCE	
Subsurface Soil	Pesticides	Endrin Aldehyde	
	VOCs	TCE	
		PCE	

Key:
1 – Site-specific background threshold value calculated during the 2009 Site Investigation based on U.S. Environmental Protection Agency Guidance (USEPA, 2002).
2 – Amended April 8, 2012. Table B1; Over 40-inch zone, migration-to-groundwater.
AAC – Alaska Administrative Code
ADEC – Alaska Department of Environmental Conservation
ARAR – applicable or relevant and appropriate requirement
COC – contaminant of concern
Delta-BHC – Delta Hexachlorocyclohexane (HCH), formally known as benzene hexachloride (BHC)
PCE – tetrachloroethylene
RCRA – Resource Conservation and Recovery Act of 1976
RRS – Radio Relay Station
TCE – trichloroethylene
VOCs – volatile organic compounds

Source: USAF, 2014

Table 2. Site SS006 COCs and ROD Cleanup Levels

Media	Contaminant of Concern		ROD Cleanup Level (mg/kg)
Surface Soil	RCRA Metals	Arsenic	10.08[1]
		Cadmium	5.0[2]
		Total Chromium	46.78[1]
	Pesticides	Dieldrin	0.0076[2]
		Delta-BHC	0.0064[2]
	VOCs	TCE	0.020[2]
		PCE	0.024[2]
Subsurface Soil	Pesticides	Endrin Aldehyde	0.29[2]
	VOCs	TCE	0.020[2]
		PCE	0.024[2]

Key:

1 – Site-specific background threshold value calculated during the 2009 Site Investigation based on U.S. Environmental Protection Agency Guidance (USEPA, 2002).

2 – ADEC Method Two Soil Cleanup Levels (18 AAC 75.341); amended April 8, 2012. Table B1; Over 40-inch zone, migration to groundwater.

AAC – Alaska Administrative Code

ADEC – Alaska Department of Environmental Conservation

ARAR – applicable or relevant and appropriate requirement

COC – contaminant of concern

Delta-BHC – Delta Hexachlorocyclohexae (HCH), formally known as benzene hexachloride (BHC)

mg/kg – milligrams per kilogram

PCE – tetrachloroethylene

RCRA – Resource Conservation and Recovery Act of 1976

ROD – Record of Decision

RRS – Radio Relay Station

TCE – trichloroethylene

VOCs – volatile organic compounds

Source: USAF, 2014

Table 3. Site SS006 ROD Cleanup Levels and Current ADEC Cleanup Levels

Media	Contaminant of Concern	Maximum Concentration[1] (mg/kg)	ROD Cleanup Level (mg/kg)	ADEC Soil Cleanup Level (mg/kg)	
				Migration-to-Groundwater[4]	Over 40 Inch Zone, Human Health[6]
Surface Soil	Arsenic	49.7 (23.5)	10.08[2]	0.2[7]	7.2[7]
	Cadmium	14.5 (17.2)	5.0[3]	9.1	76
	Total Chromium	61.1 (68.8)	46.78[2]	0.089[8]	3.2[8]
	Dieldrin	0.0089 (ND)	0.0076[3]	0.0047	0.36
	Delta-BHC	0.0091	0.0064[3]	NA	NA
	TCE	0.021	0.020[3]	0.011	3.5
	PCE	0.055	0.024[3]	0.19	69
Subsurface Soil	Endrin Aldehyde	0.78	0.29[3]	0.61[5]	20[5]
	TCE	0.089	0.020[3]	0.011	3.5
	PCE	0.072	0.024[3]	0.19	69

Key:

1 – Maximum concentrations detected during the 2008 SI (USAF, 2009) for the COCs specified in the ROD. Number in parentheses is the maximum concentration detected during the 2014 hot spot sediment sampling event in the drainage channels (Jacobs, 2014).

2 – Site-specific background threshold value calculated during the 2008 SI (USAF, 2009) using U.S. Environmental Protection Agency Guidance (USEPA, 2002).

3 – ADEC Method Two Soil Cleanup Levels (18 AAC 75.341); migration-to-groundwater, Table B1; amended April 8, 2012. The soil cleanup levels for alpha-BHC were used as a substitute for delta-BHC in the ROD.

4 – ADEC Method Two Soil Cleanup Levels (18 AAC 75.341); migration-to-groundwater, Table B1; amended November 7, 2020.

5 – Endrin substituted for endrin aldehyde per methods used in the human health risk assessment (USAF, 2009).

6 – ADEC Method Two Soil Cleanup Levels (18 AAC 75.341); Over 40-inch Zone, Human Health, Table B1; amended November 7, 2020.

7 – Due to the prevalence of naturally-occurring arsenic throughout the state, arsenic at a site will be considered background arsenic unless anthropogenic contribution from a source, activity, or mobilization by means of another introduced contaminant is known or suspected (ADEC, 2020, Method Two Cleanup Tables, Table B1, amended November 7, 2020; Footnote 11).

8 – Due to the prevalence of naturally occurring chromium III throughout the state, sample results reported for total chromium detected at a site will be considered background chromium III unless anthropogenic contribution of chromium III or VI from a source, activity, or mobilization by means of another introduced contaminant is known or suspected. The calculated chromium III migration-to-groundwater cleanup level exceeds 1,000,000 parts per million (ADEC, 2020, Method Two Cleanup Tables, Table B1, amended November 7, 2020; Footnote 12)

AAC – Alaska Administrative Code

ADEC – Alaska Department of Environmental Conservation

Delta-BHC – delta-hexachlorocyclohexane (HCH), formally known as benzene hexachloride (BHC),

mg/kg – milligram per kilogram

NA – No cleanup level provided for this compound in the current ADEC regulations.

ND – Not detected at the laboratory reporting limit.

PCE – tetrachloroethylene

ROD – Record of Decision

RRS – Radio Relay Station

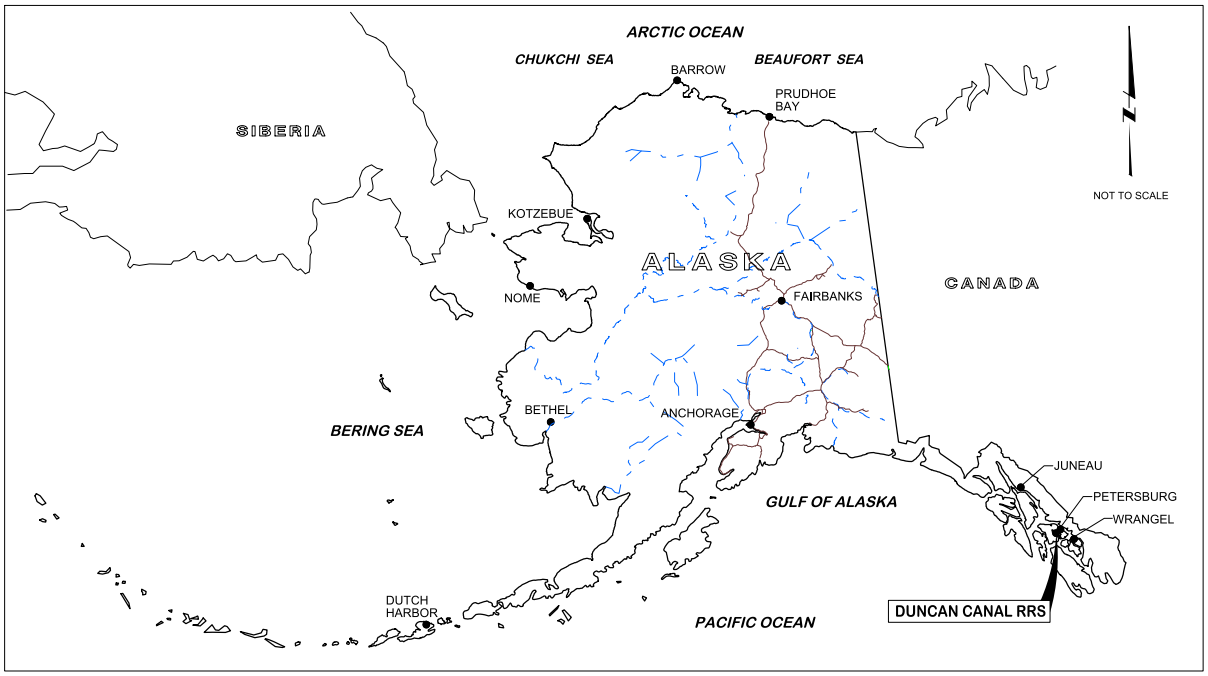
TCE – trichloroethylene

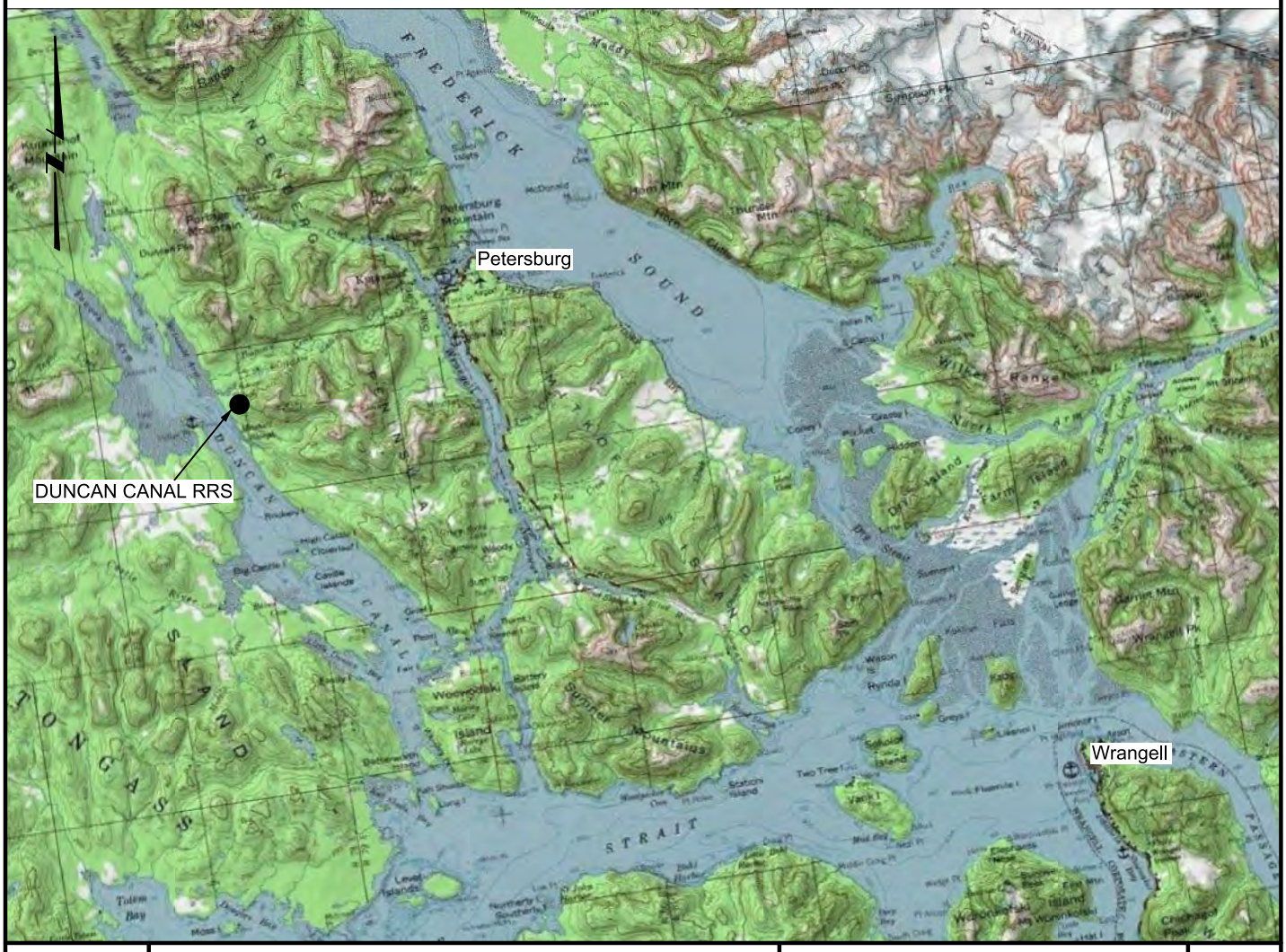
Source: USAF 2014; ADEC 2020.

(This page intentionally left blank.)

FIGURES

(This page intentionally left blank.)





SCALE IN MILES
0 3.5

UNITED STATES FOREST SERVICE
DUNCAN CANAL RADIO RELAY STATION, ALASKA
SITE SS006
2020 FIVE-YEAR REVIEW

VICINITY MAP

FIGURE
1

185704590.
200.1000

FILE: C:\D\CAD\Proj\Stantec Cardno Baker JV\2020 Duncan Canal_185704590\2020 Duncan Canal_FYR\August 2020\Fig01 Vicinity Map.dgn

TIME: 14-AUG-2020 22:24

(This page intentionally left blank.)

TIME: 16-AUG-2020 17:52 FILE: C:\D\CAD\Proj\Stantec Cardno Baker JV\2020 Duncan Canal_185704590\2020 Duncan Canal_FYR\August 2020\Fig02 Location Map.dgn

SCALE IN FEET
0 1,000

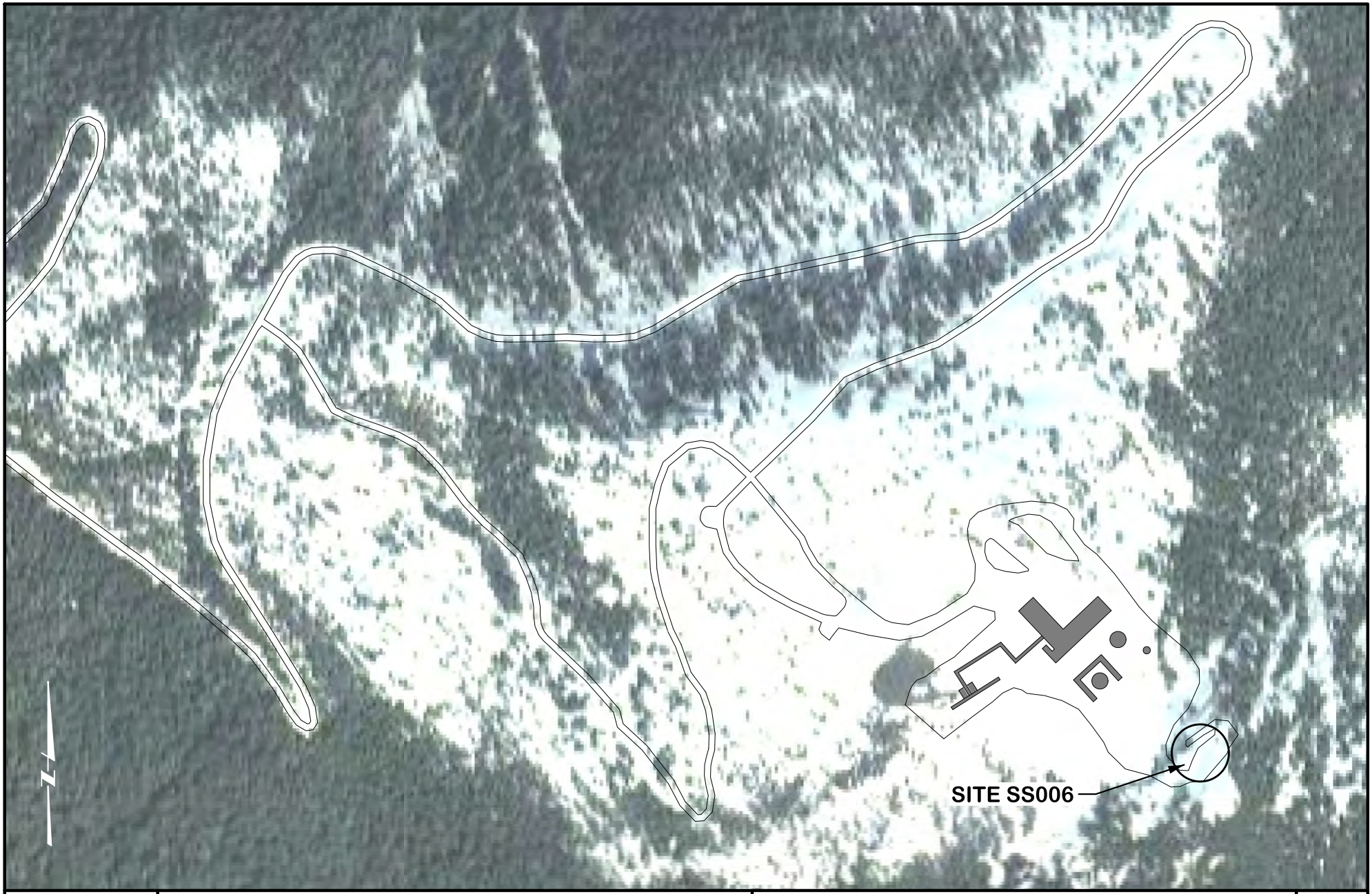
UNITED STATES FOREST SERVICE
DUNCAN CANAL RADIO RELAY STATION, ALASKA
SITE SS006
2020 FIVE-YEAR REVIEW

LOCATION MAP

FIGURE
2
185704590.
200.1000

(This page intentionally left blank.)

TIME: 16-AUG-2020 18:47 FILE: C:\D\CAD\Proj\Stantec Cardno Baker JV\2020 Duncan Canal_185704590\2020 Duncan Canal_FYR\August 2020\Fig03 Site Map.dgn



APPROXIMATE SCALE IN FEET
0 200

UNITED STATES FOREST SERVICE
DUNCAN CANAL RADIO RELAY STATION, ALASKA
SITE SS006
2020 FIVE-YEAR REVIEW

SITE MAP

FIGURE
3
185704590.200.1000

(This page intentionally left blank.)

APPENDIX A
REFERENCE LIST

(This page intentionally left blank.)

APPENDIX A
REFERENCE LIST

Alaska Department of Environmental Conservation (ADEC). 2020. 18 AAC 75 Oil and Other Hazardous Substances Pollution Control; Register 228, Amended November 7, 2020.

ADEC. 2020. ADEC Division of Spill Prevention and Response, Contaminated Sites Program Database. Available online: http://dec.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search.

Bhate Environmental Infrastructure (Bhate). 2016a. Final Summary of 2014-2015 Field Activities Report, Remedy Implementation at the Former Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. July 2016.

Bhate. 2016b. Final 2016 Long Term Monitoring Report at the Former Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. October 2016.

Bhate. 2017. Final 2016 Long Term Monitoring Report at the Former Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. October 2017.

Jacobs Engineering Group, Inc. (Jacobs). 2015. Technical memorandum re: 2014 Duncan Canal SS006 Hot Spot Sampling (Draft). January 6, 2015. Appendix I in Bhate 2016a.

U.S. Air Force (USAF). 1960. Memorandum of Understanding Between the U.S. Forest Service (USFS), Department of Agriculture and the United States Air Force, Department of Defense. Signed by the USFS on January 22,1960 and by the USAF on March 1, 1960.

USAF. 2005. Final Report, Preliminary Assessment/Site Inspection, Duncan Canal RRS, Alaska. December 2005.

USAF. 2009. Final Site Investigation Report, Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. July 2009.

USAF. 2010. Groundwater Use Determination, Mountain Top Facility Area, Duncan Canal Radio Relay Station, Alaska. January 2010.

USAF. 2010. Feasibility Study, Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. June.

USAF. 2014. Final Record of Decision for Sites DA001 (Former RRS Dump Site), SS004 (Drum Storage and Burial Site), and SS006 (Demolition Debris Area), Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. April 2014.

USAF. 2019. Land Use Control Management Plan, Pacific Air Forces Regional Support Center Installations. August 2019.

USAF. 2018. Final 2018 Institutional Controls and Cap Inspection Report for Site SS006, Duncan Canal Radio Relay Station, Kupreanof Island, Alaska. August 2018.

U.S. Environmental Protection Agency (USEPA). 2002. Guidance for Comparing Background and Chemical Concentrations m Soil for CERCLA Sites. OSWER 9285.7-41. September 2002.

U.S. Forest Service (USFS). 1987. Reply to 2740; Termination of Memorandum of Understanding dated January 22, 1960. May 28, 1987.

USFS. 2014 Interagency Agreement between United States Department of Agriculture Forest Service - Region 10 and United States Air Force Pacific Air Forces Regional Support Center in the matter of: Duncan Canal Radio Relay Station, Tongass National Forest, Kupreanof Island, Alaska. February 28, 2014

Weston Solutions, Inc. (Weston). 2013. Letter to Ms. Anne Marie Palmieri, ADEC, re Submittal of the Method Three Cleanup Levels and Groundwater Use Determination. With ADEC approval, April 18, 2013.

APPENDIX B
GROUNDWATER USE DETERMINATION – ADEC APPROVAL, 2013

(This page intentionally left blank.)

Weston Solutions, Inc.
Suite 300
425 G Street
Anchorage, Alaska 99501
Phone: (907) 276-6610 • FAX: (907) 276-6694
www.westonsolutions.com

18 April 2013

Ms. Anne Marie Palmieri
ADEC SPR-Contaminated Sites
P.O. Box 1542
Haines, AK 99827

RE: Submittal of the Method Three Cleanup Levels and Groundwater Use Determination
Duncan Canal Radio Relay Station, Alaska
Contract No.: FA8903-08-D-8784, Task Order No.: 0073
Project No.: FMRV20127501

Dear Ms. Palmieri:

Weston Solutions, Inc., on behalf of the United States Air Force (USAF), 611th Civil Engineer Squadron, would like to request approval for Cleanup Levels at Duncan Canal Radio Relay Station (RRS) for Sites DA001, SS001, SS002, SS003, SS003b, SS004 Upper, and SS006. At this time the USAF would also like to request approval of the 2010 Groundwater Use Determination for the Mountain Top Facility Area (MTFA) Site SS006.

Cleanup Levels:

The following tables present the contaminants of concern and associated cleanup levels that will be presented in the Duncan Canal RRS Record of Decision (ROD). As reported in the 2010 Proposed Plan diesel range organics (DRO) was reported with a cleanup level of 880 mg/kg; however, the ADEC Method Three cleanup level is 8,300 mg/kg. This correction will be included in the ROD in Section 2.14 Documentation of Significant Changes.

DA001 Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels (mg/kg)
Surface Soil	PCBs	Aroclor-1016	0.59	1[3]
		Aroclor-1254	0.92	
		Aroclor-1260	1.4	
		Total PCBs[2]	1.99	1[1]
	Metals	Total Chromium	99.6[4] 57.7[5]	46.78[6]
	Fuels	DRO	900[4] 8,200[5]	8,300[7]
	VOCs	Chloroform	0.49	0.46[1]
Subsurface Soil	Total PCBs	Aroclor-1016 & 1260	1.99	1[3]

Notes:
[1]– Based on ADEC 18 AAC 75 Method Two Soil Cleanup Levels, Table B1 Over 40-Inch Zone, as amended through April 8, 2012 (18 AAC 75.341).
[2]– Sum of Aroclor 1016 and Aroclor 1260 (soil sample DA001-SD-004-0-092308).
[3]– Cleanup levels for individual Aroclor species (1016, 1254, 1260) are not provided under ADEC 18 AAC 75 Method Two Soil Cleanup Levels (18 AAC 75.341). All detected Aroclor results within a single sample are totaled and compared to the Method Two Soil Cleanup Level for "Total PCBs".
[4]– Maximum concentration: Duncan Canal RRS Remedial Investigation (USAF, 2009a).
[5]– Maximum concentration: Remedial Investigation Supplemental Sampling (USAF, 2010).
[6]– Based on Background Threshold Values established during the RI (USAF, 2009a).
[7]– Site-specific ADEC 18 AAC 75 Method Three Soil Ingestion Cleanup Levels, established during the 2009 RI

mg/kg	milligrams per kilogram	DRO	diesel range organic
PCB	polychlorinated biphenyl	VOC	volatile organic compound
Total PCBs	summation of all Aroclor species		

SS001 Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels
Surface Soil	Fuels	DRO	4,000	880 mg/kg[1]
	SVOCs	Benzo(a)pyrene	0.0002	0.0002 mg/L[2]
Groundwater	Fuels	DRO	2.3	1.5 mg/L[2]

Notes:
[1] – Site-specific ADEC 18 AAC 75 Method Three Migration to Groundwater Cleanup Level established during the 2009 RI
[2]– Based on ADEC 18 AAC 75 Table C Groundwater Cleanup Levels as amended through April 8, 2012

DRO	diesel range organic	SVOC	semi-volatile organic compound
mg/kg	milligrams per kilogram	mg/L	milligrams per liter

SS002 Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels (mg/kg)
Subsurface Soil	SVOCs	1-Methylnaphthalene	6.4	6.2[1]
		2-Methylnaphthalene	9.1	6.1[1]
	VOCs	Benzene	0.21	0.025[1]
		Methylene chloride[3]	0.043	0.016[1]
	Fuels	DRO	8,500	1,100[2]
Groundwater	Fuels	DRO	3.2	1.5 mg/L[4]

Notes:
[1]– Based on ADEC 18 AAC 75 Method Two Soil Cleanup Levels, Table B1 Over 40-Inch Zone; as amended through April 8, 2012 (18 AAC 75.341).
[2]– Site-specific ADEC 18 AAC 75 Method Three Migration to Groundwater Cleanup Levels established during the 2009 Site Investigation.
[3]– Common laboratory cross-contaminant.
[4]– Based on ADEC 18 AAC 75 Table C Groundwater Cleanup Levels as amended through April 8, 2012

DRO diesel range organic
mg/kg milligrams per kilogram
mg/L milligrams per liter
SVOC semi-volatile organic compound
VOC volatile organic compound

SS003 Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels (mg/kg)
Subsurface Soil	SVOCs	Benzo(a)pyrene	2.8	2.1[1]
		Dibenzo(a,h)anthracene	0.97	0.4[1]
	Fuels	DRO	10,000	1,100[2]
Groundwater	SVOCs	Benzo(a)pyrene	0.00037	0.0002 mg/L[3]
	Fuels	DRO	19	1.5 mg/L[3]

Notes:
[1] – Based on ADEC 18 AAC 75 Method Two Screening Criteria Table B1 Over 40-Inch Zone; as amended through April 8, 2012 (18 AAC 75.341)
[2] – Site-specific ADEC 18 AAC 75 Method Three Migration to Groundwater Cleanup Level established during the 2009 Site Investigation
[3] – 18 AAC 75 Table C Groundwater Cleanup Levels as amended through April 8, 2012

DRO diesel range organic
mg/kg milligrams per kilogram
SVOC semi-volatile organic compound
mg/L milligrams per liter

SS003b Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels (mg/kg)
Surface Soil	Fuels	DRO	186,000	230[1]
		RRO	122,000	8,300[1]
	RCRA Metals	Selenium	3.6	3.4[1]

Notes:
[1] – Based on ADEC 18 AAC 75 Method Two Soil Cleanup Levels, Tables B1 and B2, Over 40-Inch Zone, as amended through April 8, 2012 (18 AAC 75.341).

DRO diesel range organic
mg/kg milligrams per kilogram
RRO residual range organic

SS004 Upper Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels (mg/kg)
Surface Soil	Fuels	DRO	8,000 / 45,400[3]	450[2]
		RRO	41,000 / 319,000[3]	8,300[1]
Subsurface Soil	RCRA Metals	Arsenic	18.6	18.13[4]

Notes:
[1]– Based on ADEC 18 AAC 75 Method Two cleanup levels, Tables B1 and B2, Over 40-Inch Zone, as amended through April 8, 2012 (18 AAC 75.341).
[2]– Site-Specific ADEC 18 AAC 75 Method Three Migration to Groundwater Cleanup Levels established during the RI.
[3]– 2005 Preliminary Assessment/Site Inspection composite sample result. 2005 Preliminary Assessment/Site Inspection composite sample soil concentrations were not found through discrete samples collected during the 2009 Site Investigation.
[4] – Site-specific background threshold value calculated during the Site Investigation (USAF, 2009a) based on USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites.
DRO diesel range organic RRO residual range organic
mg/kg milligrams per kilogram

SS006 Sample Summary

Medium	Contaminant		Maximum Concentration (mg/kg)	Cleanup Levels[1] (mg/kg)
Surface Soil	RCRA Metals	Arsenic	49.7	10.08[2]
		Cadmium	14.5	5[1]
		Total Chromium	61.1	46.78[2]
Subsurface Soil	Pesticides	Endrin Aldehyde	0.78	0.29[1]
	SVOCs	Benzo(a)pyrene	0.58	0.4[3]

Notes:
[1] – Based on ADEC 18 AAC 75 Method Two Screening Criteria, Tables B1 and B2, Over 40 inch zone Migration to Groundwater, as amended through April 8, 2012 (18 AAC 75.341)
[2] – Site-specific background threshold value calculated during the Site Investigation (USAF, 2009a) based on USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites.
[3] – Based on ADEC 18 AAC 75 Method Two Screening Criteria, Tables B1 and B2, Over 40 inch zone Direct Contact, as amended through April 8, 2012 (18 AAC 75.341)
SVOC semi-volatile organic compound mg/kg milligrams per kilogram

Attachment 1 presents the Method Three and Cumulative Risk Calculator results from the 2009 Remedial Investigation (RI) and the 2009 Site Investigation (SI) at Duncan Canal RRS.

Groundwater Use Determination:
The USAF would also like to request approval from ADEC for Groundwater Use Determination (under ADEC groundwater use regulation, 18 AAC 75.350) for the MTFA Site SS006 at Duncan Canal RRS. Attachment 2 contains the 2010 Groundwater Use Determination for the MTFA Site SS006.

This signature page documents the ADEC approval of the cleanup levels for Sites DA001, SS001, SS002, SS003, SS003b, SS004 Upper, and SS006 as well as the Groundwater Use Determination for the MTFA Site SS006 at Duncan Canal RRS, Alaska. By signing, the ADEC approves of the cleanup levels provided above, which will be presented in an associated ROD, and the Groundwater Use Determination included in Attachment 2 and comply with Alaska statues and regulations. This decision may be reviewed and modified in the future if new information becomes available that indicates the presence of ~~undiscovered~~ AMP contamination, or exposure routes, that might cause a risk to human health or the environment.

AMPalmieri

4-19-13
Date

Anne Marie Palmieri, Environmental Program Specialist
Spill Prevention and Response, Contaminated Sites Program
Alaska Department of Environmental Conservation

If you have questions please do not hesitate to call me at (907) 276-6610.

Sincerely,
WESTON SOLUTIONS, INC.

Jamie Grund
Project Manager

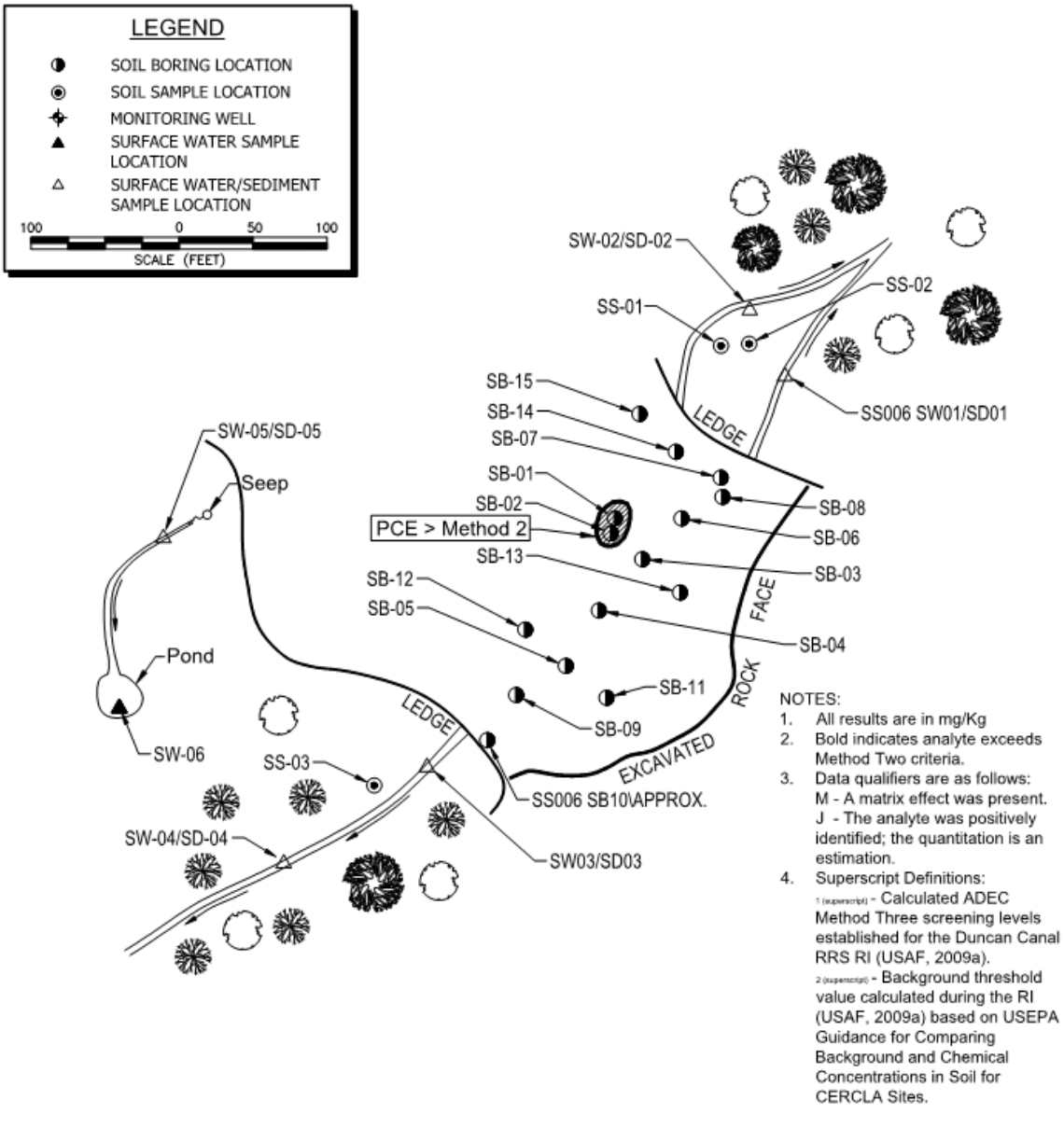
Enclosures
Attachment 1: Method Three and Cumulative Risk Calculator Results
Attachment 2: 2010 Groundwater Use Determination for the Mountain Top Facility Area Site SS006

(This page intentionally left blank.)

APPENDIX C
ROD FIGURES

(This page intentionally left blank.)

Figure 2-3 SS006 Surface Soil Analytical Exceedances



NOTES:
1. All results are in mg/Kg
2. Bold indicates analyte exceeds Method Two criteria.
3. Data qualifiers are as follows:
   M - A matrix effect was present.
   J - The analyte was positively identified; the quantitation is an estimation.
4. Superscript Definitions:
   [1] - Calculated ADEC Method Three screening levels established for the Duncan Canal RRS RI (USAF, 2009a).
   [2] - Background threshold value calculated during the RI (USAF, 2009a) based on USEPA Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites.

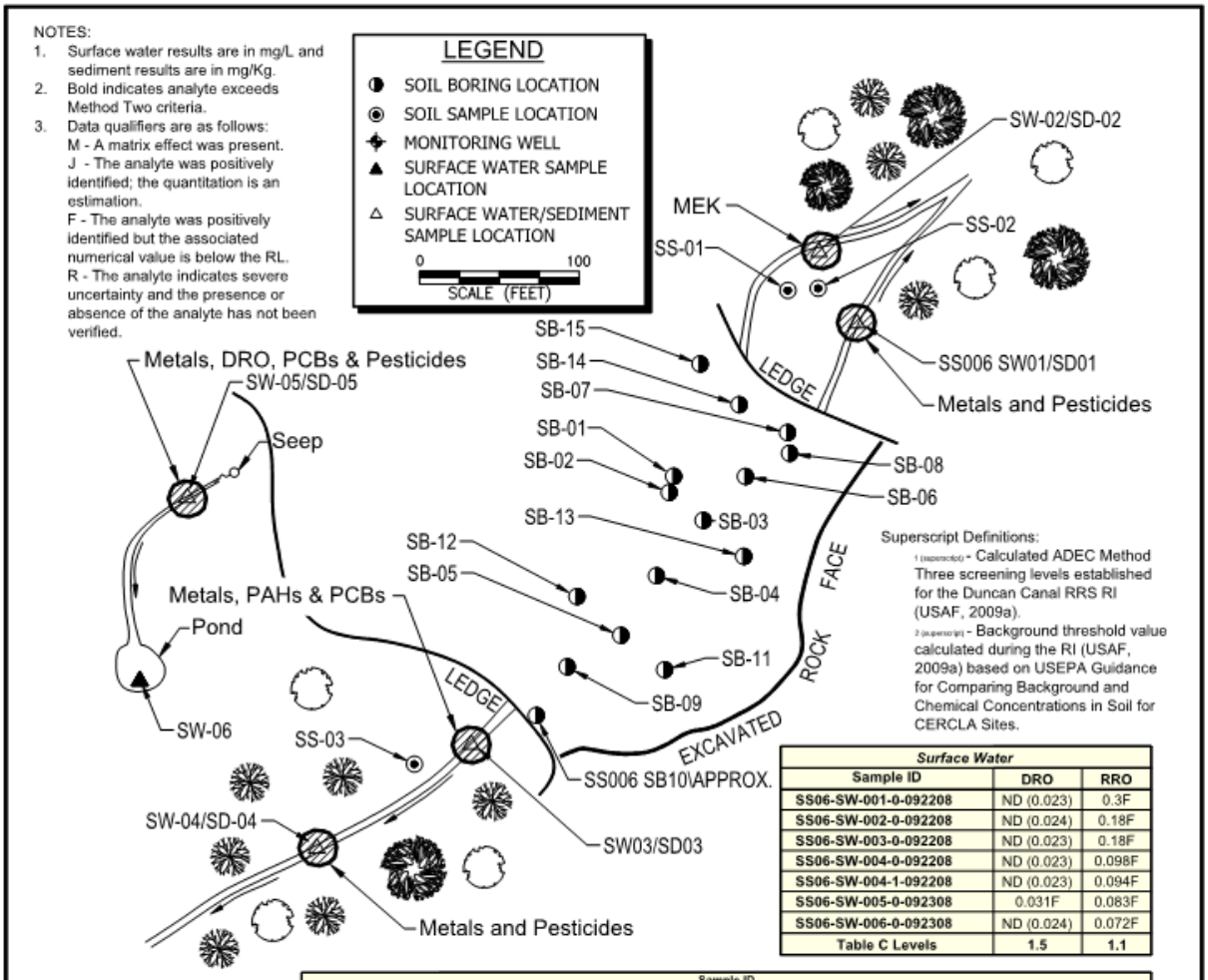
Sample ID	Depth (ft)	DRO	Methylene Chloride	Tetrachloroethene	Trichloroethene	Arsenic	Total Chromium
SS06-SS-001-0-092208	0-1	180M	**ND (0.087)**	**ND (0.055)**	**ND (0.021)**	**4.77**	**33.7M**
SS06-SS-001-1-092208	0-1	120M	**ND (0.064)**	**ND (0.041)**	ND (0.015)	**3.7**	**28.7M**
SS06-SS-002-0-092208	0-1	190M	**ND (0.072)**	**ND (0.046)**	ND (0.017)	5.07	27.6M
SS06-SS-003-0-092208	0-1	49M	**ND (0.05)**	**ND (0.032)**	ND (0.012)	1.49	14.6M
SS06-SB01-001-0-091708	1.5-2.5	120	ND (0.039)	**0.025M**	0.0093M	**6.82M**	18.8M
SS06-SB03-001-0-091708	2-3	590J	**ND (0.029)**	0.019M	0.007M	**5.29M**	20.9M
Method Two Levels	--	**3,500[1]**	**0.016**	**0.024**	**0.02**	**3.7/10.08[2]**	**25/46.78[2]**

DATE: 11 APR 2013
PROJ. NO.: 20077.048.073
FILE: see plot stamp
DRAWN BY: SJ

United States Air Force
SOURCE AREA SS006
SURFACE SOIL ANALYTICAL EXCEEDANCES
Duncan Canal RRS
Alaska

FIGURE 2-3

Figure 2-4 SS006 Surface Water and Sediment Analytical Exceedances



Surface Water		
Sample ID	**DRO**	**RRO**
SS06-SW-001-0-092208	ND (0.023)	0.3F
SS06-SW-002-0-092208	ND (0.024)	0.18F
SS06-SW-003-0-092208	ND (0.023)	0.18F
SS06-SW-004-0-092208	ND (0.023)	0.098F
SS06-SW-004-1-092208	ND (0.023)	0.094F
SS06-SW-005-0-092308	0.031F	0.083F
SS06-SW-006-0-092308	ND (0.024)	0.072F
Table C Levels	**1.5**	**1.1**

		Sample ID					
Analyte	**Screening Level**	**SS06-SD-001-0-092208**	**SS06-SD-002-0-092208**	**SS06-SD-002-1-092208**	**SS06-SD-003-0-092208**	**SS06-SD-004-0-092208**	**SS06-SD-005-0-092308**
Arsenic	**5.9/12.03[2]**	**49.7**	0.0891F	3.18	**10.4**	**12.3**	**12.8**
Cadmium	**0.6/0.792[2]**	**6.02**	0.0366F	0.183F	**2.14**	**14.5**	**0.639F**
Total Chromium	**37.3/34.24[2]**	**41.5M**	0.46M	23.3M	34.0M	19.1M	**61.1M**
Lead	**35/6.438[2]**	**41.1M**	0.227M	6.15M	**50.3M**	**49.2M**	19.2M
Silver	**0.5/0.151[2]**	0.413F	ND (0.0384)	0.112F	0.185F	0.197F	**0.562F**
Mercury	**0.17/0.0214[2]**	**0.413**	0.0443F	0.071F	0.135F	0.0776F	**0.312**
DRO	**3,500[1]**	140	120	100	100	71	**310**
RRO	**8,300**	420	440	380	520	250	800
Aroclor-1016	**0.0341**	0.033M	0.014M	0.013M	**0.013M**	0.014M	**0.029M**
Aroclor-1260	**0.0341**	ND (0.03)	ND (0.013)	ND (0.012)	**0.18J**	ND (0.013)	**0.39J**
Acenaphthene	**0.00671**	0.0053M	0.0023M	0.0022M	**0.023M**	0.0023M	0.0048M
Benzo(a)anthracene	**0.0317**	ND (0.0041)	ND (0.0018)	ND (0.0017)	**0.045J**	ND (0.0017)	ND (0.0037)
Benzo(a)pyrene	**0.0319**	0.0045M	0.0019M	0.0019M	**0.098M**	0.0019M	0.0041M
Chrysene	**0.0571**	ND (0.0039)	ND (0.0017)	ND (0.0016)	**0.063J**	ND (0.0017)	ND (0.0035)
Dibenzo(a,h)anthracene	**0.00622**	ND (0.0049)	ND (0.0021)	ND (0.0021)	**0.027J**	ND (0.0021)	ND (0.0044)
Phenanthrene	**0.0419**	0.0049M	0.0021M	0.0021M	**0.091M**	0.0021M	0.0044M
Pyrene	**0.053**	0.0049M	0.0021M	0.0021M	**0.12M**	0.0021M	0.0044M
2-Butanone (MEK)	**0.0424**	**ND (0.28)**	**ND (0.093)**	**0.15F**	**ND (0.064)**	**ND (0.087)**	**ND (0.23)**
Dieldrin	**0.00285**	**0.0087J**	ND (0.00035)	ND (0.00034)	0.0025J	ND (0.00035)	**0.0089F**
Endosulfan I	**0.00326**	ND (0.00063)	ND (0.00026)	ND (0.00026)	ND (0.00025)	ND (0.00026)	**0.016J**
Endosulfan II	**0.00194**	ND (0.0015)	ND (0.00063)	ND (0.00062)	ND (0.0006)	ND (0.00063)	**0.0082J**
beta-BHC	**0.005**	ND (0.00057)	ND (0.00024)	0.0023J	ND (0.00023)	**0.012J**	ND (0.00051)
delta-BHC	**0.0064**	**0.0078J**	0.0032J	ND (0.00023)	0.00022R	**0.0091J**	0.0005R
Lindane	**0.00094**	ND (0.00057)	ND (0.00024)	ND (0.00023)	ND (0.00023)	**0.004F**	ND (0.00051)

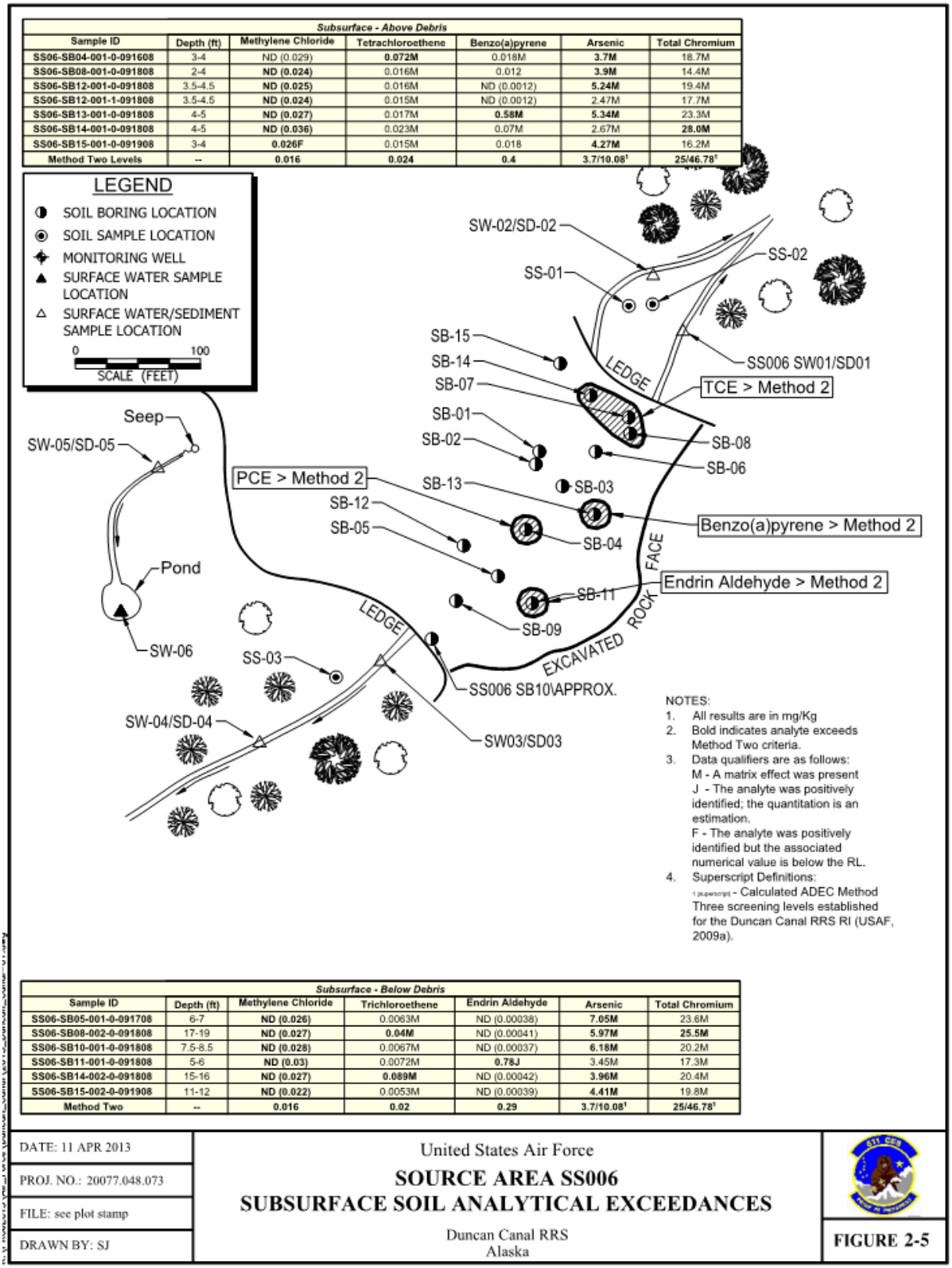
Screening Levels are: NOAA SQuiRTs TELs, PELs, EPA Region 5 ESLs, ADEC Method Two, and Background Metals

DATE: 11 APR 2013
PROJ. NO.: 20077.048.073
FILE: see plot stamp
DRAWN BY: SJ

United States Air Force
SOURCE AREA SS006 SURFACE WATER AND SEDIMENT ANALYTICAL EXCEEDANCES
Duncan Canal RRS
Alaska

FIGURE 2-4

Figure 2-5 SS006 Subsurface Soil Analytical Exceedances



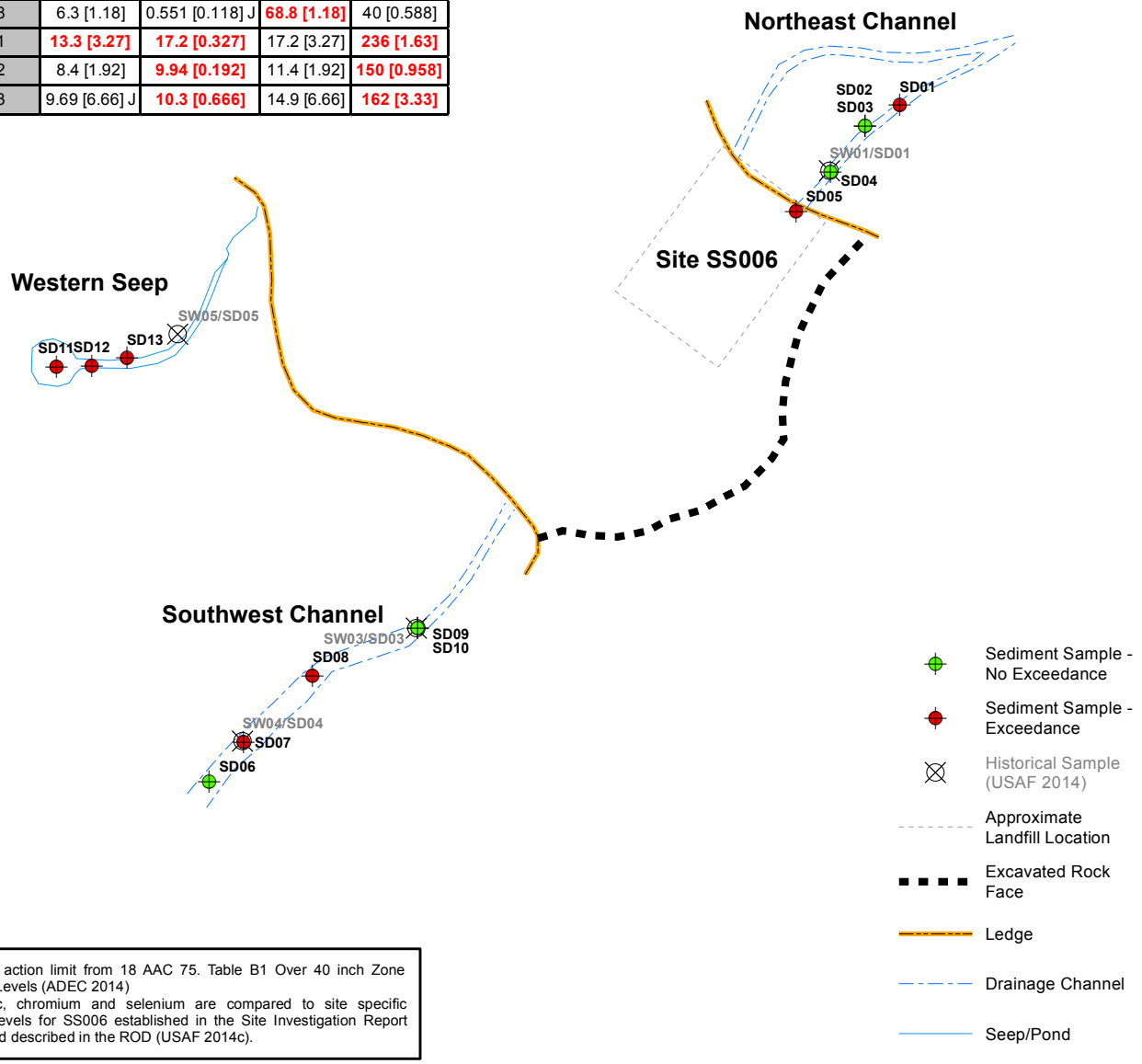
(This page intentionally left blank.)

APPENDIX D
HOT SPOT SAMPLING RESULTS – DRAINAGE CHANNELS, 2014

(This page intentionally left blank.)

2014 SS006 Hot Spot Sampling Exceedances

Location ID	Arsenic	Cadmium	Chromium	Nickel
	mg/kg	mg/kg	mg/kg	mg/kg
Project Action Limit[1,2]	10.08	5	46.78	86
SD01	**13.1 [2.39]**	0.478 [0.239] J	13.9 [2.39]	30.8 [1.19]
SD05	**23.5 [1.13]**	2.82 [0.113]	22.5 [1.13]	51.8 [0.564]
SD07	**11 [1.38]**	0.458 [0.138] J	41 [1.38]	39.4 [0.69]
SD08	6.3 [1.18]	0.551 [0.118] J	**68.8 [1.18]**	40 [0.588]
SD11	**13.3 [3.27]**	**17.2 [0.327]**	17.2 [3.27]	**236 [1.63]**
SD12	8.4 [1.92]	**9.94 [0.192]**	11.4 [1.92]	**150 [0.958]**
SD13	9.69 [6.66] J	**10.3 [0.666]**	14.9 [6.66]	**162 [3.33]**



1 Project action limit from 18 AAC 75. Table B1 Over 40 inch Zone Cleanup Levels (ADEC 2014)
2 Arsenic, chromium and selenium are compared to site specific cleanup levels for SS006 established in the Site Investigation Report (2009) and described in the ROD (USAF 2014c).

0 50 100 150 200
Feet

All Locations Are Approximate
NAD 1983 UTM Zone 8N, Meters

Source: USAF. 2009 (July). Final Site Investigation Report, Duncan Canal Radio Relay Station, Kupreanof Island, Alaska

N

2014 SEDIMENT SAMPLE LOCATIONS SS006, DUNCAN CANAL RRS

KUPREANOF ISLAND, ALASKA

JACOBS	DATE:	PROJECT MANAGER:	FIGURE NO:
	05 JAN 2015	J. WEHRMANN	2

P:\Petersburg\WERC_AFCEE_09\MXD\DuncanCanal_SS006_PostSurvey.mxd beatycj

(This page intentionally left blank.)

APPENDIX E
LAND USE CONTROL MANAGEMENT PLAN INSTALLATION FIGURE AND LUC TYPES, AUGUST 2019

(This page intentionally left blank.)

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
Driftwood Bay RRS	SS010	• Meet 18 AAC 60 maintenace and inspection requirements • Be protective of human health, safety, welfare, and the environment	'Preliminary LUCs will remain in place until ROD is finalized; '• Signage			TBD	TBD
Driftwood Bay RRS	WP003	• Meet 18 AAC 60 maintenace and inspection requirements • Be protective of human health, safety, welfare, and the environment	'Preliminary LUCs will remain in place until ROD is finalized; '• Signage			TBD	TBD
Duncan Canal RRS	SS006	• (None specified)	• Land use restrictions maintained in the property records and signage • Control of site access using fencing • An impermeable cap placed over surface soil contamination above approved cleanup levels.	Fencing Signage Soil Cap	• (None specified)	• Land use restrictions maintained in the property records and signage • Control of site access using fencing • Impermeable cap placed over surface soil contamination above approved cleanup levels • LTM and maintenance of contaminant concentrations annually by USAF and LUCs by the USFS. • CERCLA Five-Year Reviews would apply until sampling indicates that contaminant concentrations are below the approved cleanup levels. • Contaminated soil in the run-off channels will be excavated, loaded onto barges, and shipped off-site to a USEPA approved facility for disposal.	• Land use restrictions maintained in the property records and signage • LTM and maintenance of contaminant concentrations annually by USAF and LUCs by the USFS. • CERCLA Five-Year Reviews would apply until sampling indicates that contaminant concentrations are below the approved cleanup levels.
Eareckson AS	FT001	• ICs are designed to prevent activities that could disturb contaminants and affect the performance of the other components of the selected remedies and maintain current land uses, while protecting human health and the environment • The objective of the ICs are to prevent access or use of soil and groundwater contaminated with petroleum hydrocarbons, VOCs, and SVOCs.	• No land use involving subsurface activitie. • No disturbing of contaminated soil or groundwater without ADEC approval	• (None specified)	• The ICs will remain in effect until the petroleum hydrocarbon concentrations, VOCs, and SVOCs in soil are determined to be less than the ADEC 18 AAC 75.341 Method Two cleanup levels and groundwater meets the cleanup levels listed in 18 AAC 75.345, Table C.	• Visual inspections to be conducted to verify effectiveness of ICs and report inspection results to ADEC. • Inspection reports will be prepared no less than once every 5 years to evaluate status of the ICs and how any IC deficiencies or inconsistent uses have been addressed.	• The Eareckson AS Base General Plan (Plan) and USAF land records will be updated to show the boundaries of the sites to restrict excavation of soil and restrict groundwater use. The Plan will contain a map indicating site locations, with restrictions on any invasive activities that could potentially compromise the integrity of soil covers and expose potential contaminants. • Dig permits issued by the Base Operating Contractor are required for any excavation or well installation at Eareckson AS. Prior to approving a permit, the Plan will be reviewed to ensure that invasive activities are not taking place within the boundary of the sites where land use has been restricted. • USAF will initiate action within 10 days of discovering any activity that may interfere with effectiveness of ICs and notify ADEC as soon as practicable after discovery. • USAF will obtain prior concurrence from ADEC to terminate the ICs, modify current land use, or allow anticipated actions that might disrupt protectiveness of ICs (including excavation or well installation). In the unlikely event that the property is to be transferred, USAF will notify ADEC at least 30 days prior to any transfer taking place. • If ICs fail or are deficient and could immediately lead to actual risk to human health and the environment, USAF will address the situation promptly, including ADEC notification. • USAF will ensure, as appropriate, that any contractor, tenant, or other authorized occupant of land subject to LUCs is informed of the LUCs and is made subject to the requirements of such LUCs.

ERP Sites and LUC Status

- ADEC Standard Conditions (See Table 2-1A)
- Closed (See Table 2-1B)
- Land Use Control Restriction (See Tables 1-2 and 2-1)

Notes:
1. Installation boundary unavailable.
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.

ADEC - Alaska Department of Environmental Conservation
ERP - Environmental Restoration Program
GIS - Geographic Information System
LUC - Land Use Control
RRS - Radio Relay Station

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

Installation Map - Duncan Canal RRS

Figure 16

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

APPENDIX F
FYR SITE INSPECTION CHECKLISTS AND PHOTOGRAPHS, SEPTEMBER 2020

(This page intentionally left blank.)

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: SS006	**Date of inspection:** September 14, 2020
Location and Region: Duncan Canal, AK / Region 10	**EPA ID:**
Agency, office, or company leading the five-year review: Stantec	**Weather/temperature:** Sunny, ~55F, winds less than 5knts

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other: Cleanup Complete_____
  _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** __N/A_____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____
   _____

2. **O&M staff** _____N/A_____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached __None_____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED ☐ Applicable ☒ N/A)

1. **O&M Documents**
   - ☐ O&M manual — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ As-built drawings — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Maintenance logs — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

2. **Site-Specific Health and Safety Plan** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

3. **O&M and OSHA Training Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Other permits_____ — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

7. **Groundwater Monitoring Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks: _____

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — ☒ N/A

   Remarks_____

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A

    Remarks_____

IV. O&M COSTS ☐ Applicable ☒ N/A

1. **O&M Organization** ☐ Applicable ☒ N/A
   ☐ State in-house ☐ Contractor for State
   ☐ PRP in-house ☐ Contractor for PRP
   ☐ Federal Facility in-house ☐ Contractor for Federal Facility
   ☐ Other_____
   _____

2. **O&M Cost Records** ☐ Applicable ☒ N/A
   ☐ Readily available ☐ Up to date
   ☐ Funding mechanism/agreement in place
   Original O&M cost estimate_____ ☐ Breakdown attached

   Total annual cost by year for review period if available

   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost
   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost
   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost
   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost
   From_____ To_____ _____ ☐ Breakdown attached
   Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period** ☐ Applicable ☒ N/A
   Describe costs and reasons: _____
   _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☐ Gates secured ☒ N/A
   Remarks: No fencing used to restrict access.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
   Remarks: Two signs facing north, both in good shape. See attached figures.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by): Annual LUC/ICs inspections.

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☐ N/A

Other problems or suggestions: ☐ Report attached

_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks_____

_____

_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: Area is used by local deer hunters, signs of ATV traffic on road up to the site.

_____

2. **Land use changes on site** ☐ N/A

Remarks: No observable changes in land use.

_____

_____

3. **Land use changes off site** ☐ N/A

Remarks: No observable changes in land use

_____

_____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: Access road to site is utilized by AT&T technicians for access to their equipment and by hunters during season

B. Other Site Conditions

Remarks: Site appears undisturbed. There are vehicle tracks on the access road, but the tracks stop short of the site.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☒ Settlement not evident

Areal extent_____ Depth_____

Remarks_____

_____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Areal extent_____ Depth_____
Remarks_____

5. **Vegetative Cover** ☐ Grass ☒ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks: Grasses, moss, and lichens well established. Small spruce seedlings present along edges of landfill.

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A
Remarks_____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Areal extent_____ Height_____
Remarks: Site appears relatively unchanged compared to photos from previous inspections.

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks: No standing water evident in drainage swales

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability
Areal extent_____
Remarks: No evidence of ground movement

B. Benches ☐ Applicable ☒ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type_____ Areal extent_____
   Remarks_____
   _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Areal extent_____ Depth_____
   Remarks: _____
   _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Obstructions** Type_____ ☐ No obstructions
   ☐ Location shown on site map Areal extent_____
   Size_____
   Remarks_____
   _____

6. **Excessive Vegetative Growth** Type_____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Areal extent_____
   Remarks_____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance
   ☐ N/A
   Remarks_____
   _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
   Remarks_____
   _____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition☐ Needs Maintenance
Remarks_____
_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks_____
_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks_____
_____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
☐ Siltation not evident
Remarks_____
_____

2. **Erosion** Areal extent_____ Depth_____
☐ Erosion not evident
Remarks_____
_____

3. **Outlet Works** ☐ Functioning ☐ N/A
Remarks_____
_____

4. **Dam** ☐ Functioning ☐ N/A
Remarks_____
_____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
Horizontal displacement_____ Vertical displacement_____
Rotational displacement_____
Remarks_____
_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
Remarks_____
_____

I. Perimeter Ditches/Off-Site Discharge □ Applicable **X** N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Areal extent_____ Type_____
Remarks_____
_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____
_____

4. **Discharge Structure** ☒ Functioning ☐ N/A
Remarks_____
_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____
_____

2. **Performance Monitoring** Type of monitoring_____
☐ Performance not monitored
Frequency_____ ☐ Evidence of breaching
Head differential_____
Remarks_____
_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
☐ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks_____
_____
_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks_____
_____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
☐ Air stripping ☐ Carbon adsorbers
☐ Filters_____
☐ Additive (*e.g.*, chelation agent, flocculent)_____
☐ Others_____
☐ Good condition ☐ Needs Maintenance
☐ Sampling ports properly marked and functional
☐ Sampling/maintenance log displayed and up to date
☐ Equipment properly identified
☐ Quantity of groundwater treated annually_____
☐ Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
☐ N/A ☐ Good condition ☐ Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair
☐ Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

D. Monitoring Data

1. Monitoring Data
☐ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ☐ N/A
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Notes: Implemented remedy appears effective and functioning as designed. Landfill cap is showing good vegetative growth, site appears to be stable and undisturbed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Photo Log

Figure 1 - Looking west, Aerial view of the site.

Figure 2 - Looking west, Aerial View of the site.

Figure 3 - Looking South, Western Sign.

Figure 4 - Looking south, Eastern Sign, with Sitka spruce growing around it.

Figure 5 - Looking south, showing the western sign. This is the view from the end of the access road.

Figure 6 - Looking south from the western sign.

Figure 7 - View looking west from the edge of the landfill, showing the drainage swale.

Figure 8 View looking north from near the southwest boundary of the site, showing the western sign and the access road. A rusted metal pipe is circled in the middle left of the photo.

Figure 9 – Closeup of the metal pipe shown in the previous photograph.

Figure 10 - Looking west along south edge of site

Figure 11 – Looking west along south edge of the site, metal debris showing along southern edge.

Figure 12 – Close up photo of metal debris seen on south edge.

Figure 13 - Looking north, both warning signs can be seen, facing the access road.

Figure 14 - Looking north from the southeast corner of the site, showing the access road and eastern sign.

Figure 15 - Looking east, view of the site towards the eastern drainage swale.

Figure 16 - Looking southwest from the east side of the site.

Figure 17 - Looking south, view of the site. Small Sitka spruce tree on left side of photo at the edge of the site.

TIME: 08-MAR-2022 16:26 FILE: C:\D\CAD\Proj\Stantec Cardno Baker JV\2020-2022 Duncan Canal_185704590\2022 Duncal Canal_FYR\March 2022\appendix F.dgn

SCALE IN FEET
0 60

UNITED STATES AIR FORCE
JOINT BASE ELMENDORF-RICHARDSON, ALASKA
FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA
SITE SS006
FIRST FIVE-YEAR REVIEW REPORT

SITE INSPECTION PHOTOLOG SITE MAP

APPENDIX
F
185704590

APPENDIX G
COMMUNITY INVOLVEMENT MATERIALS

(This page intentionally left blank.)

PUBLISHER'S AFFIDAVIT

UNITED STATES OF AMERICA)
STATE OF ALASKA)
: SS.
FIRST JUDICIAL DISTRICT)

PUBLIC NOTICE
PACIFIC AIR FORCES REGIONAL SUPPORT CENTER ENVIRONMENTAL RESTORATION PROGRAM FIVE-YEAR REVIEW DUNCAN CANAL RADIO RELAY STATION

The Air Force Civil Engineering Center (AFCEC) Environmental Restoration Program announces the beginning of the Five-Year Review process for Duncan Canal Radio Relay Station (RRS), Alaska. This process will document whether the remedies implemented at Site SS006 (Demolition Debris Area located in the Mountain Top Facility) remain protective of human health and the environment. The remedy selected for Site SS006 was selected in the May 2014 Record of Decision. The selected remedy for Site SS006 includes: Institutional Controls (i.e. Land Use Controls to prevent use or exposure to areas where contamination is present), Engineering Controls, Excavation, Containment with an Impermeable Cap, and Long-Term Monitoring.

The Department of Defense recognizes the importance of public participation in the PACAF Environmental Restoration Program and encourages your involvement. If you have any issues or concerns about Duncan Canal RRS cleanup program, or if you have direct knowledge regarding the remedies, the Air Force would like to talk to you. Verbal and written comments to be included in the Five-Year Review may be provided to Mr. Stephen Krause, AFCEC Project Manager, by mail at 10471 20th Street, Suite 339, Joint Base Elmendorf-Richardson, AK 995062201, by email at stephen.krause.2@us.af.mil, or by calling 18002224137. The Air Force requests that comments for the Five-Year Review be provided to the Air Force by September 15, 2020. Another public notice will be issued informing the community that the review is complete.

Published: August 20, 2020

Before me, the undersigned, a notary public this day personally appeared Ron Loesch who, being first duly sworn, according to law, says that he/she is the publisher of Petersburg Pilot published at Petersburg in said Division First Judicial and State of Alaska and that the advertisement, of which the annexed is a true copy, was published in said publication on the 20 day of August, 2020 and thereafter for 1 weeks, the last publication appearing on the 20 day of August, 2020, and that the rate charged thereon is not in excess of the rate charged private individuals.

Ronald J Loesch

Anne M. Loesch

Subscribed and sworn to before me

This 28 day of September, 2020

STATE OF ALASKA
OFFICIAL SEAL
Anne M. Loesch
NOTARY PUBLIC
My Commission Expires 03/18/2023

(This page intentionally left blank.)

APPENDIX H
INTERVIEW RECORDS

(This page intentionally left blank.)

INTERVIEW DOCUMENTATION FORM

The following is a list of individuals interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Stephen Krause	Project Manager	AFCEC / CZOP	9/9/2020
Anne Marie Palmieri	Environmental Program Specialist IV	ADEC	9/22/2020
_____	_____	_____	_____

INTERVIEW RECORD

Site Name: Duncan Canal RRS; Site SS006	**EPA ID No.: NA**	
Subject: 2020 Five Year Review	**Time: 14:00 (AKT)**	**Date: 9/9/2020**
Type: ☒ Telephone ☐ Visit ☐ Email **Location of Visit:**	☐ Incoming ☒ Outgoing	

Contact Made By:

Name: Rebekah Brooks	**Title:** Principal Hydrogeologist	**Organization:** Stantec

Individual Contacted:

Name: Mr. Stephen Krause	**Title: Remedial Project Manager**	**Organization: AFCEC/CZOP**
Telephone No: 907-552-1526 **E-Mail Address:** stephen.krause.2@us.af.mil	**Street Address:** 10471 20th St Ste 348 **City, State, Zip:** JBER AK 99506-2201	

Summary of Conversation

1. *Is the remedy at site SS006 functioning as expected?*

   Yes. An explanation of significant differences is required to implement land use controls at three drainage channels that could not be excavated due to the steepness of terrain and concerns for worker safety.

2. *Do you know of any problems or difficulties that have been encountered which have impacted remedy implementation or progress at this site?*

   Yes, excavation of three drainage channels could not be performed because of the steepness of terrain and concerns for worker safety.

3. *Have any breaches of the ICs occurred, or complaints been filed? If so, how were they addressed?*

   No.

4. *Is future sampling at this site planned in order to demonstrate that residual levels meet ADEC standards and LTM and FYRs can be terminated?*

   No.

5. *The 2019 site inspection report has not been made available. Do you know the current condition of the cap? Do you know the current condition of the signage required per the ROD?*

   A site inspection was not performed in 2019 due to late award of contract.

6. *Are you aware of any community concerns regarding these sites? If so, please give details.*

   No.

7. *Are you aware of any events, incidents, or activities at these sites such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.*

   No, Site SS006 is located on USDA Forest Service managed lands.

8. *Do you have any general comments, suggestions, or recommendations regarding the management of these sites, remedy implementation, or ongoing work at the sites?*

   Recommend post ROD modification to amend the cleanup levels from those specified in the 2014 ROD for SS006 soils which are based on 2012 ADEC Method Two migration to groundwater cleanup levels to the recently promulgated ADEC Method Two Human Health cleanup levels consistent with the 350 Determination for this site. Because all known contaminant levels within the demolition debris area and three drainages are all below current ADEC promulgated human health cleanup standards no further action is required by USAF under CERCLA and the site should be managed more appropriately as a solid waste site.

9. *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

Site Name: Duncan Canal RRS, Site SS006	**EPA ID No.: NA**	
Subject: 2020 Five Year Review	**Time: 10:00 (AKT)**	**Date: 9/22/2020**
Type: ☒ Telephone ☐ Visit ☐ Email **Location of Visit:**	☐ Incoming ☒ Outgoing	

Contact Made By:

Name: Rebekah Brooks	**Title:** Principal Hydrogeologist	**Organization:** Stantec

Individual Contacted:

Name: Anne Marie Palmieri	**Title: Environmental Program Specialist IV**	**Organization: ADEC**
Telephone No: (907)766-3184 **E-Mail Address:** annemarie.palmieri@alaska.gov	**Street Address:** P.O. Box 1542 **City, State, Zip**: Haines, AK 99827	

Summary of Conversation

1. *Are the remedies at Site SS006 functioning as expected?*

   To her knowledge, yes.

2. *Has the USAF submitted annual monitoring/inspection reports as required?*

   Yes, the USAF has submitted reports for the site inspections that they have done.

3. *Do you know of any problems or difficulties that have been encountered which have impacted remedy implementation or progress at Site SS006?*

   The drainages ditches were not excavated during the remedy implementation in 2014-2015, as specified in the ROD. See #4.

4. *Have any problems been encountered which required, or will require, changes to the 2014 ROD for site SS006?*

   Based on discussions between USAF and ADEC, excavation of the drainage ditches as part of the remedy specified in the ROD could not be implemented. This is because of limitations with using heavy equipment due to steep terrain and wet soils that would have required fill placement.

5. *Are you aware of any community concerns regarding this site? If so, please give details.*

   No.

6. *Are you aware of any events, incidents, or activities at this site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.*

   No. USFS has closed the access road. AT&T uses for helipad to access the repeater which is just below the site.

7. *Do you have any general comments, suggestions, or recommendations regarding the management of the site, remedy implementation, or ongoing work?*

   No.

8. *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.

(This page intentionally left blank.)

APPENDIX I
RESPONSE TO COMMENTS BY REGULATORS

(This page intentionally left blank.)

REVIEW COMMENTS			
PROJECT: Duncan Canal RRS			**DOCUMENT:** Draft Five Year Review
DATE: 2/4/22			**REVIEWER:** Anne Marie Palmieri **PHONE:** (907) 766-3184
Item No.	**Location (page, par., sen.)**	**COMMENTS**	**USAF Response**
1.	Page 1, para 5,	If the triggering action for the FYR is the 2015 date, then this FYR should have been completed in 2020. No change to the text is requested. In the future, please try to meet the actual 5 year date.	**Noted:**
2.	Page 3, para 2	DEC did approve a groundwater use determination for this site, but the USAF did not use that determination when developing cleanup levels. Please note that if the USAF revises the site cleanup levels and uses the groundwater use determination, a Notice of Activity and Use Limitation (NAUL) will be required to ensure that groundwater at the site is not used for drinking water. No change to the text is requested.	**Noted:**
3.	Page 5, Human Health Risk	1) Line 1: revise, "…Resource <u>Conservation</u> and…" 2) Line 4: delete phrase "…even though there is little to no apparent unacceptable human health risk at Site SS006."	**Agree:** "Conservation" added to sentence. **Agree**: "…and/or the site-specific background threshold values (BTVs). According to the ROD, arsenic exceedances..."
4.	Page 9, LUC Summary	DEC understands that the USFS has changed its land-management system. The USAF should coordinate with the USFS to ensure that the new system includes the agreed to limitations in this area and that it is used by staff in the same manner as the former system.	**Agree**: This has been added as a new issue See also comment #10 below

REVIEW COMMENTS			
PROJECT: Duncan Canal RRS			**DOCUMENT:** Draft Five Year Review
DATE: 2/4/22			**REVIEWER:** Anne Marie Palmieri **PHONE:** (907) 766-3184
Item No.	**Location (page, par., sen.)**	**COMMENTS**	**USAF Response**
5.	Page 15, and throughout	Due to UECA, the requirement for a Notice of Environmental Contamination (NEC) should be changed to a NAUL.	**Agree**: The text "The required remedy components have been implemented, except for the excavation of the three drainage channels, required documentation for the Notice of Environmental Contamination (NEC) and USFS LSRS update (see Section VI)." will be replaced with "Required remedy components have been implemented except for the following activities: the three drainage channels have not been excavated and the USFS LSRS has not been updated. In addition, according to the ROD 'A Notice of Environmental Contamination approved by USAF and USFS will be placed in the Alaska Department of Natural Resources' land records.' Accomplishing an environmental notice as provided for under Alaska law will necessitate coordination between the USAF and USFS on an environmental notice of activity and use limitations describing the contamination remaining at the site and the land use controls contained in the Record of Decision."
6.	Page 16, Changes, para 2	See comment 2.	**Agree**: Text updated to "Therefore, the migration-to-groundwater exposure pathway that established the soil cleanup levels for the remedy at Site SS006 should be revised in line with the approved groundwater use determination for this location."
7.	Page 16, Question C	The Uniform Environmental Covenant Act was enacted in 2018.	**Noted**
8.	Page 17, Issue 1	See comment 2.	**Agree:** minor changes to text
9.	Page 17, Issue 2	Affect Current Protectiveness- Response should be 'Yes'.	**Agree.** Changed to "yes" based on current remedy requirements not being met, however following revision of cleanup requirements in the ESD and implementation of ICs the protectiveness would be achieved.
10.	Page 17, recommendation	Please include a recommendation to complete the Institutional Controls required by the ROD.	**Agree:** the following text will be added Issue: "Components of the ICs identified in the ROD have not been fully implemented." Recommendation: "Coordinate an update to the USFS LSRS, and record an environmental notice of activity and use limitations describing the contamination remaining at the site and the land use controls contained in the Record of Decision for the site on US Forest Service land."

REVIEW COMMENTS			
PROJECT: Duncan Canal RRS			**DOCUMENT:** Draft Five Year Review
DATE: 2/4/22			**REVIEWER:** Anne Marie Palmieri **PHONE:** (907) 766-3184
Item No.	**Location (page, par., sen.)**	**COMMENTS**	**USAF Response**
11.	Page 19, para 1	See comment 4: A NAUL is required rather than a NEC.	**Agree:** "…for the remedy to be protective in the long-term, the following actions need to be implemented in accordance with the ROD: 1) completion of an environmental notice of activity and use limitations describing the contamination remaining at the site and the land use controls contained in the Record of Decision, and 2) update of the USFS LSRS." In addition, the last paragraph will be revised to state: "In addition, an Explanation of Significant Differences should be prepared to document changes in the remedy."
12.		--end--	

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
1	1	1	*"ADEC has primary regulatory oversight of this ERP site at the former Duncan Canal RRS"* The Forest Service (USFS) has been delegated the President's response and enforcement authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as the lead cleanup agency for all areas on National Forest System Lands that are subject to CERCLA. Pursuant to Section 2(e) of Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 29, 1987), the President has delegated to the Secretary of Agriculture lead Federal agency authority under Section 104 of CERCLA with respect to remedial actions for releases or threatened releases of hazardous substances at sites not on the NPL and removal actions other than emergencies, where either the release is on or the sole source of the release is from USDA lands. The Department of Defense has delegated authority pursuant to Executive Order 12580 and Section 120 of CERCLA with respect to	**Agree:** The highlighted sentence has been replaced with the text supplied**.**	Thank you. No further comments.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under their jurisdiction. ADEC jurisdiction applies as Applicable or Relevant and Appropriate Requirements (ARARs) for CERCLA actions at the site. Accordingly, the statement that "ADEC has primary regulatory oversight" is not correct. Please clarify the jurisdiction and role of the USFS, US Air Force (USAF) and state of Alaska at Site SS006 to facilitate continued cooperation and collaboration among the parties.		
2	2	Site Background	*"The area around Duncan Canal receives occasional recreational and subsistence use, including logging, recreational and subsistence camping, hunting, and fishing. (USAF, 2009)."* Logging is not a recreational or subsistence use. Further, the report states previously that site is currently used as a helicopter pad, a commercial use. Please clarify the current land uses at the site and within vicinity of the site. Address whether any of	**Agree:** Text revised to clarify that the area around Duncan Canal RRS receives occasional recreational and subsistence use, as stated in the Site Investigation (USAF 2019), including the harvest of forest products, camping, hunting, and fishing. The 2020 FYR site inspection indicates that hunting still occurs but no access to site was observed.	Thank you. No Further comments.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			the land uses have changed since the Record of Decision was approved.		
3	3	Site Background	*"A groundwater use determination, prepared in 2010 (USAF, 2010) and approved by ADEC in 2013 (Weston, 2013), concluded that groundwater at the site is classified as a non-drinking water source for current and future use. Also, evidence of groundwater use has not been identified in the vicinity of the former Duncan Canal RRS,"* Please add clarification in this paragraph to specify that the state's groundwater determination relates to ARARs at the site. Also, please clarify whether monitoring wells or other groundwater investigations were conducted at the site to characterize groundwater.	**Agree:** Additional wording from Groundwater use determination added "…groundwater at the site is virtually nonexistent since the site is located on shallow bedrock at the mountain summit. Seasonal surface water does not exceed applicable ADEC Water Quality Criteria (18AAC70).ADEC Water Quality Criteria (18AAC70)." Clarifying no groundwater samples could be collected.	Add at end of sentence, "(18AAC70 is identified as a chemical specific ARAR in the ROD.) **Agree:** added text to end of sentence ", which is identified as a chemical specific ARAR in the ROD."
4	3	Site Background	*"approximately 3,400 cubic yards of potentially uncontaminated buried debris are present at the site"* The term "potentially uncontaminated" provides no definitive information regarding waste characteristics of the 3,400 cubic yards (cy) of solid waste placed into the	**Noted:** This section only gives the background to why the site was created. The wastes were not segregated so it is treated as one area. The following section "Basis of Action" identifies the COC within the site that were identified during the 2009 SI.	Please add information about the estimated 473 cy of hazardous debris-ie that it was first identified in the FS and that there is no further information in the project record regarding this debris. Because there is no

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			debris cell (in addition to the 105 cy of contaminated soil and 473 cy or potentially hazardous debris). Please summarize available data regarding waste characteristics of all solid waste placed into the repository.		record of what this debris is composed of and it's disposition, the most conservative approach would be to assume it is contained in the debris cell and its contents are unknown. **Agree:** The volume is quoted in the ROD, which references the FS which does not explain how it was derived. An additional sentence added explaining source of data "The volumes of soil and debris stated in the ROD were from the 2010 Feasibility Study for Duncan Canal (USAF, 2010) and are understood to be calculated volumes based on sampling results and geotechnical investigations of the site"
5	4	FYR Review	The form indicates that the site has not achieved construction completion. This	**Agree:** text changed to "The triggering action for this statutory	Thank you. No further comments.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
		Summary Form	seems to contradict the introduction section of the document, which states "the triggering action for this statutory FYR is substantial completion of the remedy." Please define the terms "substantial completion" and "construction completion" as used in the document. Also, please address the issue regarding remediation of contaminated sediments in the drainage ditches, as specified in the ROD, with respect to "substantial completion" and "construction completion." In addition, please describe any remedial actions or activities approved by the ROD that have yet to be completed.	FYR is the implementation of feasible remedy components in 2015…" The term "substantial completion" is no longer used in the document. The Status of Implementation section wording amended to clarify that following agreement, part of the ROD Remedy was not implemented.	
6	5	II. Response action summary	*"Therefore, Site SS006 warranted remedial action under CERCLA and/or Alaska State law to establish controls to protect human health and the environment until cleanup standards that are protective of unrestricted use are reached."* Please explain how "cleanup standards that are protective of unrestricted use" are	**Noted:** This is wording is taken from the ROD as the basis for taking action. The Response action that follows explains the remedial action objectives and Remedial action to achieve these.	Indicate in the appropriate section of the document that "USAF does not intend sample the contents of SS006 to determine if the site will meet UU/UE. Therefore, the site will not achieve UU/UE." Provide rationale for not conducting

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			planned to be reached. See comment 12 for additional discussion of this issue.		future testing of the contents of SS006. **Agree:** A sentence has been added to the end of the Remedy Component Section "No further sampling of the site is planned by the USAF that would demonstrate compliance with UU/UE requirements due to the low current levels of contamination which are contained within the site."
7	6	Response Action	In paragraph 3 of this section, the acronym MFTA is used several times. We assume these are typos which should be MTFA.	**Agree:** "MFTA" changed to "MTFA".	Thank you. No further comments. Add text from the ROD to clarify that levels of Cd and Cr are not carcinogenic or a human health risk. **Agree:** added sentence to HHR section " Although total chromium and cadmium were at concentrations exceeding

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
					ADEC Method Two cleanup levels for migration to groundwater, because there was not a viable pathway they did not present a risk to human health."
8	7	Remedy Components	*"The USAF is responsible for confirming that implementation, maintenance, and monitoring of the remedial action is conducted for the duration of the remedy and that conditions remain protective of human health and the environment (USAF, 2014). Future management of the site will be the responsibility of the USFS."* In the Record of Decision (ROD), institutional controls are to be "implemented by the USAF and managed by the USFS." Long-term monitoring and maintenance of the impermeable cap is a USAF responsibility. Based on the ROD, the impermeable cap is expected to require maintenance indefinitely (ROD Table 2-5). Please clarify this section of the document to specify that monitoring and maintenance	**Agree:** The ROD states that the USAF is responsible for an undetermined duration until it meets UU/UE status, wording corrected to accurately reflect the ROD. "The USAF will ensure ICs will be maintained until concentrations of contaminants in soil are at such levels that will allow for UU/UE per ADEC at which time the frequency of inspections and reports, if mutually agreed upon by ADEC, USAF and USFS, may be reduced (USAF 2014)."	Thank you. No further comments. Add to paragraph beginning with "In 1986," "Contaminated soil from the demolition of the facilities at the MTFA was placed in the buried debris cell (105 cy)." **Comment:** This section is quoting historical documents, as discussed in comment #4 above, the 105 cy was a calculated figure for the FS. Add to paragraph beginning with "In 2009" information regarding tests of water from the seeps in the

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			of the debris cell is expected to be required indefinitely, and that it is a USAF responsibility.		drainage channels showed no contamination exceeding ADEC Cleanup Levels. Also clarify the text already in the section was for soil samples. **Agree:** Sentence added "Surface water samples were all below constituent screening levels"
9	15	Technical Assessment Question A	*"The LUCs will remain in place until residual contamination meets the cleanup levels for UU/UE."* Please describe how it will be determined that residual contamination meets cleanup levels for unlimited use/unrestricted exposure (UU/UE)." Also, please describe the "residual contamination" including the location of the contamination, the characteristics etc. Annual monitoring included only a visual inspection of the debris cell. Data should be collected to evaluate natural attenuation of any residual contamination in exposed soil or sediments. Otherwise, we have no data to assess whether residual contamination meets	**Agree:** No sampling is conducted on a regular basis so the site will remain at its current status as per the ROD.	See Comment 6.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			cleanup levels for UU/UE. Please explain how the debris cell will qualify for UU/UE because monitoring, maintenance and ICs are expected to be required indefinitely. (ROD Table 2-5)		
10	16	Changes in Exposure Pathways	*"There have been no changes in the physical conditions at Site SS006 during this FYR reportingperiod that would adversely affect the protectiveness of the remedy."* Figures 11 and 12 of Appendix F are photos of metal debris exposed in a ditch located along the south edge of the site. The appendix does not provide information regarding the proximity of the ditch to the debris cell cover system. Accordingly, it is not possible to determine if the photos document erosion occurring along the edge of the debris cell, which could eventually lead to exposure and damage to the geosynthetic clay liner (GCL). Please provide a map that shows the location of the inspection photos in relation to the disposal cell, the orientation of the photos, the specific route of the inspection in relation to the disposal cell, and the location of the	**Agree:** A site map has been added to Appendix F to show the location and orientation of the site photographs, and show the relation to the disposal cell and drainage ditch as shown in Figures (photos) 11 and 12 of the site inspection. The following text has been added to the end of Section IV. FYR Review Process, 2020 FYR Site Inspection *"The debris shown in Appendix F photo figures 8 and 9 (rusted metal pipe) was laying on the surface of the cap and may have been associated with a previous sign post.* *The debris noted in Appendix F photo figures 11 and 12 is located at the edge of the south limit of the cap where it meets the vertical rock face.*	Please provide the map. It was not included in the 20220719 RLSO for our review. **Agree:** map supplied in Appendix F

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			ditch shown in figures 11 and 12. It should be noted that the 2018 inspection report does not indicate that exposed debris was present, suggesting that localized erosion of the 16-inch cover layer may be occurring. Given high precipitation that occurs seasonally at the site, cover erosion and eventual exposure of the GCL is a risk factor with respect to long-term effectiveness and permanence of the remedy. Please address this issue in the report text.	*There was no evidence of localized soil disturbance indicating erosion in this area. There was no observed erosion of the cap during the 2020 site inspection. Runoff from the site is directed toward two swales: one to the northwest, directing flow to the west; and one to the northeast, directing flow to the east. No erosion of the soils was noted within the swales."*	
11	16	Changes in Exposure Pathways	*"Placement of the containment cap during remedy implementation was to prevent possible rainwater leaching of contaminants from the debris cell to drainage channels and downgradient surface water bodies. However, COCs were not detected in down-gradient surface water samples collected during the SI. Therefore, the migration-to-groundwater exposure pathway, to establish the soil cleanup levels for the remedy at Site SS006 deserves reconsideration."*	**Noted:** Referenced further comments below (comments 12 through 15) have been addressed.	Thank you. No further comments.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			The remedy must meet the threshold criteria to protect human health and the environment and comply with ARARs. State clean-up levels are ARARs for this site. We would be open to discussing a possible ROD amendment to modify the clean-up standard ARARs with USAF and the state. Further discussion is provided below with respect to the relevance of the state clean-up standard to long term monitoring and maintenance of the debris cell cover system.		
12	17	Issues/Recommendations	*"Based on the 2013 ADEC-approved Groundwater Use Determination, groundwater at the site was eliminated as a current or potential future source of drinking water. The cleanup levels specified in the ROD for SS006, are however based on migration-to-groundwater, this results in the requirement to maintain a cap on the site and conduct inspections and other LUCs to protect the groundwater."* As described in the ROD "Site 006 has an estimated volume of 105 cubic yards of RCRA metals, VOCs and pesticide contaminated subsurface and surface soil,	**Partially Agree:** Although the general description of the waste in this location describes the presence of hazardous waste, the site Investigation in 2009 found levels to be below DEC direct contact levels. Text has been revised to read as follows: "An impermeable cap at the site is maintained and inspected to protect human health and the environment by preventing physical contact with contaminated soil, preventing	Thanks. No further comments.

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			and estimated 15 cubic yards of contaminated soils in the run-off channels, an estimated 473 cubic yards of hazardous debris and an estimated 3,400 cubic yards of potentially uncontaminated buried debris… The remedy for SS006 will include selected ICs, ECs, containment, and LTM. The remedy will include installation of an impermeable soil/clay cap or impermeable liner over contaminated soil and debris." (ROD Section 2.13.2). The selected alternative included covering of the debris cell to prevent infiltration of precipitation through the contaminated soil and the various debris (i.e. solid waste and potentially hazardous waste). It is not accurate to state that the requirement to construct and maintain the cover is based solely on application of ARARs for contaminated soil. Please modify the section cited above to delete the end of the last sentence starting with "this results in the requirement…"	contaminated dust from being transported by wind from the site, and preventing additional contamination from migrating to surface water. LUCs are maintained to prevent disturbance of the impermeable cap."	

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
13	18	Recommendations Table	*"The estimated 473 cubic yards of hazardous debris referenced in the ROD as being present at SS006 is not substantiated by any documents in the administrative record and appears to be erroneous."* A lack of historical data in the administrative record does not indicate that the ROD is erroneous. The discrepancy could simply be an omission in the record. Given that the ROD is signed, the remedy has been implemented, and further characterization of potential hazardous waste in the buried debris would require excavation through the cover system and sampling, we feel this recommendation is not warranted. Please delete this recommendation from the table.	**Agree:** Issue/ recommendation deleted.	Provide additional information regarding the 473 cu of hazardous debris. See Comment 4. **Agree:** text added as per comment #4
14	19	Protectiveness statement	*"In order for the remedy to be protective in the long-term, the following actions need to be implemented: 1) completion of the NEC, and 2) update of the USFS LSRS."* These actions are currently under review by the USDA Office of General Counsel. These	**Agree:** The following text has been added to question A: Required remedy components have been implemented except for the following activities: the three drainage channels have not been excavated and the USFS LSRS has not been updated. In addition, according	Thank you. No further comments.

FIRST FIVE-YEAR REVIEW FOR SITE SS006

FORMER DUNCAN CANAL RADIO RELAY STATION, ALASKA

Draft April 2021

Commenter: Forest Service Comments on USAF Response to Comments Date: September 28, 2022

Cmt. No.	Page	Section	FS Comment/Recommendation	USAF Response	FS Comment
			provisions in the ROD may need to be revisited.	to the ROD 'A Notice of Environmental Contamination approved by USAF and USFS will be placed in the Alaska Department of Natural Resources' land records.' Accomplishing an environmental notice as provided for under Alaska law will necessitate coordination between the USAF and USFS on an environmental notice of activity and use limitations describing the contamination remaining at the site and the land use controls contained in the Record of Decision.", and the Protectiveness Statement amended accordingly.	
15	21	Next Review	Based on the nature of the annual inspections, we request a joint site visit with USAF in 2022 to discuss future monitoring plans for the site.	**Noted:** No change to FYR, a date for the site visit should be agreed.	Thank you. No further comments.