THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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November 6, 2014

File No: 2518.38.003
2518.38.004

Lori Roy
Remedial Project Manager
611 CES/CEAR
10471 20th Street Ste 341
JBER, AK 99506-2201

Subject: **Decision Document: Big Mountain Radio Relay Station (RRS) ST001 and LF015 Cleanup Complete Determination – Institutional Controls**

Dear Ms. Roy,

Site ST001 is the location of the Former 42,400-Gallon Fuel Oil AST and Pipeline at the Lower Camp of the Big Mountain Radio Relay Station (RRS). Site LF005 is the location of the Former Lower Camp Landfill. The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the referenced sites. This decision letter memorializes the site history, cleanup actions, and describes specific conditions required to effectively manage remaining contamination. No further remedial action will be required as long as compliance with these conditions is maintained. Additional information can be found in the 2011 Final Record of Decision for the Big Mountain RRS and the 2014 Final Remedial Action Report for Big Mountain RRS.

Site Name and Location:
Big Mountain Radio Relay Station, ST001, LF005
Latitude 59°21' North, Longitude 155°15' West
Iliamna Lake, Alaska

JBER, AK 99506-2201

Name and Mailing Address of Contact Party:
Lori Roy
U.S. Air Force
611 CES/CEAR
10471 20th Street Ste 341

DEC Site Identifiers:
File No: 2518.38.003
Hazard ID: 74

File No: 2518.38.004
Hazard ID: 77

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

The Big Mountain RRS, located on the southern shore of Iliamna Lake, was constructed by the United States Air Force (USAF) as part of the defense communication network and aircraft warning system established across Alaska during the Cold War. The facility was constructed in 1956 as part of the White Alice Communication System (WACS) which was operational as a tropospheric scatter station from September 1957 to 1979. In the 1960s, an Alaska Telephone Switching Station was added to the operational capabilities as part of an intrastate telephone network. By 1979, the installation was closed. Most of the original equipment, structures, and facility infrastructure were left in place at that time. Subsequently, these structures and facilities have been demolished, removed from the site, and placed in a construction debris landfill at the Lower Camp.

The RRS consisted of two main camp areas referred to as the Lower Camp and the Upper Camp. The Lower Camp facility included a gravel airstrip and former operational support facilities. The Upper Camp was an antennae array and support facilities, including living quarters for site personnel who supported the installation's operational mission. Sites ST001 and LF005 are located in the Lower Camp. During installation activity, hazardous and potentially hazardous substances were used and stored there to support base activities.

ST001

The Former 42,400-Gallon Fuel Oil AST and Pipeline Service area (ST001) is located approximately 600 feet north of the airstrip and 200 feet west of the Lower Camp access road. In addition to the AST, the fuel system included a truck fill stand, a containment berm with an outflow pipe, and a 600-foot long, 4-inch diameter pipeline that extended east from the AST toward the access road. The pipeline was located above ground for most of its length and buried only where it crossed the access road to the landfill. The structures associated with the fuel system were removed during the 2003 and 2004 Clean Sweep activities. Contaminants of concern at site ST001 include diesel range organics (DRO) in groundwater and polychlorinated biphenyls (PCBs) in sediment.

LF005

The Former Lower Camp Landfill (LF005) is located next to the unnamed creek in a flat area north of the runway at the Lower Camp. It is assumed that the landfill was used for facility refuse disposal from its activation in the late 1950s until its closure in the 1970s. The landfill was capped in 2004 and seeded with native vegetation. Contaminants of concern at the site include pesticides and PCBs in sediment, and volatile organic compounds (VOCs) in groundwater. PCB contamination documented in surface soil at site LF005 was removed during the 2011/2012 Remedial Action.

Contaminants of Concern

The following contaminants of concern, those above approved cleanup levels, were identified during the course of the site investigations summarized in the Characterization and Cleanup Activities section of this decision letter.

LF005

- Polychlorinated Biphenyls (PCBs)
- Diesel Range Organics (DRO)
- 4,4'-dichlorodiphenyldichloroethene (4,4'-DDD)
- 4,4'-dichlorodiphenyltrichloroethane (4,4'-DDT)
- 4,4-dichlorodiphenylethylene (4,4'-DDE)
- 1,4-dichlorobenzene (1,4'-DCB)
- Benzene

- Cis 1,2'-dichloroethene (DCE)
- Total Aromatic Hydrocarbons (TAHs)
- Total Aqueous Hydrocarbons (TAqHs)

ST001

- Polychlorinated Biphenyls (PCBs)
- Diesel Range Organics (DRO)

Cleanup Levels

The cleanup levels for PCBs and pesticides detected in sediment are the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT) Probable Effects Levels (PELs). The cleanup levels for DRO and VOCs detected in groundwater are the approved cleanup levels established in 18 AAC 75.345 Table C. The cleanup levels for TAHs an TAqHs detected in groundwater at the point of discharge into surface water are the surface water quality standards in 18 AAC 70, as referenced in 18 AAC 75.345(f).

Table 1 – Approved Cleanup Levels

Contaminant	Sediment (mg/kg)	Groundwater (mg/L)
PCBs	0.277	-
4,4-DDD	0.00851	-
4,4-DDE	0.00675	-
4,4-DDT	4.45	-
DRO	-	1.5
1,4-DCB	-	0.075
Chlorobenzene	-	0.1
Cis-1,2-DCE	-	0.07
Benzene	-	0.005
TAH	-	0.010
TAqH	-	0.015

mg/kg = milligrams per kilogram
mg/L = milligrams per liter

Characterization and Cleanup Activities

A number of environmental characterization and cleanup activities have been conducted at this site since 1998. These activities are described below.

Initial Remedial Investigation / Feasibility Study – 1998

In 1998 the USAF conducted an Initial RI/FS at these sites. Concentrations of VOCs and metals were detected in groundwater samples above the cleanup levels at LF005. It was recommended to place a low-permeability landfill cap over the landfill. At ST001, DRO and arsenic were detected at concentrations above the cleanup levels in soil and groundwater samples.

Interim Remedial Action and Decision Document – 2002
The Interim Remedial Action and Decision Document were developed based on the 1998 RI/FS recommendations. A long-term monitoring program was developed for Sites LF005 and ST001.

Remedial Investigation– 2004
Interim remedies for LF005 and ST001 that were documented in the 2002 Interim Remedial Action Decision Document were implemented as part of the 2004 Remedial Investigation fieldwork. At LF005 a continuous protective cap was placed over the closed landfill and seeded with vegetation. Additional monitoring wells were installed at LF005, and an Environmental Risk Assessment was performed at the nearby wetlands. There were no groundwater exceedances in samples collected from LF005. Additional surface water, sediment, soil, and groundwater samples were collected at ST001 to fill data gaps. The volume of contaminated soil at ST001 was estimated to be 800 cubic yards.

Interim Remedial Action - 2005
During the 2005 Interim Remedial Action, approximately 600 cubic yards of petroleum-contaminated soil at ST001 was excavated from the site, and was stockpile onsite in a lined and bermed area for remediation.

Final Letter Report for Post-Treatment Confirmation Sampling of POL Stockpiles at Big Mountain RRS - 2007
POL contaminated soil excavated during the 2005 Interim Removal Action fieldwork was treated using naturally occurring petroleum-degrading microbes and chemicals that were used to facilitate hydrocarbon breakdown. The soil eventually reached contaminant concentrations below the ADEC cleanup levels, and was transported to the northern portion of the Big Mountain RRS Runway. The soil was spread, graded, sloped, and seeded to minimize ponding and erosion.

Final Feasibility Study - 2011
The report included the results of the Feasibility Study (FS) that was conducted at the Big Mountain Radio RRS to identify potential remedial alternatives for contaminated media present at Sites LF005 and ST001. The FS was conducted in accordance with the three stages typical of an FS for a contaminated site facility, which broadly involve the identification and screening of technologies, the development and screening of alternatives, and the detailed analysis of the alternatives per contaminated media per site.

Final Record of Decision - 2011

The USAF and the State of Alaska signed the Record of Decision approving the selected remedy for sites LF005 and ST001. The response action selected for both sites under CERCLA and Alaska state law included institutional controls and long term monitoring of contaminated sediment and groundwater at both sites. Additionally soil contaminated with PCBs with concentrations between 1 and 10 mg/kg at site LF005 would be excavated and disposed of at an onsite industrial solid waste landfill. Soil with PCB concentrations greater than 10 mg/kg would be excavated and disposed of offsite.

Final Remedial Action Report – 2014

The report summarizes the excavation and disposal activities for PCB-impacted soil at LF005. Approximately 117 cy of soils with concentrations between 1.0 mg/Kg and 10.0 mg/Kg were placed in the on-site repository identified as LF010, located at the former site SS014 the Former Dual AST System. Institutional controls and monitoring of the onsite repository is managed through Site SS014

(LF010), ADEC File Number 2518.38.005. Soil confirmation samples indicate that PCB concentrations in the soil remaining at site LF005 are less than the ADEC cleanup level of 1 mg/kg.

Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways.

Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations at LF005 and ST001 do pose a cumulative health risk which will be managed with the site institutional controls.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 2 – Exposure Pathway Evaluation For Sites LF005 and ST001

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	Contamination is not present in surface soil (0 to 2 feet below ground surface).
Sub-Surface Soil Contact	Pathway Incomplete	Contamination is not present in subsurface soil.
Inhalation – Outdoor Air	Pathway Incomplete	Contaminants are not volatile and present in soil; therefore the inhalation pathway is incomplete.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Contaminants are not volatile and present in soil; therefore the inhalation pathway is incomplete.
Groundwater Ingestion	Exposure Controlled	Groundwater contamination is present, but drinking water wells are not present. New wells may not be installed without ADEC approval.
Surface Water Ingestion	De-Minimus Exposure	Surface water contamination has not be documented, but contaminants could migrate to surface water. The maximum concentrations detected in groundwater and sediment are unlikely to cause significant exposure through surface water ingestion.
Wild and Farmed Foods Ingestion	De-Minimus Exposure	Contaminants of concern do have the potential to bioaccumulate in plants or animals; however the maximum contaminant concentrations detected in sediment are unlikely to cause significant exposure through ingestion of wild foods.
Exposure to Ecological Receptors	De-Minimus Exposure	Contaminant concentrations remaining onsite are above the risk-based cleanup levels. However, a decision was made to protect the habitiat by not doing remediation of sediments.

Notes to Table 2: "De-Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. "Pathway Incomplete" means that in ADEC's judgment contamination has no potential to contact receptors. "Exposure Controlled" means there is an administrative mechanism in place limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

ADEC Decision

Remaining contamination is above approved cleanup levels. This site will receive a "Cleanup Complete with Institutional Controls" designation on the Contaminated Sites Database, subject to the following conditions described below and in further detail in the 2011 Record of Decision.

1. Signs must be maintained at the sites indicating where contaminants have been detected in sediment and groundwater above the cleanup levels.
2. A notice must be placed in the property records to inform the current and future property owners of the presence of contamination.
3. A notice must be placed in the property record preventing the installation of drinking water wells in the areas with contaminated groundwater.
4. Disturbance of sediment must not occur unless approval has been granted by ADEC.
5. If sediment, soil, or groundwater is moved from the sites, ADEC prior approval is required, as is analytical characterization and appropriate disposal.
6. Long-term monitoring of sediments and groundwater at the sites is required as described in the 2011 Record of Decision.

Standard Conditions

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 269-3077.

Sincerely,

Jessica Morris
Project Manager