THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File: 2403.38.001

December 20, 2017

Heidi Long
Alaska Army National Guard
Construction Facilities Management Office
PO Box 5800
JBER, AK 99505-0800

Re: Decision Document: AKARNG Alakanuk FSA
Cleanup Complete Determination

Dear Ms. Long:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the Alaska Army National Guard (AKARNG) Alakanuk Federal Scout Armory (FSA) located on Osier Street in Alakanuk. The FSA does not have a conventional address but is located at 62.683231°N and -164.657520°W. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required unless new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the AKARNG Alakanuk FSA, which is located in the ADEC office in Juneau, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

Site Name and Location:
AKARNG Alakanuk FSA
Section 14 of Township 030N,
Range 082W of the Seward
Meridian.
Alakanuk, AK

Name and Mailing Address of Contact Party:
2LT Jennifer Nutt
Alaska Army National Guard
Construction Facilities Management Office
PO Box 5800
JBER, AK 99505-0800

DEC Site Identifiers:
File No.: 2403.38.001
Hazard ID.: 3060

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

The Alakanuk Federal Scout Armory (FSA) is located on Osier Street in Alakanuk at the east entrance of Alakanuk Pass Slough. Alakanuk is a Yupik Village with a population of about 652. The Village obtains its' drinking water from the Yukon River. The area is vegetated by tundra vegetation and underlain by discontinuous permafrost found at 1 to 5 feet below ground surface. The area is also relatively flat and surface water occurs in shallow depressions and ponds.

The original FSA was built in 1959 and was a single story Butler-type prefabricated structure located on Lot 3 according to U.S. Survey 4092. In 1967, the Village was relocated due to erosion and the FSA was moved to a temporary location before being moved permanently in 1972 to its present location. The FSA was upgraded in 1986 adding a second Butler building with an enclosed walkway. Additionally, a 20-foot storage van was added. The original 3,000-gallon aboveground fuel storage tank (AST) was also replaced with a new one of the same capacity, however for a time, they both were in operation.

According to the *Preliminary Assessment Records Review Army National Guard Scout Armory Alakanuk, Alaska* dated July 1998, there had been a few fuel spills and leaks from the ASTs. Approximately 400-gallons of No. 1 fuel oil was released from the old AST in May 1985. The AKARNG personnel removed oil saturated snow and used absorbent pads to collect about 100-gallons of free product. The pads were burned at the city landfill. Leaks were also noted in the record due to freezing water in the fuel line(s). Other sources of petroleum contamination on site included a leaking creosote container and various drums of gasoline and solvents. There was also as many as 33 drums stored on-site. The Alakanuk FSA was added to the ADEC Contaminated Sites Database in July 1998 following receipt of the *Preliminary Assessment Records Review.*

Contaminants of Concern

During the site investigation and cleanup activities at this site, samples were collected from soil, groundwater, and surface water and analyzed for diesel range organics (DRO), gasoline range organics (GRO), residual range organics (RRO), polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH), and benzene, toluene, ethylbenzene, xylenes (BTEX). Based on these analyses, the following contaminant was detected in soil above the applicable cleanup level and is considered a Contaminant of Concern at this site:

- Diesel Range Organics (DRO)

Cleanup Levels

A site-specific soil cleanup level for DRO in soil (12,292 mg/kg) for the site was documented in the *Alakanuk Federal Scout Readiness Center Record of Decision for Petroleum Contamination* dated August 2013 and is listed in Table 1 below. This cleanup level is based upon an estimate of the reasonable maximum exposure expected to occur under current and future site conditions and is developed using ADEC Method 3 for developing site-specific alternative cleanup levels.

Table 1 – Approved Cleanup Level

Contaminant	Soil (mg/kg)
DRO	12,292

mg/kg = milligrams per kilogram

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 1998 following a site investigation conducted the same year by ERM West Inc. and Hart Crowser Inc. under contract for the AKARNG and is documented in the *Final Site Investigation Army National Guard Scout Armory Alakanuk, Alaska* dated August 1999. Four areas were investigated: the existing AST area, the former burn drum area, the drum storage areas, and the former AST area. The soils in the investigation areas were field screened using an organic vapor meter (OVM) and 17 primary soil samples and 1 duplicate were collected from a maximum of five feet below ground surface and submitted for analysis of DRO. Select samples were additionally analyzed for gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), residual range organics (RRO), synthetic precipitation leaching procedure (SPLP)/DRO, polycyclic aromatic hydrocarbons (PAHs), and zero headspace extraction (XHE/BTEX). Other analyses conducted on select samples to help assess remedial options were the following: total organic carbon, pH, nitrate/nitrite, total nitrogen, ammonia nitrogen, ortho-phosphate, total phosphorus, grain size, and bulk density. The analytical results documented that petroleum contamination above ADEC cleanup levels was not found near the existing AST area, former burn drum area, or the drum storage area. The highest levels of petroleum contamination (up to 23,000 mg/kg DRO) were found near the former AST area. There were no other contaminants of concern identified. One wellpoint was installed near the zone of contamination and an active layer water sample was collected from it. After the sample was collected, the well remained dry. Consequently, a second water sample was collected directly from a borehole. These samples were analyzed for GRO, DRO, BTEX, total phosphorus, nitrate/nitrite, total nitrogen, ammonia nitrogen, and chemical oxygen demand. These samples had DRO, GRO, and benzene at concentrations greater than ADEC cleanup levels, however, the samples were directly exposed to soil within the borehole and thus the results were likely biased.

An interim removal action was performed in 2002 by Clearwater Environmental on behalf of the AKARNG and is documented in the report *Final Interim Removal Action Report Federal Scout Armory Alakanuk, Alaska* dated April 2005. The removal action removed approximately 20 tons of DRO contaminated soil and centered on the west side of the FSA where the former AST was located. Excavation of DRO contamination up to five feet below ground surface was achieved using a backhoe and hand tools. The soils were field screened using a photoionization detector (PID). Two confirmation samples and a duplicate were collected from the base of the excavation and four samples were collected from the sidewalls. There were issues with the analytical data and therefore the GRO and BTEX data was rejected. The DRO data indicated that there was DRO contamination left in place at values up to 14,300 mg/kg (Sample ALA003). Approximately 21 tons of contaminated soil was placed into Supersacks and transported to TPS Technologies for thermal remediation.

The AKARNG contracted with Hoefler Consulting Group to identify possible alternative cleanup levels. These are documented in the report *Alternative Cleanup Level Demonstration Alakanuk Federal Scout Armory Alaska Army National Guard Alakanuk, Alaska*, dated December 2005. Cleanup levels according to Methods One, Two, and Three were presented in the report but the cleanup level was not chosen until August 2013 when the AKARNG and the ADEC signed the ROD discussed above in the cleanup levels section.

A data gap investigation was conducted by CH2MHill on behalf of the AKARNG and is documented in the *Alakanuk Federal Scout Readiness Center Data Gap Investigation Report* dated June 2013. The report identified data gaps in the delineation of soil DRO contamination both vertically and laterally and the extent of DRO groundwater contamination. In July 2011, Fifty-one primary and five duplicate soil samples were collected from the surface to eight feet below ground surface and analyzed for DRO. Some of these samples were also analyzed for extractable petroleum hydrocarbons (EPH), volatile petroleum hydrocarbons (VPH),

BTEX, and PAHs. Three groundwater monitoring wells were installed around the AST area to evaluate the supra-permafrost groundwater on site at about 1.5 feet below ground surface. Three primary groundwater samples and a duplicate were collected and analyzed for DRO, BTEX, PAH, and GRO. Then in August 2012, ten additional primary samples and a duplicate were collected from the site. These samples were collected from the area around the generator shed and the former AST. PID readings were taken at each sample location at varying depths but none of these were sent for laboratory analysis.

The investigation delineated the extent of DRO contamination in soil. There were also elevated detections in soil of GRO (410 mg/kg), benzene (0.05 mg/kg), xylenes (19 mg/kg), 1-methylnapthalene (19 mg/kg), 2-methylnapthalene (30 mg/kg), benzo(a)pyrene (0.39 mg/kg), dibenzo(a,h)-anthracene (0.39 mg/kg), and naphthalene (15 mg/kg). A figure in the report delineated the soil contamination that encompassed the area near the former generator shed and AST and extended south from there for about 25-70 feet to the property line. The contamination was limited to about eight feet below ground surface based on previous studies. The supra-permafrost groundwater investigation found that groundwater flows generally to the south and that extent of the petroleum-impacted groundwater is fairly localized in the area near the AST. The analytical water sample results from three wells installed in 2011 during the data gap investigation showed that the default Table C ADEC cleanup levels were met, and potential migration of contamination by the supra-permafrost groundwater is not a pathway of concern.

The final excavation was documented in the *Final Alakanuk Remedial Action Report* for the Alakanuk Federal Scout Readiness Center prepared by Eagle Eye Electric LLC. According to the *Final Alakanuk Remedial Action Plan, Federal Scout Readiness Center,* prepared by Eagle Eye Electric, LLC, and dated July 14, 2015, one previous soil sample (ALA003) collected from one foot below ground surface had a DRO concentration greater than the cleanup level of 12,292 mg/kg having a concentration of 14,300 mg/kg. This sample was located near the former aboveground storage tank cradle on the west side of the old Federal Scout Readiness Center building and was targeted for excavation. The excavation activities were guided using a PID and confirmation samples from the excavation base and sidewalls were submitted to an approved laboratory and analyzed for DRO. Thirteen cubic yards of soil were removed from the site and were disposed of at the Waste Management landfill in Seattle. Final confirmation sample results (six primary samples and a duplicate) had DRO values ranging from 74-7,500 mg/kg which were lower than the cleanup level.

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 meet the human health cumulative risk criteria for residential land use.

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 or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Remaining DRO contamination in surface soil (74-7,500 mg/kg) is less than the ADEC cleanup level for the ingestion and inhalation exposure pathways for the under-40 inch precipitation zone (8,250 and 12,500 mg/kg respectively).
Sub-Surface Soil Contact	De-Minimis Exposure	Remaining DRO contamination in subsurface soil (480-2,000 mg/kg) is less than the ADEC cleanup level for the ingestion and inhalation exposure pathways for the under-40 inch precipitation zone (8,250 and 12,500 mg/kg respectively).
Inhalation – Outdoor Air	De-Minimis Exposure	DRO contamination remains in the soil, but is below the inhalation cleanup level of 12,500 mg/kg.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	Vapor intrusion is not expected to occur on site.
Groundwater Ingestion	Pathway Incomplete	Groundwater contamination is below the ADEC Table C groundwater cleanup levels.
Surface Water Ingestion	Pathway Incomplete	DRO contamination did not affect surface water in the area.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contaminants of concern do not have the potential to bioaccumulate in plants or animals.
Exposure to Ecological Receptors	Pathway Incomplete	Ecological receptors on site are limited and are not expected to be affected by residual contamination.

Notes to Table 2: "De-Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be adversely 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 institutional control in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

ADEC Decision

Soil contamination at the site has been cleaned up to concentrations below the approved cleanup level suitable for residential land use. This site will receive a "Cleanup Complete" designation on the Contaminated Sites Database, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325(i). A "site", as defined by 18 AAC 75.990 (115), means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. (See attached site figure.)

2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

3. Groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, additional testing and treatment may be required to ensure the water is suitable for its intended use.

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 contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to 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, 555 Cordova Street, Anchorage, Alaska 99501-2617, 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, P.O. Box 111800, 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) 465-5207, or email at Danielle.Duncan@alaska.gov.

Sincerely,

Danielle Duncan
Project Manager

cc: Spill Prevention and Response, Cost Recovery Unit

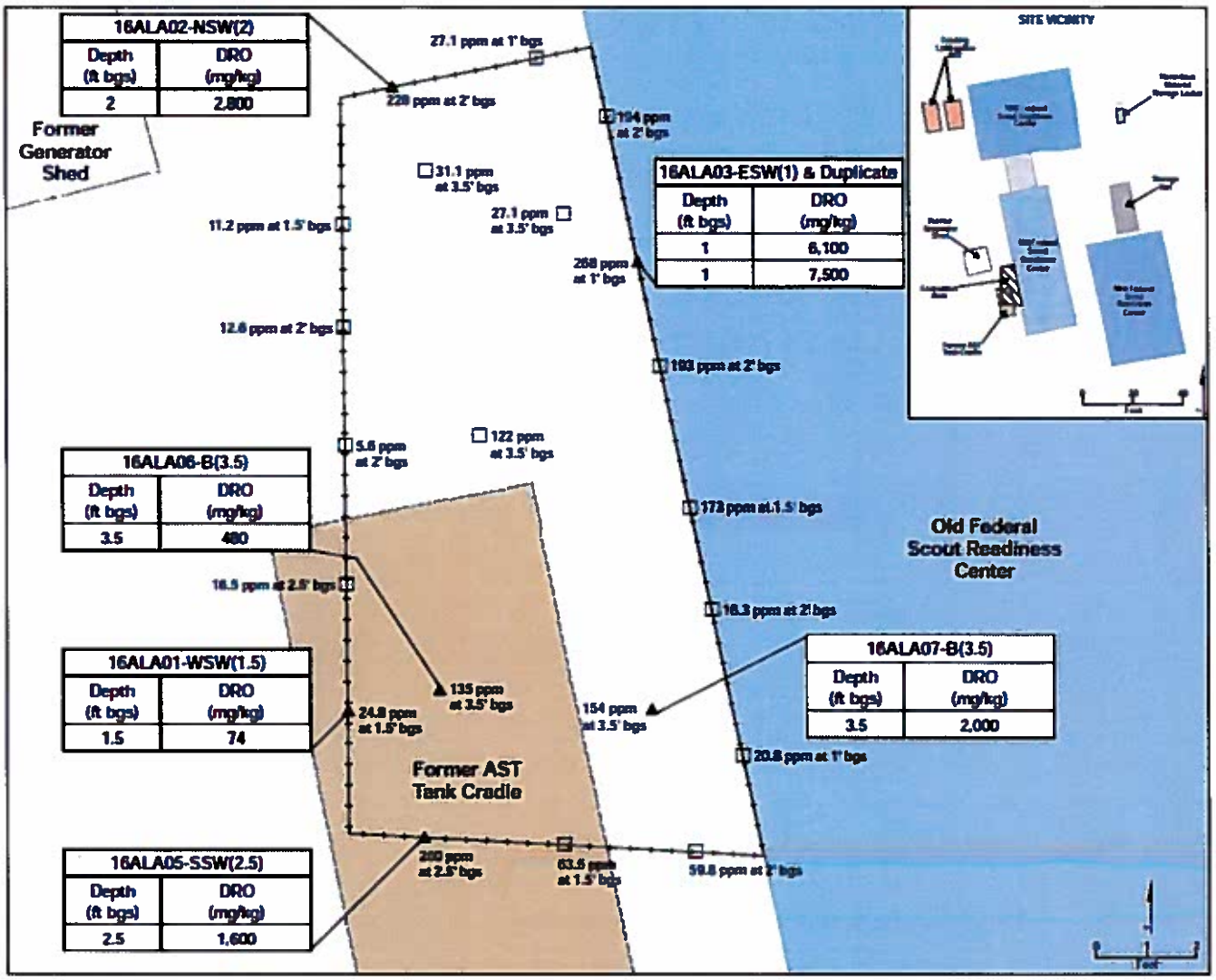

Figure 1: Locations and concentrations of remaining DRO soil contamination on site at the Alakanuk FSA. Figure copied from the Alakanuk Remedial Action Report prepared by Eagle Eye LLC, dated October 17, 2016.