



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File No.: 2402.38.002
Hazard ID: 2456

January 19, 2024

Jenna Van Horn
Environmental Program Manager
Alaska Army National Guard
PO Box 5-549
JBER, AK 99505

Re: Decision Document: AKARNG Akiak FSA
Cleanup Complete Determination

Dear Ms. Jenna Van Horn;

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the AKARNG Akiak FSA located at Mukluk Street USS 2243 in Akiak, AK. 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 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 Akiak FSA, which is located in the DEC 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 Akiak FSA
Mukluk Street, USS 2243
Akiak, AK 99552

Name and Mailing Address of Contact Party:

Jenna Van Horn
Alaska Army National Guard (AKARNG)
PO Box 5-549
JBER, AK 99505

DEC Site Identifiers:

File No.: 2402.38.002
Hazard ID.: 2456

Regulatory Authority for Determination:

18 Alaska Administrative Code (AAC) 75

Site Description and Background

Akiak is located along the west bank of the Kuskokwim River, approximately 42 air miles northeast of Bethel. The community is within the Yukon Delta National Wildlife Refuge. The Akiak Federal Scout Armory (FSA) is located within city limits, about 300 feet from the Kuskokwim River. The FSA covers less than 1 acre and current infrastructure onsite includes a 20 by 60-foot prefabricated Butler building built in 1960, a 1,500-gallon aboveground storage tank (AST) connected on the east corner of the armory, a 1,500-gallon AST connected to the south side of the armory that was removed sometime after June 1994, and a storage van east of the armory. A generator and shed were also located at the southeast corner of the armory and were removed in 1992, though gravel-filled drums used to support the shed foundation remain at the site.

Two spills are known to have occurred at the AKARNG Akiak FSA. A large fuel spill occurred in August 1987 when a wooden stand for the former 1,500-gallon, single-walled heating oil AST collapsed and spilled up to 1,500 gallons of heating oil. The AST stand and single-walled AST were then replaced with a 1,500-gallon, double-walled heating oil AST. During an Environmental Compliance and Audit Survey completed in June 1992, a fuel release was discovered on the ground beneath the fuel supply piping between the 1,500-gallon, double-walled AST and the Federal Scout Readiness Center (FSRC) building. The cause and amount of this spill are unknown.

Contaminants of Concern

During the 1998 and 1999 Remedial Investigations at this site, samples were collected from soil and groundwater and analyzed for diesel range organics (DRO), residual range organics (RRO), gasoline range organics (GRO), benzene, toluene, ethylbenzene, and xylene (BTEX), volatile petroleum hydrocarbons (VPH) and polynuclear aromatic hydrocarbons (PAHs). Based on these analyses, the following contaminants were detected above the applicable cleanup levels and are considered Contaminants of Concern (COCs) at this site:

- Diesel Range Organics (DRO)
- Gasoline Range Organics (GRO)
- Benzene
- Ethylbenzene
- 1-Methylnaphthalene
- 2-Methylnaphthalene
- Naphthalene
- Xylene

Cleanup Levels

Contaminants of concern were detected in soil above the most stringent Method 2 cleanup levels for the under-40 inches of precipitation climate zone established in 18 AAC 75.341(d), Table B2. All other COCs were detected below their respective most stringent Method 2 cleanup levels established in 18 AAC 75.341(c), Table B1 and 18 AAC 75.341(d), Table B2. Site-specific soil and groundwater cleanup levels for the site were documented in the “*Akiak Federal Scout Readiness Center Record of Decision for Petroleum Contamination*” dated August 2013 however this site qualifies for closure under the Method 2 cleanup levels.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Soil (mg/kg)	Groundwater (µg/L)
DRO	250	12,500	1,500
GRO	300	1,400	2,200
Benzene	0.022	11	4.6
Ethylbenzene	0.13	49	15
1-Methylnaphthalene	0.41	68	11
2-Methylnaphthalene	1.3	310	36
Naphthalene	0.038	29	1.7
Xylene	1.5	57	190

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

Characterization and Cleanup Activities

In May 1995 an investigation was conducted to determine whether soil contamination was present at the former AST and new AST locations. Seven borings were advanced until frozen soil was encountered at depths up to 6 feet below ground surface (bgs). Samples were collected for field screening using infrared technology at approximate intervals of 1.5 feet. Soil samples were analyzed for DRO, which was detected at a maximum concentration of 12,000 mg/kg at 3 feet bgs located north of the former AST.

In 1998 an investigation was conducted to further delineate contamination in soil around the former AST and new AST. A total of 11 soil borings and four well points were advanced. Soil samples collected from the borings were analyzed for DRO, and a subset of soil samples were also analyzed for RRO, GRO, BTEX and PAHs. Groundwater from the well points was analyzed for DRO, RRO, GRO, and BTEX. Soil sample results indicated DRO concentrations up to 44,000 mg/kg at 2.5 feet bgs around the former AST location. RRO was detected at concentrations up to 1,100 mg/kg and GRO was detected at concentrations up to 1,200 mg/kg around the former AST and new AST. In the groundwater sample collected beneath the former AST location, benzene was detected at a concentration greater than current groundwater cleanup level at 12 µg/L. Contaminant concentrations in the three well points installed upgradient and downgradient of the ASTs were either non-detect or were detected at concentrations less than the DEC 18 AAC 75 Table C at the time of the investigation. Groundwater flow direction was identified to be generally east-south-east towards the Kuskokwim River.

In 2004, cleanup was conducted to remove soil with DRO concentrations greater than 12,500 mg/kg. Approximately 115 cubic yards (cy) of petroleum-contaminated soil was removed from the area around the former AST and new AST. The maximum depth of the excavation was 4.5 feet bgs. Confirmation soil samples collected from the limits of the excavation were analyzed for DRO, GRO, and BTEX. DRO was detected at concentrations up to 17,000 mg/kg in samples collected along the northern excavation wall, west of the former AST, and adjacent to the FSRC building.

In 2008, site characterization was conducted to delineate the extent of DRO contamination in soil. A total of 91 soil borings were advanced to maximum depths of 6 feet bgs in a grid with 5-foot spacing stepping out around the former AST and the existing AST. Samples were collected for field screening using a photoionization detector (PID) at multiple depths in each boring. A total of 22 analytical soil samples were

collected for DRO. Most samples selected for laboratory analysis were collected from outside of the contaminated area along the apparent edge of contamination at intervals where headspace PID results were less than 5 parts per million (ppm). All DRO analytical results were less than 100 mg/kg, which is below the MTG cleanup level for DRO of 230 mg/kg.

In July 2011, additional investigation was conducted. Six soil borings were advanced to depths up to 7 feet bgs. Groundwater was observed in several of the borings at approximately 6.5 to 7 feet bgs. Nine analytical soil samples were collected and analyzed for DRO, and a subset of samples were also analyzed for GRO, BTEX, PAHs and VPHs. DRO was detected at maximum concentrations of 32,000 mg/kg at 3 to 4 feet bgs in soil sample collected beneath the FSRC building and 21,000 mg/kg at 3 to feet bgs in soil sample collected adjacent/south of the FSRC building. GRO was detected at a maximum concentration of 920 mg/kg and all BTEX concentrations were either non-detect or less than the most stringent DEC Method Two cleanup levels. 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected at 47 mg/kg, 56 mg/kg, and 22 mg/kg, respectively, in soil sample at a depth of 3 to 4 feet bgs. All other PAH concentrations were non-detect or less than the most stringent DEC Method Two cleanup levels. The two borings with the highest DRO concentrations were only advanced to a depth of 4 feet bgs, so the vertical extent of contamination was not determined.

In September 2013, a record of decision (ROD) for the site was approved by DEC. The ROD established site-specific soil and groundwater cleanup levels based on the Hydrocarbon Risk Calculator (HRC) calculations or exceedance of groundwater ingestion criteria. The ROD prescribed removal of petroleum contaminated soil in excess of the site-specific cleanup levels.

In June 2015, the FSRC building was moved so that contaminated soil could be excavated beneath the building. Approximately 132 cubic yards of soil was excavated and transported from the site to the Columbia Ridge Landfill. Analytical results for confirmation samples indicated that the highest remaining concentrations of DRO were 6,720 mg/kg at 9 feet bgs, GRO at 517 mg/kg at 9 feet bgs and benzene at 0.00935 mg/kg at 8 feet bgs (Figure 1). Three monitoring wells (MW-1, MW-2, and MW-3) were installed at the site after the remedial action activities were complete. Based on previous investigations that indicated the presence of shallow groundwater at depths of approximately 6 to 8 feet bgs, the monitoring wells were installed to depths of approximately 10 feet bgs. No water was observed in the monitoring wells 24 hours after installation. A second mobilization to the site was performed on September 1, 2015. Less than 0.25 liters of water was purged from each MW-1 and MW-2 until the monitoring wells were purged dry. MW-3 was found to be dry. Due to insufficient groundwater, the monitoring wells could not be developed, and groundwater samples could not be collected.

In August 2016, September 2017, and August 2018 efforts to sample the monitoring wells were unsuccessful due to insufficient volumes of groundwater present. In August 2019, a field effort was conducted to decommission the three wells installed during the 2015 effort. Three new monitoring wells were installed to replace the original wells to total depths of 20 to 25 feet bgs. Permafrost was not encountered, and water-saturated soil was found in soil boring cores around 15 feet bgs. Groundwater samples were successfully collected from these three newly installed wells (MW1A, MW2A, and MW3A). Samples were analyzed for DRO, benzene, and GRO. GRO was not detected and DRO was detected below the Table C cleanup level at a maximum of 898 µg/L in MW1A.

In June 2021, a groundwater sampling event was conducted. Groundwater samples were collected using HydraSleeves at depths between approximately 7.5 to 9 feet. Samples were analyzed for DRO and benzene.

Analytical results indicated that DRO was present at concentrations below the Table C cleanup level at a maximum of 440 µg/L in MW2A. Benzene was not detected in any sample.

On June 9, 2022, a final field effort was conducted to decommission the monitoring wells, MW1A, MW2A, and MW3A. All investigative derived waste (IDW) was disposed of at the Akiak Landfill.

The footprint of remaining contamination includes two overlapping areas covering approximately 65 feet by 31 feet. The remaining contamination is between 3 and 9 feet bgs.

Remaining Contamination

The maximum concentrations of contaminants remaining at the site are shown in Tables 2a. These concentrations are all below their respective approved cleanup levels. Sample locations referred to in Tables 2a are shown in the attached site figure. The 2011 samples identified in the table below were removed during the 2015 excavation but confirmation samples did not analyze for VOC and PAH.

Table 2a – Maximum Contaminant Concentrations Remaining in Soil

Contaminant	Soil (mg/kg)	Sample Location	Date Sampled
DRO	6,720	15AK1208(9.0)	2015
GRO	517	15AK1208(9.0)	2015
Benzene	0.00935J	15AKI10SSW(8)	2015
Ethylbenzene	0.19J	11AKISB001*	2011
1-Methylnaphthalene	47	11AKISB001*	2011
2-Methylnaphthalene	56	11AKISB001*	2011
Naphthalene	22	11AKISB001*	2011
Xylene	2.8J	11AKISB001*	2011

J- quantitation is an estimate

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 (HI) of 1 across all exposure pathways.

Based on a review of the environmental record, DEC 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 DEC'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 3.

Table 3: Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Soil samples results indicated contamination remaining is below Method 2 Human Health soil cleanup levels.
Sub-Surface Soil Contact	De-Minimis Exposure	DRO, GRO and benzene contamination remains in the sub-surface but is below Method 2 Human Health soil cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Contamination remains in the sub-surface but is below Method 2 Inhalation soil cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	Contamination of benzene remains in the groundwater but is below Table C Groundwater cleanup levels. Soil contamination is below Inhalation cleanup levels. Buildings are on raised foundations. Pathway considered de-minimis.
Groundwater Ingestion	De-Minimis Exposure	Depth to groundwater is approximately 5 to 13 feet bgs. Contaminants were detected, however below groundwater cleanup levels.
Surface Water Ingestion	Pathway Incomplete	The nearest surface body water is Kuskokwim River which is directly east of the site and is observed to be approximately 365 feet from the site. Contamination is not expected to migrate to surface water. Surface water is not used as a drinking water source.
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	Contamination remains in the subsurface soil, but it is of limited volume and concentration, and is located within a developed area unlikely to attract ecological receptors.

Notes:

1. “De Minimis Exposure” means that, in DEC’s judgment, the receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination.
2. “Pathway Incomplete” means that, in DEC’s judgment, the contamination has no potential to contact receptors.

DEC Decision

Soil and groundwater contamination at the site have been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database.

DEC approval is required for movement and disposal of soil and/or groundwater subject to the Site Cleanup Rules, in accordance with 18 AAC 75.325(i). Please contact DEC for information about applicable regulations and requirements. A “site”, as defined by 18 AAC 75.990, means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.

Movement or use of contaminated material in an ecologically sensitive area or in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Furthermore, 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. If, in the future, groundwater from this site is to be used for other purposes, additional testing and treatment may be required to ensure the water is suitable for its intended use.

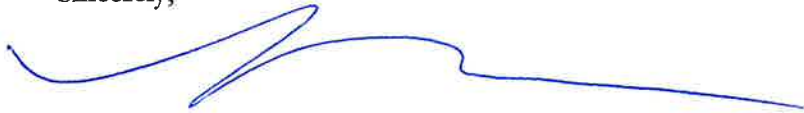
This determination is in accordance with 18 AAC 75.380 and does not preclude DEC from requiring additional assessment and/or cleanup action if information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to the environment.

Informal Reviews and Adjudicatory Hearings

A person authorized under a provision of 18 AAC 15 may request an informal review of a contested decision by the Division Director in accordance with 18 AAC 15.185 and/or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. See DEC's "Appeal a DEC Decision" web page <https://dec.alaska.gov/commish/review-guidance/> for access to the required forms and guidance on the appeal process. Please provide a courtesy copy of the adjudicatory hearing request in an electronic format to the parties required to be served under 18 AAC 15.200. Requests must be submitted no later than the deadline specified in 18 AAC 15.

If you have questions about this closure decision, please feel free to contact me at (907) 269-7691, or email at lisa.krebs-barsis@alaska.gov.

Sincerely,



Lisa Krebs-Barsis

Enclosed: Figure 1

cc: DEC, Division of Spill Prevention and Response, Cost Recovery Unit
Bill O'Connell, DEC

Figure 1: 2015 Excavation Area with Field Screening and Analytical Soil Sample Locations and Results

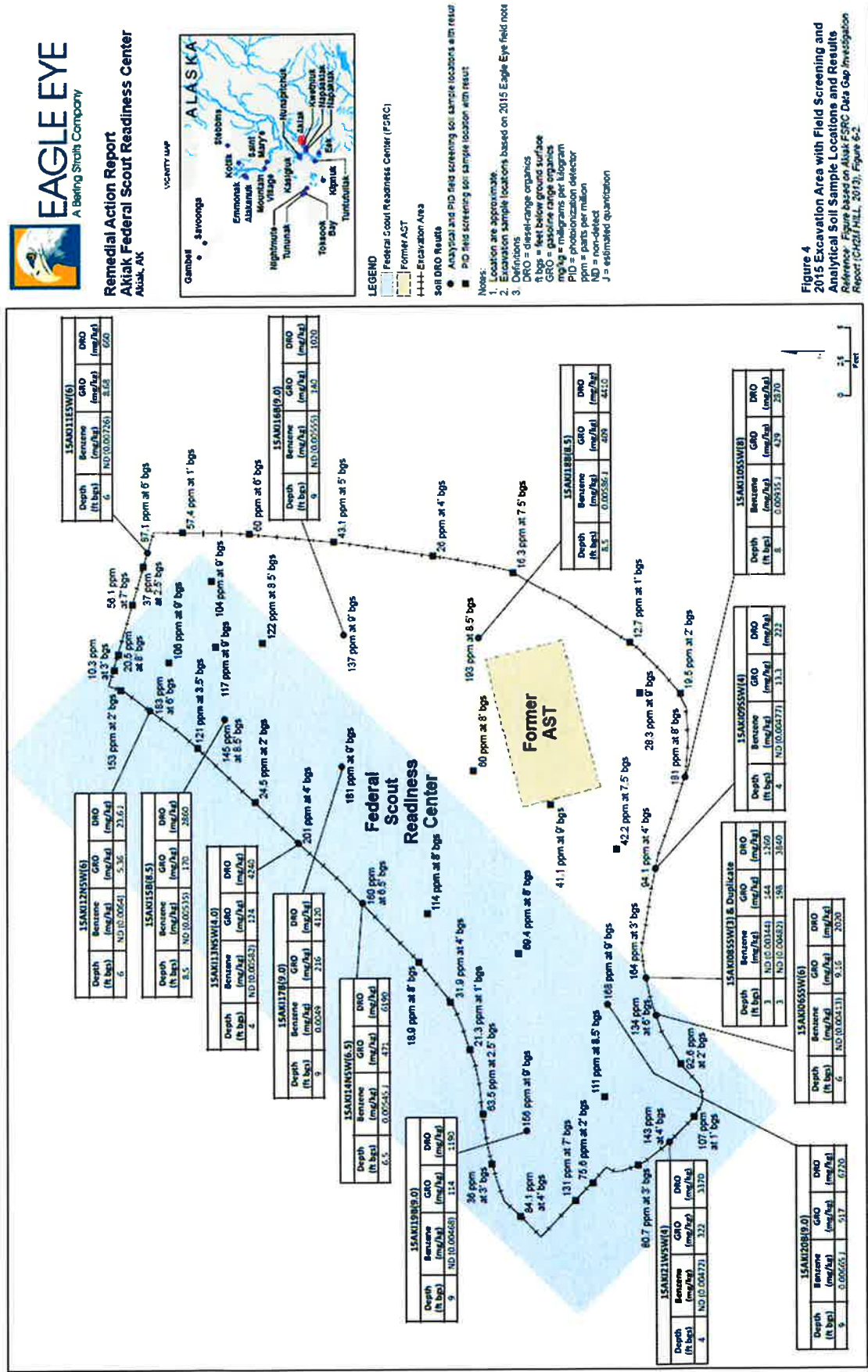


Figure 4
2015 Excavation Area with Field Screening and Analytical Soil Sample Locations and Results
Reference: Figure based on Aktik FSRC Data Gap Investigation Report (CH2M HILL, 2013), Figure 6-2.