

1 Site Name and Location

Facility name: Kipnuk Federal Scout Readiness Center (FSRC), Kipnuk, Alaska.

Hazard ID: 1557

ADEC file number: 2421.38.001

AEDB-R number: CCAK175931

Site location: Kipnuk FSRC is within the City of Kipnuk, 4 miles inland from the Bering Sea coast along the west bank of the Kuguklik River (also known as the Kugkaktlik River) in the Yukon-Kuskokwim Delta. The City of Kipnuk is 85 air miles southwest of Bethel and within the Bethel Recording District (Figure 1). (Figures are at the end of this Record of Decision.)

The FSRC originally was located on Lot 2 of U.S. Survey 423—a 3.5-acre tract fronting the Kugkaktlik River—which was seceded for Alaska Army National Guard (ARNG) use under Public Land Order 2020 in 1959. In spring 1985, erosion of the riverbank caused the relocation of the original FSRC building. The FSRC currently is within Section 10 of Township 003 North, Range 086 East, Seward Meridian, described as follows: commencing from the south corner of Lot 5 of Kipnuk Lakeview Subdivision (Plat Number 8-8), thence north 61.10944 degrees, east a distance of 969.31 feet, to the true point of beginning; thence north 60.5 degrees, east a distance of 100 feet; thence south 29.5 degrees, east a distance of 150 feet; thence south 60.5 degrees, west a distance of 100 feet; thence north 29.5 degrees, west a distance of 150 feet, back to the true point of beginning. The parcel contains an area of 15,000 square feet (0.344 of an acre), more or less.

Latitude and longitude: 59.93413247 degrees north, -164.03844395 degrees west, based on the 1984 (revised 2004) World Geodetic System (WGS 84) datum.

Facility owner and point of contact: The facility owner is ARNG, and the point of contact is Lieutenant Colonel Joel Gilbert, CFMO/Environmental, Building 57024, Joint Base Elmendorf-Richardson, Alaska, 99505.

2 Contaminants of Concern and Media Affected

Historical practices have resulted in release of petroleum hydrocarbons to soil, groundwater, and surface water at Kipnuk FSRC, and the affected areas have been investigated. Based on results of sampling conducted during investigations, the following contaminants of concern and affected media have been identified (CH2M HILL, 2013).

Soil: Diesel-range organics (DRO) were detected in soil to approximately 1.5 feet below ground surface (bgs) at concentrations greater than Alaska Department of Environmental Conservation (ADEC) Method 2 cleanup levels (Table B2 of Title 18, Chapter 75, Section 341(d), of the *Alaska Administrative Code* [AAC]).

Groundwater: All contaminant concentrations detected in suprapermafrost groundwater were below ADEC cleanup levels (Table C of 18 AAC 75.345[b][1]).

Surface water: All contaminant concentrations detected in the surface water were below ADEC cleanup levels (Table C of 18 AAC 75.345[b][1] and 18 AAC 70.020[b][5][A][iii]).

The maximum reported onsite contaminant concentrations in soil are presented in Table 1. On the basis of the results of a cumulative risk assessment (CH2M HILL, 2013), it has been concluded that, under current conditions, petroleum-contaminated soil at Kipnuk FSRC poses unacceptable risk to human health.

3 Regulatory Authority

The agency with regulatory authority (ADEC) is identified in applicable State of Alaska regulations as promulgated in the Oil and Hazardous Substance Pollution Control Act, 18 AAC 75, Article 3 (April 8, 2012, Revision).

TABLE 1
Summary of Contaminant Concentrations in Soil
Kipnuk Federal Scout Readiness Center

Chemical of Concern	Maximum Concentration	Sample Depth (feet bgs)
Diesel-range organics	17,700 mg/kg	0.33

bgs = below ground surface
mg/kg = milligrams per kilogram

4 Relevant Guidance and Policy

The following ADEC guidance documents are applicable for this Record of Decision: *Policy Guidance to Developing Conceptual Site Models* (2010), *Cumulative Risk Guidance* (2008), *Ecoscoping Guidance* (2012), *Implementing Guidance for the Method 3 Hydrocarbon Risk Calculator* (2011b), *Guidance on Using Institutional Controls in Oil and Other Hazardous Substances Cleanups* (2011a), and *Site Closure Memorandum* (2009).

5 Confirmed Routes of Exposure

The conceptual model for primary routes of exposure at Kipnuk FSRC was developed in accordance with ADEC guidance (2010). The model (Figure 2) takes into account past and current sources of contamination, chemical release mechanisms, transport/exposure media, potential exposure points, potential exposure routes, and potential receptors. The complete routes of exposure are as follows:

- Surface soil ingestion and direct contact pathways are considered complete under current and reasonably expected future conditions.
- Direct contact and ingestion of subsurface soil pathways are considered complete under current and reasonably expected future conditions.
- Ingestion and direct contact with surface water on the property is not considered a significant potential exposure pathway because the onsite surface water is not likely to be used as a drinking water source.
- Outdoor and indoor inhalation pathways are considered complete for the purposes of this model; however, potential exposure through outdoor inhalation is limited because volatile chemicals are diffused and diluted in the breathing zone, and potential exposure through indoor inhalation is not considered significant because all buildings are constructed on floating (elevated) foundations, generally limiting the pathway.
- All potentially complete ecological exposure pathways are considered insignificant because the compounds of concern for bioaccumulation are not present and because of the small size of the site (ADEC, 2012), the location of the site within the City of Kipnuk, and the presence of more optimal habitat nearby.
- The shallow supraperafrost groundwater should not be considered a viable drinking water source and ingestion of this water should not be considered a viable exposure pathway because the following conditions are met (18 AAC 75.350):
 - Groundwater is not used for a public or private drinking water system.
 - Groundwater is not used within the zone of contribution of an active public or private drinking water system.
 - Groundwater is not within a recharge area for a public or private drinking water well, a wellhead protection area, or a sole-source aquifer.
 - Groundwater is not expected to be transported or to act as a transport mechanism for hazardous substances to a current or potential future source of drinking water.
 - Groundwater is not a reasonably expected potential future source of drinking water, based on the evaluation of:

- The limited availability of the groundwater and the shallow depth to the groundwater
 - The quality of the water, which has high mineral content and turbidity and is susceptible to contamination from multiple point and non-point sources
 - The existence of a preferred alternative source of drinking water
 - Groundwater is not expected to be transported or to act as a transport mechanism for hazardous substances to a current or potential future source of drinking water.
- Ingestion of groundwater from the aquifer beneath the shallow supraperafrost groundwater is not considered a complete pathway because it is known to be highly brackish and unfit for consumption.

6 Basis for Action

On the basis of findings of the cumulative risk assessment (CH2M HILL, 2013), it has been determined that, under current conditions, soil contaminated with DRO at Kipnuk FSRC poses unacceptable risk to human health. Remedial actions are necessary to protect human health from the risk associated with potential ingestion of the petroleum-contaminated soil.

Contaminant concentrations within both supraperafrost groundwater and surface water were determined to be below ADEC cleanup levels (Table C of 18 AAC 75.345[b][1] and 18 AAC 70.020[b][5][A][iii]). Therefore, no further remedial action is considered necessary for supraperafrost groundwater and surface water at Kipnuk FSRC.

7 Site-specific Cleanup Levels

As stated in 18 AAC 75.340(d), for each affected site, a responsible person shall propose soil cleanup levels for hazardous substances in soil for ADEC approval. The proposed soil cleanup levels must be based upon an estimate of the reasonable maximum exposure expected to occur under current and future site conditions and must be developed using one or more of the following methods:

- ADEC Method 1 for petroleum hydrocarbon-contaminated soil in a non-Arctic zone, as set out in Table A1 of 18 AAC 75.341(a), or in an Arctic zone, as set out in Table A2 of 18 AAC 75.341(b)
- ADEC Method 2 for soil contaminated with chemicals other than petroleum hydrocarbons, as set out in Table B1 of 18 AAC 75.341(c), or with petroleum hydrocarbons, as set out in Table B2 of 18 AAC 75.341(d)
- ADEC Method 3 for developing site-specific alternative cleanup levels (ACLs)

For each contaminant detected in soil at a concentration above its ADEC cleanup level, the respective cleanup level provided under Method 1 or 2 applies at a contaminated site unless ADEC approves an ACL that has been proposed under Method 3.

For Kipnuk FSRC, cleanup levels for soil contaminated with petroleum hydrocarbons, cleanup levels were initially obtained from Table B2 of 18 AAC 75.341(d). However, using available aliphatic and aromatic hydrocarbons data, a site-specific Method 2 CL for DRO was developed (CH2M HILL, 2013), which has been approved by ADEC (ADEC, 2013). Table 2 summarizes the Method 2 cleanup levels for Kipnuk FSRC that are deemed protective of human health.

8 Selected Remedy

Remedial alternatives that were evaluated for petroleum-contaminated soil at Kipnuk FSRC are presented in *Kipnuk Federal Scout Readiness Center Data Gap Investigation Report* (CH2M HILL, 2013). The remedial alternatives that were evaluated were institutional controls (ICs) and removal of petroleum-contaminated soil from the site (source removal).

Petroleum-contaminated soil. The remedy selected for petroleum-contaminated soil at Kipnuk FSRC is source removal. ARNG is committed to implementing, monitoring, maintaining, and enforcing all components of the selected remedy to ensure that site conditions remain protective of human health. The major components of this remedy are as follows:

- Excavation of contaminated soil that contains petroleum contaminants in concentrations greater than site-specific cleanup levels (Table 2)
- Shipment of the excavated soil offsite for either offsite thermal treatment or disposal in an approved offsite landfill

TABLE 2
Site-specific Soil Cleanup Levels
Kipnuk Federal Scout Readiness Center

Contaminant	Maximum Reported Soil Concentration	ADEC Method 2		
		Table B2 Soil Ingestion Cleanup Level ^a	Site-specific Soil Ingestion Cleanup Level ^b	Approved Site-specific Cleanup Level
Diesel-range organics				
Aliphatics (77.36%)	--	10,000	--	10,000
Aromatics (22.64%)	--	4,100	--	4,100
Total	17,700	10,250	12,927	12,500 ^c

Note: All values are in milligrams per kilogram.

^a Method 2 cleanup levels obtained from 18 AAC 75.341(d), Table B2, under-40-inch zone

^b Site-specific ingestion cleanup level obtained from *Napaskiak Federal Scout Readiness Center Data Gap Investigation Report* (CH2M HILL 2013)

^c Cleanup level limited by maximum allowable concentration obtained from 18 AAC 75.341(d), Table B2, under-40-inch zone

-- = not applicable

ADEC = Alaska Department of Environmental Conservation

9 Post-closure Remedial Review

When the site meets the applicable cleanup levels established in Table 2, the remedial actions can be considered complete without ICs, in accordance with 18 AAC 75.380(d)(1) and the ADEC Site Closure Memorandum (ADEC, 2009), subject to the following condition:

- In accordance with 18 AAC 75.325(i), at a site where DRO is present in soil at concentrations above the migration-to-groundwater cleanup levels established in 18 AAC 75.341(d), Table B2, any proposal to transport soil offsite will require ADEC approval.
- In accordance with 18 AAC 70, soil containing residual contamination may not be placed in surface water or other environmentally sensitive areas.
- Under 18 AAC 75.380(d)(1), ADEC may require additional site characterization or remedial action if new information is discovered that leads ADEC to make a determination that the cleanup action described in this Record of Decision is not protective of human health, safety, and welfare and the environment.

The undersigned parties concur with this Record of Decision for Kipnuk FSRC.



JOEL T. GILBERT, Lieutenant Colonel
Alaska Army National Guard

17 Jun 13

Date



DEBRA CAILLOUET, Environmental Specialist
Federal Facilities Section, Contaminated Sites Program
Alaska Department of Environmental Conservation

6/27/13

Date