The U.S. Air Force is committed to keeping the community informed of activities, investigations, and cleanup schedules at Point Lonely SRRS.

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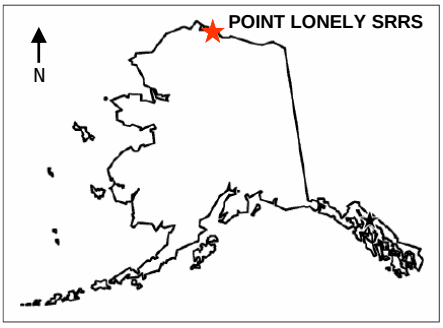
Proposed Plan for Twelve ERP Sites at Point Lonely Short Range Radar Station

Comment Period: December 13, 2007 to January 11, 2008

INTRODUCTION



The U.S. Air Force (USAF) and the Alaska Department of Environmental Conversation (ADEC) request your comments on this Proposed Plan for twelve Environmental Restoration Program (ERP) sites at Point Lonely Short Range Radar Station (SRRS), Alaska. This Proposed Plan is prepared under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan, 40 CFR 300.430(f)(2). These federal laws regulate the cleanup of old hazardous waste sites that contain substances covered under CERCLA.

The Proposed Plan is a document that the lead agency (USAF) is required to issue to fulfill the public participation requirement under CERCLA and the National Contingency Plan. This document summarizes information from the Remedial Investigation and Feasibility Study (RI/FS) reports. The reader should refer to these reports and the administrative record for more information regarding the recommended remedial actions. This Proposed Plan:

- Provides a summary of the remedial alternatives evaluated for each site;
- Identifies the preferred alternative proposed for each site;
- Provides the rationale for the selection of the preferred alternative; and
- Provides information on how the public can comment on the Proposed Plan and become involved in the remedy selection process.

This Proposed Plan describes the environmental investigations that were performed at each site and the proposed action. At Point Lonely SRRS, the U.S. Environmental Protection Agency (USEPA) has deferred regulatory authority to ADEC; therefore, no comments for this Proposed Plan were provided by the USEPA. ADEC is the lead regulator for Point Lonely SRRS and the USAF is the lead cleanup agency. ADEC concurs with the proposed actions discussed in this Proposed Plan.

Not all contaminated sites are addressed under CERCLA, which only covers specified hazardous substances. Petroleum products such as crude oil or refined fuel are not considered hazardous substances under CERCLA. Sites that are contaminated with releases of petroleum products are addressed by ADEC under the contaminated sites regulations (18 Alaska Administrative Code [AAC] 75, Article 3, Discharge Reporting Cleanup and Disposal of Oil and Other Hazardous Substances). None of the sites at Point Lonely are on the National Priorities List. The twelve sites included in this Proposed Plan are:

- **Sewage Disposal Area (SS001)**
- **Drum Storage Area (SS002)**
- **Beach Diesel Tanks, Pumphouse, and Pipeline (SS003)**
- **POL Storage (SS004)**
- **Diesel Spills (SS005)**
- **Vehicle Storage Area (SS006)**
- **Old Dump Site No. 1 (LF007)**
- **Garage (SS009)**
- **Diesel Tank (SS010)**
- **Inactive Landfill (LF011)**
- **Module Train (SS012)**
- **Hangar Pad Area (SS013)**

INTRODUCTION (CONTINUED)

In addition, this plan provides information on several Areas of Concern (AOCs) that were investigated as part of the Environmental Restoration Program at Point Lonely. These AOCs are:

- **Aircraft Fuel Stand 1 (AOC01)**
- **Aircraft Fuel Stand 2 (AOC02)**
- **Central Tank Farm (AOC03)**

Involving the public in the decision-making process is required by 40 Code of Federal Regulations (CFR) 300 for sites on the National Priorities List. Although Point Lonely SRRS is not on the National Priorities List, the USAF is committed to keeping the community informed of activities, investigations, and cleanup schedules at the site.

Public comments on this Proposed Plan will become part of the Record of Decision for each site. The Record of Decision will include a summary of public comments received during the comment period for this Proposed Plan and responses by the USAF. The USAF shall be responsible for implementing, maintaining, monitoring, reporting, and enforcing the remedial actions identified for the duration of the remedies selected in this Proposed Plan. Final decisions on the recommended alternatives will not be made until all comments submitted by the end of the public comment period have been reviewed and considered. Changes to the preferred alternatives may be made if public comments or additional data indicate that such changes would result in more appropriate remedies.

SITE HISTORY AND BACKGROUND

The Point Lonely Short Range Radar Station (SRRS) is located at latitude 70° 54' N, longitude 153° 15' W, and is immediately adjacent to the Beaufort Sea. It is situated approximately one mile west of Pitt Point and occupies 1,801 acres. The nearest communities are Nuiqsut, 75 miles southeast, and Barrow, located approximately 85 miles northwest. Prudhoe Bay/Deadhorse is located approximately 150 miles to the southeast. Point Lonely is accessible by air and barge; there are no roads connecting it to the Alaska highway system. The coastline along the Beaufort Sea adjacent to the facility is eroding. The coastline has receded approximately 11 feet per year from 1992 to 2005, based on analysis of aerial photographs from 1992 to 2005. Erosion rates along the lagoon bordering the facility are significantly less, on the order of a few feet per year.

Aerial photograph of Point Lonely SRRS (1981).

The Point Lonely facility was originally one of the many Distant Early Warning (DEW) Line stations located across the arctic region of North America and Greenland. The Point Lonely SRRS was constructed as an auxiliary DEW Line Station in 1953 and was active until 1989. The main station structures include the inactive module train, warehouse, garage, fixed petroleum, oil, and lubricants tanks, pumphouse, radar antennas, and 5,000-foot gravel runway.

In 1993, the Point Lonely installation was converted to an SRRS, which operated until 2005. The installation consisted of a radar structure, support building, a helicopter landing area, and an airstrip used for landing fixed wing aircraft. The SRRS was unmanned except for periodic maintenance visits. There are currently no plans to reactivate the radar station at Point Lonely. The USAF is planning to demolish and remove excess structures in 2008 as part of the USAF's Clean Sweep Program. Environmental cleanup will also be performed.

The Point Lonely installation is very isolated and no permanent settlements are in the immediate area. The Point Lonely area is located within the historical and/or current subsistence use area for the communities of Barrow and Nuiqsut. The primary subsistence resources include fish, birds, and caribou. Very little recreational activity takes place in the area around the Point Lonely installation due to its remote location and cold climatic conditions.

Point Lonely SRRS is situated on federal lands managed by the U.S. Bureau of Land Management (BLM). The BLM granted use of the property to the USAF through a Right-of-Way grant. The parcel of land covered under the grant is approximately 1,801 acres. The grant states that upon its termination the land shall be rehabilitated to the satisfaction of the BLM Arctic Area Manager.

SITE HISTORY AND BACKGROUND (CONTINUED)

The Point Lonely SRRS is located within the National Petroleum Reserve –Alaska , Northeast Planning Area. Point Lonely facilities have been used in the past for staging during oil and gas exploration. This use is likely to continue, and will likely increase after the USAF's departure. The North Slope Borough (NSB) in conjunction with Ukpeagvik Iñupiat Corporation, the Barrow village corporation, has expressed an interest to the BLM and USAF in leasing portions of the Point Lonely installation. This includes using some of the buildings. Their intention is to use Point Lonely as a base camp in support of oil and gas exploration and development. The airstrip is also likely to remain in operation. Given these circumstances, the current and future site use of the Point Lonely facility is best characterized as industrial, with occasional recreational or subsistence use. There is no groundwater use at the installation because there is no drinkable groundwater. Based on regional studies, permafrost over 2,000 feet deep underlies the area.

Under the USAF Environmental Restoration Program, environmental investigations have been conducted at the Point Lonely SRRS starting with a Phase I Installation Assessment and Records Search in 1980 and 1981. Other investigations included a Remedial Investigation/Feasibility Study (RI/FS) in 1993, an RI/FS in 2005, and a supplemental RI in 2006. Detailed information about these and previous investigations can be found in reports at the information repositories listed on page 32.

The aerial photograph below depicts the locations of the 12 Environmental Restoration Program sites and three areas of concern (AOCs) discussed in this Proposed Plan.

Figure 1— Point Lonely Site Locations (2001 Aerial Photograph)

SITE HISTORY AND BACKGROUND (CONTINUED)

Table 1 presents the proposed actions for the sites included in this Proposed Plan. No further action or closure indicates no further investigations, sampling, or cleanup actions will be performed at a site. As listed in Table 1, CERCLA hazardous substances were detected at five sites at Point Lonely SRRS. Some of these CERCLA sites also contain fuel-contaminated soil, which is being addressed under Alaska State laws and regulations (18 AAC 75).

Past activities potentially resulting in contaminant releases at the Point Lonely SRRS include:

- Spills during the transfer of fuels in and out of storage tanks;
- Leaks from fuel lines, tanks, or drums;
- Spills or leaks of fuel, lubricants, or solvents during vehicle and equipment maintenance activities;
- Spills or leaks from transformers or other electrical equipment containing polychlorinated biphenyls (PCBs); and
- Disposal of wastes and other discarded material containing hazardous substances.

The primary contaminants encountered during investigations at Point Lonely SRRS are diesel range organics (DRO); gasoline range organics (GRO); polynuclear aromatic hydrocarbons (PAHs); polychlorinated biphenyls (PCBs); petroleum, oil, and lubricants (POL); residual range organics (RRO); semivolatile organic compounds (SVOCs); metals; and volatile organic compounds (VOCs). Most of these contaminants are the result of fuel or oil spills.

Pages 10 through 31 in this Proposed Plan summarize the background, remedial investigations, risks, and recommendations for each site. The sites are separated into CERCLA and non-CERCLA sites, and then are organized by the proposed action beginning with those sites recommended for no further action and/or closure.

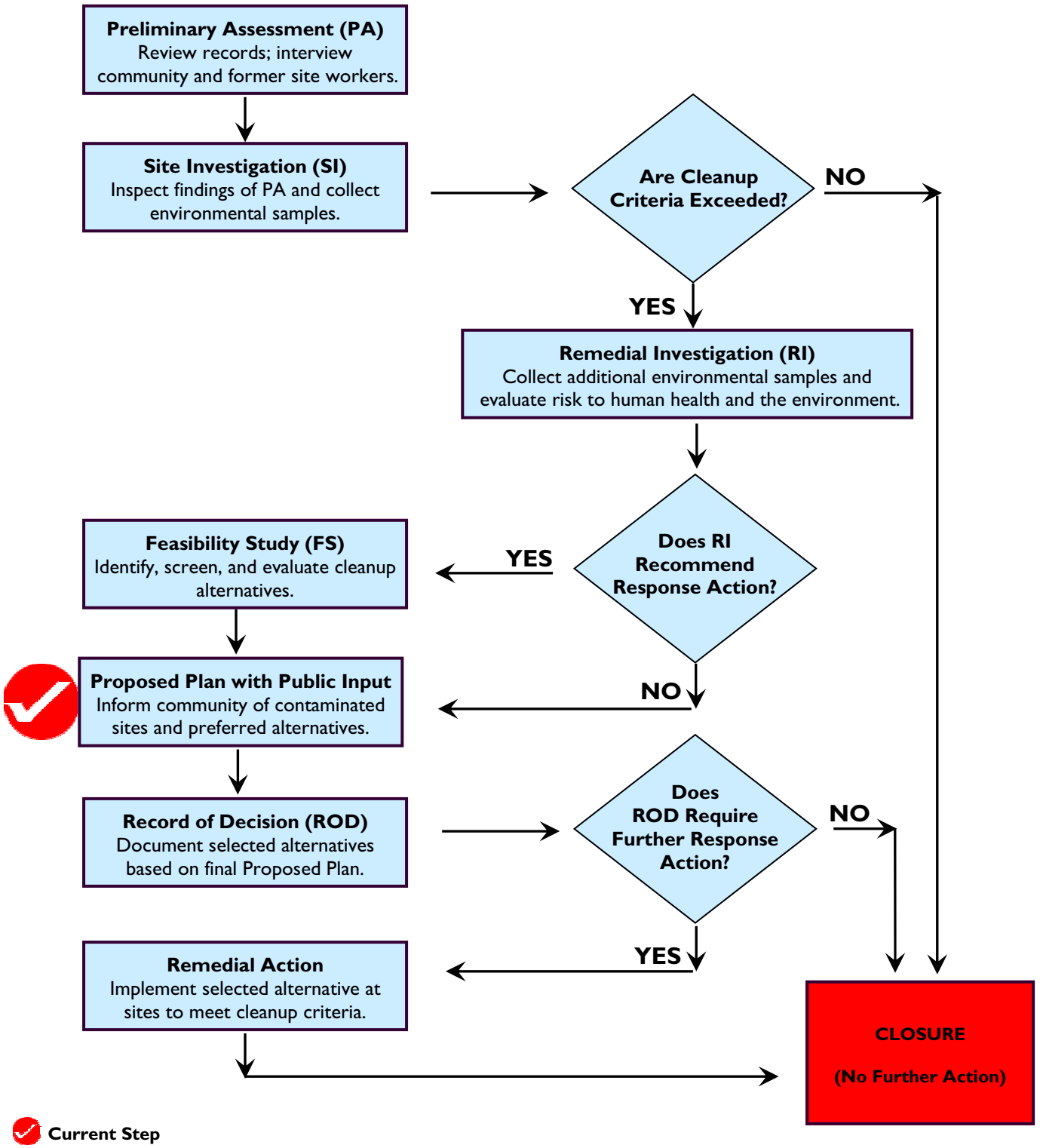
Table 1—Proposed Actions for Point Lonely SRRS Environmental Restoration Program Sites and Areas of Concern

Site	CERCLA Hazardous Substances?	Proposed Action	
		Under CERCLA (Federal Regulations)	Under 18 AAC 75 (State Regulations)
Sewage Disposal Area (SS001)	No	Not Applicable	Full Closure[1]
Drum Storage Area (SS002)	No	Not Applicable	Remedial Action[2]
Beach Diesel Tanks, Pumphouse, and Pipeline (SS003)	No	Not Applicable	Remedial Action[2]
POL Storage Area (SS004)	Yes	No Further Action	Conditional Closure[1]
Diesel Spills (SS005)	No	Not Applicable	Conditional Closure[1]
Vehicle Storage Area (SS006) / Inactive Landfill (LF011)[4]	No	Not Applicable	Not Applicable (closure will occur under18 AAC 60)[4]
Old Dump Site No. 1 (LF007)	Yes	Remedial Action[3]	
Garage (SS009)	Yes	Remedial Action[3]	
Diesel Tank (SS010)	No	Not Applicable	Conditional Closure[1]
Module Train (SS012)	Yes	Remedial Action[3]	
Hangar Pad Area (SS013)	Yes	Remedial Action[3]	
Aircraft Fuel Stand 1 (AOC01)	No	Not Applicable	Conditional Closure[1]
Aircraft Fuel Stand 2 (AOC02)	No	Not Applicable	Conditional Closure[1]
Central Tank Farm (AOC03)	No	Not Applicable	Conditional Closure[1]

Notes:
[1] Site is proposed for full or conditional closure under 18 AAC 75. Conditional closure requires continued tracking of the site in the ADEC Contaminated Sites database and restrictions on the relocation of the soil, or in the case of SS004 use of the surface water.
[2] Remediation of petroleum contaminated soil will be performed in accordance with Alaska State regulations.
[3] Remediation of contamination will be performed in accordance with CERCLA and Alaska State laws and regulations.
[4] SS006 and LF011 occupy the same area and are regulated as the same site. The area is permitted as a solid waste landfill under 18 AAC 60 (Solid Waste Program), and will be closed when the landfill permit requirements are met.

INVESTIGATION AND REMEDIATION PROCESSES

The environmental investigations and cleanup at Point Lonely SRRS are being performed as part of the USAF Environmental Restoration Program (ERP), which is consistent with CERCLA. The ERP is designed to identify, quantify, and remedy problems associated with past and current management of hazardous substances and hazardous waste at USAF facilities. The steps involved in evaluation and cleanup of sites under the ERP are summarized in the flow chart on this page.



INVESTIGATION AND REMEDIATION PROCESSES (CONTINUED)

As indicated in the flow chart on page 5, areas which potentially contain environmental contamination are first sampled as part of a site investigation. If the sample concentrations exceed screening criteria indicating a concern, then a more detailed remedial investigation (RI) is conducted. The purpose of an RI is to do the following:

- Identify the hazardous substances that have been released to the environment;
- Determine the nature, extent, and distribution of the hazardous substances in the affected media and identify the **contaminants of concern** (COCs);
- Identify migration pathways and receptors;
- Determine the direction and rate of migration of the COCs;
- Evaluate the risk to human health and the environment; and
- Determine the need for remedial action.

At sites where the RI determines that there is a need for remedial action, a feasibility study (FS) is performed. The objectives of an FS are to:

- Identify and evaluate remedial alternatives, where necessary; and
- Select a preferred remedial action alternative.

Unless a waiver is justified, CERCLA Section 121(d)(2)(A) usually requires that remedial actions meet federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate. These requirements are commonly referred to as applicable or relevant and appropriate requirements (ARARs). CERCLA Section 121(d)(2)(A)(ii) requires state ARARs to be met if they are more stringent than federal requirements.

The sampling results from the remedial investigations conducted at Point Lonely SRRS were compared against screening criteria to determine whether there were COCs that require remedial actions to protect human health or the environment. Table 2 on page 7 contains the primary regulatory and risk-based screening criteria used to identify COCs and evaluate risk.

These screening criteria are conservative standards, meaning they were developed to be protective of sensitive human populations (e.g., residents or children) and ecological **receptors** under typical conditions. They were selected based on the current and projected land use of each site. Even if there is no current residential land use at a site, criteria protective of people using the site for residential purposes were used to screen the data (e.g., ADEC Method Two soil cleanup levels). Less stringent screening criteria or cleanup levels may be protective of people or ecological receptors at the Point Lonely sites based on site-specific uses and characteristics. However, cleanup levels which would not be protective of most potential site uses, including residential site use, and could prevent relinquishment of the land back to the BLM were not proposed.

A chemical was considered a COC if it exceeded the screening criteria, unless further evaluation indicated the contaminant posed little risk. The 1993 RI/FS included a human health and ecological risk assessment for all twelve sites at Point Lonely.

Contaminant of Concern (COC) - *A COC is a chemical that exists at a concentration that poses an unacceptable risk to human health and the environment. The concentration at which a chemical poses an unacceptable risk depends upon many factors including its toxicity and the frequency or chance that an individual may become exposed to the chemical. Therefore, the location and size of a contaminated area affects the potential risk. A small area of contamination that is unlikely to come into contact with animals or humans typically represents a low risk.*

Receptors - *Receptors are the site-specific populations that could be exposed to contamination. Examples include: humans, plants, aquatic organisms, birds, and mammals.*

Exposure Pathways - *Pathways are the means by which receptors may be exposed to contamination. Examples include: direct contact, ingestion, or inhalation. ADEC defines complete exposure pathways as those that are currently complete or could be complete in the future based on contaminant migration or future land use.*

Ecological Risk Standards - *ADEC permits several different methods for evaluating the potential adverse effects to ecological receptors. In the Point Lonely risk assessment, the potential risk to plants was evaluated by comparing the concentrations of COCs in the soil and surface water to values from existing plant toxicity studies. Potential risks to aquatic organisms, birds, and mammals were evaluated using the hazard quotient (HQ) method, which is a calculated value. If the HQ is less than 1.0, then adverse effects in ecological receptors at the site are not expected. If the HQ is equal to or greater than 1.0, a potential for adverse effects exists.*

ADEC Risk Management Standards- *ADEC has set standards to protect people from health risks caused by exposure to contaminants in soil and water (18 AAC 75.325[h]). The cancer risk standard is 1 in 100,000. This means that contact with contaminants at the site over a 70-year lifetime will not increase the cancer risk among individuals by more than 1 in 100,000. These levels are calculated to protect people who are both easily affected by the chemicals and often come into contact with the contaminants at the site.*

The noncancer risk standard is a hazard index (HI) of 1. This hazard index measures the likelihood that a person who comes into contact with contaminants at the site over the course of a lifetime will experience noncancer health effects. A hazard index of 1 is the maximum level at which people are not expected to experience any unacceptable health effects.

INVESTIGATION AND REMEDIATION PROCESSES (CONTINUED)

The risk assessment characterized the probability that measured concentrations of hazardous chemical substances would cause adverse (harmful) effects in humans or the environment, including wildlife. The baseline human risk assessment evaluated the risk to both potential site workers and residents. The baseline ecological risk assessment evaluated risks to receptors in the terrestrial and aquatic environments present at Point Lonely. Potentially exposed populations (receptors) were identified, and then information on exposure and toxicity were combined to determine whether there was a significant risk to these receptors. The initial step in the risk assessment was to identify COCs in the soil, sediment, and water. Next, the potential for humans or ecological **receptors** to be exposed to these COCs was evaluated by examining complete or potentially complete **exposure pathways**. Finally, the risks to ecological receptors were determined to be significant or insignificant by comparing them to the **ecological risk standards**. Risks to humans were evaluated by calculating the noncancer and cancer risks associated with exposure to COCs at the Point Lonely sites, and comparing them to **ADEC risk management standards** (see inset on previous page).

Using the 2005 RI data, human health risks were also quantified following ADEC guidance at sites where sample concentrations of any contaminant exceeded one-tenth (1/10) of the Method Two soil cleanup level for the Arctic Zone. These "cumulative risk calculations" were used to identify which sites exceeded ADEC risk management standards.

REMEDIAL ACTION OBJECTIVES

The remedial action objectives for the sites at Point Lonely SRRS are to:

1. Protect human health and the environment;
2. Comply with applicable Federal, State and local laws and regulations; and
3. Comply with requirements for rehabilitation of the land under the BLM Right-of-Way grant, unless management of a particular area (site) is to be retained by the USAF. Because it has no further purpose for the lands, the USAF's objective is to fulfill its cleanup obligations under the Right-of-Way grant as soon as practical. This will allow management of the land to be relinquished back to the BLM.

Meetings have occurred between the lead regulatory agency (ADEC), landowner (BLM), and the USAF to determine appropriate cleanup levels based on the environmental conditions and future land use of the property. The proposed cleanup levels are based on State of Alaska regulations. Appropriate modification was made for site-specific conditions. In general, BLM administered public lands are to be managed for multiple uses. Therefore, the BLM usually does not accept land with contamination that is not acceptable for residential land use. These criteria are consistent with the ADEC risk management standards.

Table 2—Primary Regulatory and Risk-Based Screening Criteria Used to Identify Contaminants of Concern and Evaluate Risk

Media	Screening Criteria[1]
Soil (including tundra, beach sands, and gravel pads)	• 18 AAC 75.341, Tables B1 and B2, Arctic Zone (i.e., ADEC Method Two Soil Cleanup Levels for the Arctic Zone), Ingestion and Inhalation[2]. • 18 AAC 75.341, Table A2, Method One Petroleum Hydrocarbon Soil Cleanup Levels in the Arctic Zone[3] (used for screening when Method Two levels are not considered sufficiently protective of surface water).
Sediment (from aquatic habitats)	• National Oceanic and Atmospheric Association Screening Quick Reference Table Probable Effects Levels for Freshwater or Marine Sediment (NOAA SQuiRT PELs)[4]. PELs represent concentrations **above** which adverse effects in ecological receptors are frequently expected.
Surface Water	• 18 AAC 70 (Alaska Water Quality Standards) • *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* • SQuiRT for Aquatic life Criteria Continuous Concentration (CCC). CCCs are concentrations that are considered long-term (chronic) exposure values.

Notes:

[1] The proposed cleanup levels for a particular site may differ from these general screening criteria based on an evaluation of the site-specific conditions and risk.

[2] Referred to as ADEC "Method Two soil cleanup levels." These are risk-based standards protective of human health under a long-term residential scenario. In accordance with ADEC guidance, all applicable contaminants which exceeded 1/10 of the Method Two cleanup level were identified and included in cumulative risk calculations to determine if ADEC risk management standards were exceeded.

[3] Referred to as ADEC "Method One soil cleanup levels." These are conservative, nonrisk-based standards.

[4] Samples collected from ponds or water bodies found in the tundra or seasonal drainages judged to be viable aquatic habitat were classified as sediment and screened against sediment criteria. This criterion is also considered secondarily for soils that have a high likelihood to erode into freshwater or marine environments.

INVESTIGATION AND REMEDIATION PROCESSES (CONTINUED)

The proposed soil cleanup levels to meet the remedial objectives at Point Lonely SRRS are equal to or less than the ADEC Method Two soil cleanup levels for the Arctic Zone (18 AAC 75.341, Tables B1 and B2). Method Two cleanup levels are protective of humans using the land for residential purposes over their lifetime. These cleanup levels are also protective of site workers or visitors, who would spend less time at the site. If the proposed cleanup levels are met, the sites will receive the status of closure from the ADEC under 18 AAC 75. Closure or conditional closure under 18 AAC 75 is typically a prerequisite of relinquishment of the site back to the BLM.

The most common cause of environmental contamination at Point Lonely is spills of petroleum hydrocarbons, particularly diesel fuel. The proposed cleanup levels for petroleum hydrocarbons are listed in Table 3. As indicated in the table, the cleanup levels differ for coastal and inland sites. The lowest cleanup levels (ADEC Method One) are proposed for sites near the coast, which are considered susceptible to erosion in the relatively near future. The primary objective of the lower cleanup levels is to prevent petroleum sheens from occurring on the water surface if the sites erode. The presence of petroleum sheens can be a violation of Alaska State Water Quality Standards (18 AAC 70). Sites considered susceptible to erosion are SS002, SS003, and LF007, which are all located along the coast (Figure 1).

Table 3—Summary of Proposed Soil Cleanup Levels for Petroleum Hydrocarbons at Point Lonely SRRS

Petroleum Hydrocarbon (Cleanup Level in milligrams per kilogram [mg/Kg])	Coastal Sites - Susceptible to Erosion[1]	Inland Sites - Not Susceptible to Short-Term Erosion	
	Full Closure Criteria [2]	Conditional Closure Criteria [3]	Full Closure Criteria [2,4]
Gasoline Range Organics (GRO)	100	1,400	100
Diesel Range Organics (DRO)	200 (500)	12,500	200 (500)
Residual Range Organics (RRO)	2,000	13,700	2,000

Notes:

[1] These sites are considered to have a high probability of undergoing significant erosion within the next 15-25 years. The objective for these sites is to obtain full closure as soon as practical. ADEC considers these sites to be SS002, SS003, and LF007.

[2] ADEC Method One cleanup levels for the Arctic Zone as listed in 18 AAC 75.341, Table A2. The DRO cleanup level of 500 mg/Kg is applicable if the total BTEX is < 15 mg/kg and benzene is < 0.5 mg/Kg. These cleanup levels apply to gravel pads and roads only. The cleanup levels for native soils (e.g., tundra and peat) are Method Two cleanup levels for the Arctic Zone.

[3] ADEC Method Two cleanup levels for the Arctic Zone. The lowest value for the Ingestion or Inhalation pathway as listed in 18 AAC 75.341, Table B1. The Method Two cleanup level must also be protective of migration to surface water at the specific location [18 AAC 75.340(b)].

[4] To achieve full closure for gravel pads at inland sites, Method One cleanup levels (shown in the table) can be used for the Arctic Zone. Alternatively, the most stringent Method Two soil cleanup levels must be achieved. These levels are listed in 18 AAC 75.341, Table B2 for the migration to groundwater pathway.

For sites located in inland areas, Method Two soil cleanup levels are considered sufficient to protect human health and the environment under the current and future site conditions. In the arctic, Method Two cleanup levels must be demonstrated to be protective of migration to surface water to be considered appropriate for the site (18 AAC 75.340[b]). Water samples collected from the surface water bodies next to sites with petroleum hydrocarbons did not exceed any regulatory or risk-based screening criteria, including Alaska Water Quality Standards. This indicates surface water is not impacted by the petroleum hydrocarbons in the soils even at the existing concentrations. The residual hydrocarbons are bound to the soil and are immobile. The soils pose no risk to the environment in their present location.

To ensure gravel with residual petroleum hydrocarbons is not moved and placed in contact with surface water, the sites with petroleum hydrocarbons above the most stringent Method Two cleanup levels (Table 3) will be granted conditional closure. In accordance with 18 AAC 75.325(i), the landowner of a site granted conditional closure shall obtain approval from ADEC prior to disposing (or transporting) soil from the site. In addition, soil may not be disposed in surface water or other environmentally sensitive areas. Site boundaries will be documented to show the location of soil subject to conditional closure requirements. This boundary will conform to the area with contaminants remaining above the full closure cleanup levels. This area will be reduced if the concentrations decrease below this level through natural attenuation or voluntary cleanup. If the land subject to conditional closure is leased or transferred to a third party, these terms will be part of the lease agreement or property transfer documents. If, at a later date, it is demonstrated the petroleum hydrocarbons at a site have attenuated to levels where these conditions are no longer necessary, the site can be fully closed.

INVESTIGATION AND REMEDIATION PROCESSES (CONTINUED)

At the coastal sites, the Method Two cleanup levels for the Arctic Zone will be utilized for the native soils underlying gravel pads or tundra with natural vegetation. The vegetation helps stabilize the soils, which reduces erosion. The native soils, especially the upper foot, are high in organics, which are needed for vegetation to grow. Removal of the vegetation or the native soils below Method Two cleanup levels would cause more severe or long-term environmental damage than the residual hydrocarbons.

Remedial alternatives for CERCLA sites are compared and judged based on nine criteria as outlined under CERCLA guidance. The nine evaluation criteria are described below:

Protection of Human Health and the Environment—Addresses how well an alternative provides adequate protection of human health and the environment. It includes how risks posed through each exposure pathway are reduced, eliminated, or controlled.

Compliance with Applicable and Relevant or Appropriate Requirements (ARARs)—Addresses whether an alternative will meet all of the requirements of Federal and State environmental statutes.

Long-Term Effectiveness and Permanence—Refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time. It includes the adequacy and reliability of controls, along with the degree of certainty that the alternative will prove successful.

Reduction of Toxicity, Mobility, or Volume through Treatment—Addresses the extent to which the treatment reduces the toxicity, mobility, or volume of contaminated media.

Short-Term Effectiveness—Addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during the construction and operation of a remedial alternative until cleanup levels are achieved.

Implementability—Addresses the technical and administrative feasibility of an alternative from design through construction and operation. It includes the availability of services and materials, administrative feasibility, and coordination with other governmental agencies.

Cost—The full cost of an alternative.

State Acceptance—Refers to the approval of an alternative by the State of Alaska and any comments or concerns expressed.

Community Acceptance—Addresses the reaction by the community during the public comment period about an alternative. It includes comments and concerns expressed at that time, and whether there is support for an alternative.

COMMON ACRONYMS IN THIS PROPOSED PLAN

General Terms

ADEC - Alaska Department of Environmental Conservation
BLM - Bureau of Land Management
CERCLA - Comprehensive Environmental Response Compensation, and Liability Act
COC - Contaminant of Concern
NOAA SQuiRTs - National Oceanic and Atmospheric Association Screening Quick Reference Tables. Used for screening sediment data.
RI - Remedial Investigation
SRRS - Short Range Radar Station

Chemicals

BTEX - benzene, toluene, ethylbenzene, and xylenes
DRO - diesel range organics
GRO - gasoline range organics
PAHs - polynuclear aromatic hydrocarbons
PCBs - polychlorinated biphenyls
RRO - residual range organics
SVOCs - semivolatile organic compounds
TAH - total aromatic hydrocarbons
TAqH - total aqueous hydrocarbons

Units

milligrams per kilogram (mg/Kg) - A measurement of concentration equal to parts per million (ppm). Used for soil and sediment sample results.

micrograms per liter (µg/L) - A measurement of concentration equal to parts per billion (ppb). Used for water sample results.

CERCLA SITES

This section of the plan discusses the sites where CERCLA hazardous substances were detected. As listed in Table 1, CERCLA hazardous substances were detected at five sites at Point Lonely SRRS. Therefore, these sites are subject to cleanup under CERCLA. The most commonly detected CERCLA hazardous substance was PCBs. Some of these sites also contain fuel contaminated soil which is being addressed under Alaska State laws and regulations.

POL STORAGE AREA (SS004)

Pool of water with water quality exceedances in foreground with wooden pallet on gravel pad above.

Site Background and Description

The POL Storage Area is a gravel pad reportedly used to store petroleum, oil, and lubricant (POL) products. It is located north of SS005 and is adjacent to the road leading to the Beaufort Sea. In 1993, a 3,000-gallon jet fuel (JP-4) tank was located on the pad. It was not present in 2005, but a large wooden pallet was located where the tank was identified in 1993. A small drainage (gully) leads from the wooden pallet west to the tundra. Tundra wetlands, typical of the region, border the west side of the site. The gravel pad at the site may be used for storage or staging in the future.

Remedial Investigations (RIs)

During the 1993 RI, soil, sediment, and surface water samples were collected at SS004. Samples were analyzed for GRO, DRO, RRO, BTEX, VOCs, SVOCs, and metals. No soil samples contained compounds above ADEC Method One or Two cleanup levels. Sediment sample results were all below screening criteria (Table 2). A surface water sample collected from a small pool of water in the tundra at the base of the drainage from the pad contained concentrations of benzene, toluene, and chlorinated compounds (cis-1,2-dichloroethene, tetrachloroethene [PCE], and trichloroethene [TCE]) above Alaska Water Quality Standards (18 AAC 70). The pool of water was small, less than 3 feet in diameter and 1 foot deep (Figure 2).

Additionally, soil, sediment, and surface water samples were collected during the 2005 RI. Soil samples were collected on the gravel pad and in the tundra and analyzed for GRO, DRO, RRO, VOCs, and PAHs. The soil samples contained no contaminants above ADEC Method One or Two cleanup levels and sediment samples did not exceed screening criteria. A surface water sample was collected in the same location as the 1993 water quality exceedances. The water sample contained 1,1-dichloroethene, benzene, cis-1,2-dichloroethene, PCE, TCE, and total aromatic hydrocarbons (TAH, the sum of BTEX compounds) above Alaska Water Quality Standards. In general, the concentrations of contaminants were lower than those in 1993. A surface water sample collected downgradient did not exceed water quality standards, and the majority of compounds were nondetectable. No source of the contamination was identified, but the impacted area appeared to be small (less than 500 square feet). The site was recommended for further evaluation to determine if an active zone water contaminant plume was present.

In 2006, a supplemental RI was conducted to determine the source of contamination. Well points were installed to sample active zone (pore) water surrounding the small pool of water in each of the cardinal directions, and on the pad in the small gully leading to the pooled water. Surface and active zone water samples were analyzed for VOCs. Four of the five well points contained benzene and chlorinated compounds above Alaska Water Quality Standards. These regulatory standards are intended for protection of surface water, and are not directly applicable to pore water. However, they provide a useful benchmark for comparison. Concentrations of the contaminants were higher in the pore water than surface water. The maximum concentrations were detected in a well point 3 feet east of the pooled water (at the foot of the pad), suggesting the contamination was originating from the gravel pad. A well point installed approximately 12 feet east (upgradient) of the pooled water also contained elevated levels of VOCs, although much lower than in the well point next to the pool of water. This suggested the size of the subsurface plume was small (approximately 40 by 60 feet).

Risk Evaluation Summary

The contaminants of concern (COCs) for the site are listed in Table 4. The COCs exceed Alaska Water Quality Standards in the small pool of water at the edge of the gravel pad (Figure 2). The risk assessment conducted as part of the 1993 RI identified the surface water in the pool of water as a risk to human health if used as the sole drinking water source by a resident living year round at the site. However, the limited size of the pond makes this unlikely. The water would be frozen over half the year and would not provide a sufficient quantity of water for a year round drinking source due to its small size (<25 gallons). Surface water and sediment results did not exceed screening criteria for sediment in aquatic habitats (NOAA SQuiRTs), which indicates the site conditions are protective of ecological receptors. An ecological risk assessment using the 1993 RI data determined none of the COCs posed a risk to ecological receptors.

POL STORAGE AREA (SS004), CONTINUED

The contaminants have declined significantly in concentration from 1993 to 2006 in the small pool of water. This trend is anticipated to continue. BTEX compounds are more volatile than the chlorinated solvents, and so will decrease in concentration more rapidly in the surface water. PCE and TCE degrade to yield cis-1,2-dichloroethene, vinyl chloride, and 1,1-dichloroethene under anaerobic conditions. This process appears to be occurring in the active zone water based on the changes in the ratios of these compounds since 1993. Measurements of dissolved oxygen levels in the active water also suggest anaerobic conditions are present. The natural degradation of the VOCs will be a slow process in the cold, arctic conditions. The water quality exceedances in the surface water may persist for another 15-25 years. Site observations of the pool of water from 1993 to 2007 indicate that it is becoming increasingly vegetated and decreasing in size. In 2007, the maximum depth was approximately 8 inches and width was 3 to 5 feet. Thus, the surface water may not be present over the long-term.

Table 4—POL Storage Area (SS004) Summary

Contaminant of Concern (COC)	Media	2005 Sample Result	2007 Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation
Benzene	Surface Water (micrograms per liter [µg/L])	13.4	2.94	5	18 AAC 70 (Table 1)
cis-1,2-Dichloroethene		1,360	271	70	18 AAC 70 (Table 1)
Tetrachloroethene (PCE)		66.2	0.62	5	18 AAC 70 (Table 1)
Trichloroethene (TCE)		25.4	2.96	5	18 AAC 70 (Table 1)
TAH		31.4	9.52	10	18 AAC 70 (Table 1)
TAqH		31.7	9.52	15	18 AAC 70 (Table 1)

TAH = Total Aromatic Hydrocarbons (sum of BTEX); TAqH = Total Aqueous Hydrocarbons (TAH + Total PAHs)

Proposed Action

The site is proposed for no further action under CERCLA and conditional closure under 18 AAC 75. There are no reasonable risks of injury to humans or wildlife at the site because of the small volume of water in the pool. No cleanup action under CERCLA is warranted. Conditional closure under 18 AAC 75 is appropriate due to the current Alaska Water Quality Standard exceedances. Over time, the VOCs in the water will naturally attenuate to concentrations below Alaska Water Quality Standards, which will allow full closure to be attained. The conditional closure will require the site to be tracked in the ADEC contaminated sites database. The site shall not be disturbed without prior ADEC approval, and the surface water will not be used as a drinking water source.

Figure 2—POL Storage Area (SS004) Site Features

OLD DUMP SITE NO. 1 (LF007)

Toe of landfill eroding into lagoon.

Site Background and Description

LF007 is an inactive landfill that received waste from the installation between 1955 and 1976. There is no written record of the types of waste disposed of in the landfill. It is located near the western edge of the lagoon. The landfill is capped with gravel and bordered by the lagoon on its eastern side. The bluff face along the lagoon is approximately 15 to 16 feet high and consists of unconsolidated gravel. Erosion is evident along the bluff face, especially near the base. Based on a review of historical photographs and site inspection, the majority of the landfill is likely to erode within the next 50 to 70 years, unless the shoreline is stabilized.

Remedial Investigations (RIs)

During the 1993 RI, surface soil and water samples were collected at LF007. Samples were analyzed for fuel-related compounds, VOCs, SVOCs, metals, and PCBs. Stained soil was observed at two locations: one near the northern end adjacent to the lagoon and the other near the center of the landfill. The maximum DRO and RRO concentrations were 270 mg/Kg and 5,900 mg/Kg, collected in the center stained area. No other contaminants exceeded screening criteria in the soil or surface water. The risk assessment concluded the site posed minimal risk to human health or the environment and no further action was recommended at the site.

A storm in August 2000 subjected the landfill to high waves and caused erosion of the bluff. Metal debris was noted in the water during a 2001 survey of the area. Stabilization methods for the landfill were considered and it was recommended the bluff face be covered with geotextile material and sand bags to diminish the likelihood of further erosion.

A geophysical survey of the landfill was conducted during the 2005 RI to help delineate the landfill boundary and identify areas of potentially buried metal (metallic anomalies), (Figure 3). The metallic anomalies were the focus of soil sampling efforts. Test pits were dug down to permafrost using an excavator. Based on the test pits, it appeared the landfill was capped with approximately 1.5 to 2 feet of clean gravel and had an average debris thickness of 4 feet. The landfill debris was thicker closer to the lagoon. Some debris was exposed at the toe of the bluff. The landfill debris consisted of domestic (kitchen) and industrial waste. The latter was more prevalent and included wire, cable, piping, metal sheeting and drums. Soil, sediment, and surface water samples were also collected. The soil samples contained low to moderate levels of petroleum hydrocarbons, and occasionally low concentrations of PCBs. The maximum detected DRO and RRO concentrations were 3,040 and 11,100 mg/Kg, respectively. Arsenic was the only compound to exceed Method Two cleanup levels with a maximum concentration of 10.9 mg/Kg. The arsenic concentrations were similar to those contained in background samples was believed to be naturally occurring. The maximum detection of PCBs was 2.57 mg/Kg, which was present in the sediment (soil) of a small pool of water in the tundra next to the landfill. The RI recommended that remedial action be taken due to the likelihood the landfill would erode. The recommended action was to relocate the debris to another landfill and treat or dispose of the contaminated soil.

Table 5— Old Dump Site No. 1 (LF007) Summary

Contaminants of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation
DRO	Soil (milligrams per kilogram [mg/Kg])	3,040	200 (500)[1]	18 AAC 75.341 (Table A2, Arctic Zone)
RRO		11,100	2,000	18 AAC 75.341 (Table A2, Arctic Zone)
Total PCBs	Sediment (mg/Kg)	2.57 (fresh) 0.367 (marine)	0.189 (fresh) 0.277 (marine)	NOAA SQuiRT Sediment

[1] The DRO cleanup level of 500 mg/Kg is applicable if the total BTEX is < 15 mg/Kg and benzene is < 0.5 mg/Kg.

Risk Evaluation Summary

DRO, RRO, and PCBs are the primary contaminants in the landfill soils (Table 5). DRO and RRO exceed the cleanup criteria for a coastal site (Table 3) and PCBs exceed the Method Two soil cleanup level. Cumulative risk calculations using the 2005 RI data under a residential scenario, excluding the arsenic concentration, indicate an excess human cancer risk of 1×10^{-5} and a hazard index of 1. Neither exceed the ADEC risk management criteria. However, if the PCBs are released from the landfill they have the potential to bioaccumulate and biomagnify in the food chain, which is not accounted for in the cumulative risk calculations.

OLD DUMP SITE NO. 1 (LF007), CONTINUED

The petroleum hydrocarbons are relatively immobile due to their subsurface location and the generally dry conditions within the landfill. The lack of petroleum hydrocarbons in the surrounding surface water supports the assumption that no significant migration of these contaminants is currently occurring. The petroleum hydrocarbons will naturally attenuate over time. However, the rate will probably be slow due to the low temperatures and lack of nutrients in the soil. PCBs are stable compounds and are relatively immobile due to their limited solubility in water. Their detection in the sediment is likely due to erosion or previous grading of the landfill. PCBs tend to bioaccumulate when consumed and concentrate in the upper levels of the food chain. Selenium was the only compound to exceed surface water screening criteria, with all three samples above criteria and a maximum concentration of 358 micrograms per liter (µg/L). It is possible the selenium was naturally occurring and was mobilized from the native soil.

Surface of landfill looking southeast.

The landfill is inactive and there are no known human uses of the immediate area. In its current condition, the landfill is considered poor ecological habitat; however, the site borders tundra wetlands and the lagoon. These adjacent areas appear capable of supporting a wide array of species typical of the arctic environment. The future land use is expected to remain the same. It is unlikely this site will be used for industrial or residential purposes by humans because of its susceptibility to flooding and erosion.

Based on the detected contaminant concentrations, the immediate risk posed by the landfill to human health or ecological receptors is considered low. However, the landfill is likely to continue to erode into the adjacent lagoon if no action is taken. The erosion of the landfill could potentially create chemical and physical hazards, and cause exceedances of water quality standards. Furthermore, the landfill contents are not completely characterized. There are uncertainties regarding the types and quantities of hazardous substances in the landfill. Similar landfills at other DEW Line Stations have contained drums holding oil and fuel, and occasionally fluids with PCBs. Therefore, the future risk is considered greater than the current risk. The future risk is difficult to numerically quantify given the uncertainties regarding the landfill contents and degree of dilution that would occur as the landfill erodes. However, the risk is sufficiently high that remedial action is recommended. In addition, removal of the eroding landfill has been requested by the BLM to meet the terms of the Right-of-Way agreement.

Figure 3—Old Dump Site No. 1 (LF007) Site Features

Proposed Action

LF007 is proposed for remedial action under CERCLA and Alaska state laws and regulations. The proposed action at LF007 is landfill removal and disposal. This would consist of excavation of the landfill and segregation of the solid waste from the contaminated soils and any hazardous substances. The cleanup levels for the petroleum contaminated soil will be those listed in Table 3 for coastal locations, and Method Two cleanup levels for the Arctic Zone for other COCs. The petroleum contaminated soil less than Method Two cleanup levels for the Arctic Zone will be landspread at an inland location, where they will not pose a risk to water quality. The proposed location is the gravel pad at SS005 which already contains petroleum contaminated soil and is proposed for conditional closure (see page 24 regarding SS005). The other contaminated soil, inert debris, and other regulated wastes will be disposed off site. Removal of the landfill is expected to eliminate any water quality issues associated with the contaminated soil. Direct cleanup of surface water is not part of the remedy, but contaminated soil removal is likely to allow the water to achieve Alaska Water Quality Standards. Post removal monitoring of surface water will be performed to confirm no Alaska Water Quality Standards exceedances remain. The other remedial alternatives considered at LF007 were no action and shoreline stabilization. A summary of the comparison of remedial alternatives is shown in Table 6. Landfill removal and disposal is the only option that offers long-term effectiveness and permanence. It is also more cost-effective than shoreline stabilization, which would require costly long-term maintenance. In addition, landfill removal is the only alternative that allows the USAF to relinquish the land back to the BLM.

Table 6—Comparison of Remedial Alternatives Addressing LF007

Remedial Alternative	Threshold Criteria		Balancing Criteria					Modifying Criteria	Cumulative Evaluation Result
	Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-term Effectiveness (Impacts, Time to Achieve Remedial Action Objectives)	Implementability	Cost	State Acceptance	
No Action	○	○	○	○	●	●	●	○	○
Shoreline Stabilization	●	●	◑	◑	◑	○	○	◑	◑
Landfill Removal and Disposal	●	●	●	●	○	◑	◑	●	●

Symbol Key

● Best ◕ Better than Average ◑ Average ◔ Worse than Average ○ Worst

Description of Alternatives

No Action—No response action taken. This alternative would include a site-specific risk assessment to potentially close the site via site-specific cleanup levels.

Shoreline Stabilization—Consists of placing bags on the downgradient half of the slope and a geoweb cellular system backfilled with local gravel over a prepared landfill face. Annual monitoring of the site would be required to ensure that the remedy is performing correctly. Maintenance would be required for the life of the structure.

Landfill Removal and Disposal (Petroleum contaminated soils treated; Hazardous and non-hazardous debris disposed off site)—Requires excavation of the landfill to remove the contaminated soil and debris, including any hazardous substances that may be contained in the debris. The excavated material would be screened and segregated into various waste streams depending on the contaminants or waste present.

GARAGE (SS009)

Garage looking east with surface water in foreground.

Site Background and Description

The Garage consists of an inactive vehicle storage and maintenance building. It is raised on wooden pilings and surrounded by a gravel pad. The building is approximately 100 feet northeast of the module train on the south side of the runway. The floor drains discharged directly beneath the garage to the ground surface until 1993. An abandoned flammable storage shed is north of the garage on the edge of the gravel pad. Tundra borders the gravel pad to the north and west. Culverts drain the area underneath the garage and discharge to the adjacent tundra.

Remedial Investigations (RIs)

During the 1993 RI, soil, sediment, and surface water samples were collected and analyzed for fuel-related compounds, PCBs, and metals. The maximum DRO detection was 16,000 mg/Kg in a soil sample collected underneath the southeast corner of the garage. It was the only compound in the soil to exceed Method Two cleanup levels. Surface water and sediment samples generally contained low concentrations of compounds. Migration of contaminants appeared minimal, although it was believed minor migration had occurred through the culverts to the tundra. The risk assessment concluded there was minimal human health or ecological risk at the site, and the human excess cancer risk and HI for non-carcinogenic health effects were below the ADEC risk management standards. However, the area under the building was recommended for remedial action to reduce the concentration of petroleum hydrocarbons below ADEC cleanup levels.

Soil, sediment, and surface water samples were collected during the 2005 RI at both the garage and the flammable storage building. Samples were analyzed for fuel-related compounds, PCBs, solvents, metals, and wood preservatives (pentachlorophenol and 2-methylphenol [o-cresol]). Lead, arsenic, PCBs, DRO, and RRO exceeded Method Two cleanup levels underneath the garage. The petroleum hydrocarbon concentrations suggested diesel fuel and oil had been discharged. The arsenic concentrations were similar to those contained in background samples and the arsenic was believed to be naturally occurring. Sampling indicated that the petroleum hydrocarbons beneath the garage had migrated into the adjacent gravel pad to the north and west. However, the concentrations were much less than under the garage, and did not exceed Method Two cleanup levels for the Arctic Zone. Petroleum hydrocarbons were also detected around the flammable storage building but none exceeded Method Two cleanup levels for the Arctic Zone.

Sediment and surface water samples were collected from locations adjacent to the gravel pad to determine if contaminants had migrated and impacted the tundra wetlands. Some PAH compounds were detected in sediments suggesting there had been some past migration of petroleum hydrocarbons, although the current concentrations were not considered a concern. There were no exceedances of Alaska Water Quality Standards (18 AAC 70). The soils underneath the garage were recommended for remedial action due to the exceedance of ADEC Method Two cleanup levels and to enable the USAF to meet the conditions of the Right-of-Way grant (Figure 4).

Risk Evaluation Summary

The contaminants of concern (COCs) at SS009 are listed in Table 7. Concentrations of the COCs exceed regulatory cleanup levels needed for conditional closure of the site. Cumulative risk calculations for a residential scenario based on the 2005 RI data indicate an excess human cancer risk of 4×10^{-5} and a hazard index (non-carcinogenic health effects risk) of 5. Most of the calculated risk is associated with the PCBs in the soil. These risk calculations assume a residential exposure scenario, which is unlikely, especially considering the majority of contaminants are located under the garage. When risk is calculated under an industrial scenario, neither the excess cancer risk nor the hazard index exceeded ADEC risk management standards.

The concentrations of PCBs and lead present underneath the garage are not anticipated to decrease significantly with time. They are stable compounds that do not readily degrade. The petroleum hydrocarbons will likely decrease with time through volatilization and biodegradation. However, concentrations of DRO and RRO above Method Two cleanup levels will likely persist for some time, especially for the heavier end compounds such as RRO. There is evidence the petroleum hydrocarbons have migrated north and west of the garage. However, current migration appears to be minimal. The risk to ecological receptors is low based on the detected concentrations in the tundra and lack of habitat in the impacted areas. Several PAH compounds exceeded NOAA SQuiRT sediment criteria, but most of the criteria were for marine sediments and, therefore, not entirely applicable. The exceedances of Method Two soil cleanup levels prevent relinquishment of the land back to the BLM.

GARAGE (SS009), CONTINUED

Table 7—Garage (SS009) Summary

Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation[1]
DRO	Soil (milligrams per kilogram [mg/Kg])	34,100	12,500	18 AAC 75.341 (Table B2)
RRO		45,000	13,700	18 AAC 75.341 (Table B2)
Total Xylenes		28.9	81	18 AAC 75.341 (Table B1)
1,3,5-Trimethylbenzene		23.6	48.8	18 AAC 75 (Technical Memorandum 01-007)
Tetrachloroethene		15.7	80	18 AAC 75.341 (Table B1)
Total PCBs		11.4	1.0	18 AAC 75.341 (Table B1)
Chromium		49.7	410	18 AAC 75.341 (Table B1)
Lead		759	400	18 AAC 75.341 (Table B1)

[1] All citations and the associated cleanup levels are for the Arctic Zone.

Proposed Action

The site is proposed for remedial action under CERCLA and Alaska State laws and regulations. The proposed remedial action is removal and offsite disposal of the contaminated soil beneath the building. The COCs and the proposed cleanup levels are listed in Table 7. Soil with PCBs above the 1 mg/Kg cleanup level will be removed and disposed out of state at a landfill permitted to accept the waste. The disposal will be consistent with the Off-Site Rule (40 CFR 300.440). The purpose of this rule is to avoid future environmental problems by ensuring these wastes are disposed in management units (landfills) determined to be environmentally sound. It is estimated that 308 tons of contaminated soil will be removed and disposed offsite. Removal of the soil with PCBs > 1 mg/Kg will likely reduce the concentrations of petroleum hydrocarbons well below the proposed cleanup levels in most areas because the COCs are co-located. A comparative analysis of the remedial alternatives is shown in Table 8. The alternatives included no action, institutional controls, and removal and offsite disposal. Institutional controls would consist of fencing and warning signs around the building to reduce the potential exposure to the contaminated soil beneath the building.

The proposed removal action enables the remedial objectives for Point Lonely SRRS to be met. This action provides good long-term effectiveness and permanence, and enables the USAF to meet cleanup obligations under the Right-of-Way grant as soon as practical. The no action and institutional controls alternatives would prevent the relinquishment of the land to the BLM. In addition, the no action alternative does not reduce the risk of exposure below ADEC risk management standards. The institutional controls alternative would require the USAF to monitor and maintain the controls indefinitely, which is not cost effective. After the proposed action is complete, the concentration of DRO and RRO remaining in the soil may exceed the criteria for full closure under 18 AAC 75 (see Table 3). If this is the case, the site will be conditionally closed. The conditions associated with the closure will be as described on page 8.

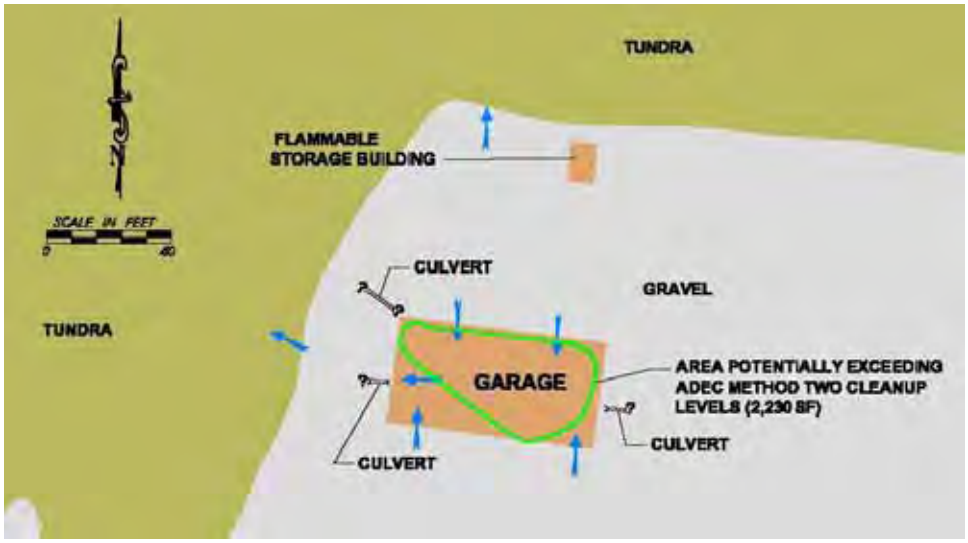


Figure 4—Garage (SS009) Site Features

Table 8—Comparison of Remedial Alternatives Addressing SS009

Remedial Alternative	Threshold Criteria		Balancing Criteria					Modifying Criteria	Cumulative Evaluation Result
	Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-term Effectiveness (Impacts)	Implementability	Cost	State Acceptance	
No Action	○	○	○	○	○	●	●	○	○
Institutional Controls	●	●	◐	◐	●	○	◐	◐	◐
Full Source Removal and Offsite Disposal	●	●	●	●	◑	◑	○	●	●

Symbol Key

● Best ◕ Better than Average ◐ Average ◔ Worse than Average ○ Worst

Description of Alternatives

No Action—No response action taken. This alternative would include a site-specific risk assessment to potentially close the site via site specific cleanup levels.

Institutional Controls—Control site access by erecting fencing and posting signs. Long term monitoring and maintenance would also occur.

Full Source Removal and Offsite Disposal—Excavate contaminated soil above ADEC Method Two cleanup levels underneath the garage and transport to a permitted landfill and/or TSD facility for disposal. Disposal must be consistent with the Off-Site Rule for PCBs.

MODULE TRAIN (SS012)

North side of module train showing area with PCB contaminated soil.

Site Background and Description

The Module Train (SS012) consists of the gravel pad underneath and surrounding the module train. Power generation and fuel tanks were located inside the module train at the eastern end of the building. The radome is located slightly east of the center of the module train building. Two electrical transformer stands are located on the north side of the building near its east end. Doors on the north and south sides of the building beneath the radome lead to the radio room. The radio room area contained multiple electrical transformers to support operation of the radar system. The gravel pad is approximately 3 to 4 feet thick in the area, but thins to only a few inches beneath the building, which is raised on wooden pilings.

Remedial Investigations (RIs)

During the 1993 RI, soil, sediment, and surface water samples were collected adjacent to the west end of the module train. Samples were analyzed for fuel-related compounds based on the belief that the diesel generators and day tanks were located in the western end of the building. GRO and DRO were not detected in the soil and sediment. Only minor detections of VOCs were noted in the water and sediment. Due to the lack of contamination, the site was recommended for no further action.

During the 2005 investigation, it was determined the generators were on the eastern end of the building. Soil samples were collected near the eastern end of the building and analyzed for GRO, DRO, RRO, BTEX and PAHs to help identify possible petroleum contamination from the generators and day tanks. In addition, soil samples were collected near the stairs beneath the radome and beneath the two transformer stands and analyzed for PCBs. The maximum DRO concentration was 3,670 mg/Kg in a sample collected beneath the eastern end of the module train. No petroleum hydrocarbons or related compounds (BTEX and PAHs) exceeded Method Two cleanup levels for the Arctic Zone. PCBs were detected above the Method Two cleanup level of 1 mg/Kg in four of seventeen soil samples. The maximum PCB concentration was 34.6 mg/Kg. PCBs were detected above 1 mg/Kg on both sides of the stairs leading from the radio room north of the module train. The PCBs in this area may have originated from transformer oil being dumped on the ground surface outside the doorways during maintenance activities. The site was recommended for remedial action to address the PCB contamination on the north side of the module train.

Risk Evaluation Summary

PCBs were the only compound detected above ADEC Method Two cleanup levels for the Arctic Zone (Table 9). The cumulative risk calculation for a residential scenario had an excess cancer risk of 9×10^{-5} and a hazard index (non-carcinogenic health effects risk) of 13. Both of these exceed ADEC risk management standards (18 AAC 75.325[h]). However, a residential scenario is not representative of the current or projected site use. The cumulative risk was also calculated under an industrial scenario and neither the excess cancer risk nor the HI exceeded the risk management standards. However, PCBs can bioaccumulate and this risk is not accounted for in the cumulative risk calculations. In addition, the presence of PCBs in the soils at concentrations greater than 1 mg/Kg would likely prevent relinquishment of the land back to the BLM.

Table 9—Module Train (SS012) Summary

Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation[1]
DRO[2]	Soil (milligrams per kilogram [mg/Kg])	3,670	12,500	18 AAC 75.341 (Table B2)
PCBs		34.6	1.0	18 AAC 75.341 (Table B1)

[1] All citations and the associated cleanup levels are for the Arctic Zone.
[2] DRO is considered a potential COC.

MODULE TRAIN (SS012), CONTINUED

Soil on the eastern end of the module train is contaminated with low-level petroleum hydrocarbons. However, the low levels of hydrocarbons and the lack of volatile compounds indicates the fuel is weathered. Significant migration of the contamination is unlikely due to the low surface gradient and the limited precipitation. The concentrations of petroleum hydrocarbons will continue to decrease over time. In regards to the petroleum contamination, no action needs to be taken to protect human health or the environment.

Proposed Action

The site is proposed for remedial action under CERCLA and Alaska State laws and regulations. The soil with PCBs above 1 mg/Kg outside the north stairs of the module train is proposed for removal and offsite disposal consistent with the Off-Site Rule (40 CFR 300.440). The estimated volume of soil above the cleanup level is 3 cubic yards.

The remedial alternatives considered for the PCB-contaminated soil at SS012 were no action, institutional controls, solidification, onsite treatment via thermal desorption, and offsite disposal. A comparison of the alternatives is shown in Table 10. Excavation and offsite disposal is the most cost-effective and readily implementable approach to meeting the remedial objectives established for Point Lonely SRRS. Treatment of the soil is more expensive than offsite disposal, and does not provide significantly greater protection of human health and the environment. Institutional controls would be hard for the USAF to maintain at this remote and unmanned location, and would prevent relinquishment of the land to the BLM. The no action alternative would also prevent relinquishment of the land. In addition, a site-specific risk assessment would be required to obtain site closure because PCBs exceed ADEC Method Two cleanup levels for the Arctic Zone.

No cleanup action will be taken to address the petroleum hydrocarbons detected in the soil at the site. The concentrations of DRO detected in the soil are between levels established for conditional and full closure at an inland location (Table 3). Therefore, the site can be conditionally closed under 18 AAC 75 following removal of the PCB contaminated soil above 1 mg/Kg. The conditions associated with the closure will be as described on page 8. The restrictions on soil movement will only apply to the area (soil) with DRO concentrations above the full closure criteria (Table 3).

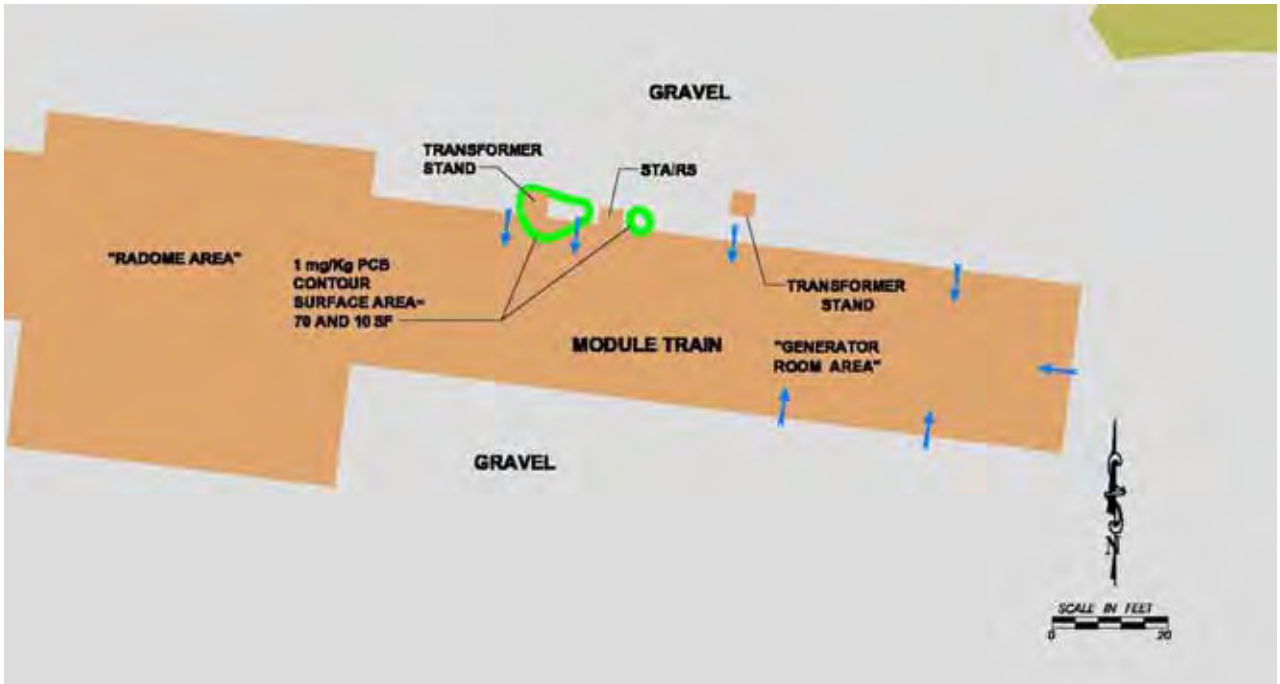


Figure 5—Module Train (SS012) Site Features

Table 10—Comparison of Remedial Alternatives Addressing PCBs at SS012 and SS013

Remedial Alternative	Threshold Criteria		Balancing Criteria					Modifying Criteria	Cumulative Evaluation Result
	Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-term Effectiveness (Impacts, Time to Achieve Remedial Action Objectives)	Implementability	Cost	State Acceptance	
No Action	○	○	○	○	○	●	●	○	○
Land Use (Institutional) Controls	●	●	◔	○	◔	◑	◔	◔	◔
Solidification	●	●	◑	◔	◔	◔	◑	◑	◑
Onsite Treatment via Thermal Desorption	●	●	●	●	◑	○	○	◔	◔
Source Removal and Disposal	●	●	●	◔	◔	◔	◕	●	●

Symbol Key ● Best ◔ Better than Average ◑ Average ◕ Worse than Average ○ Worst

Description of Alternatives

No Action—No response action taken. This alternative would include a site-specific risk assessment to potentially close the site via site specific cleanup levels.

Land Use (Institutional) Controls—Control site access by erecting fencing and posting signs. Long term monitoring and maintenance would also occur.

Solidification—Excavate PCB-contaminated soil and mechanically mix it with cement grout to immobilize the PCBs. The soil/grout mixture would be left at the site.

Onsite Treatment via Thermal Desorption—This option uses low temperature thermal treatment that would occur onsite.

Source Removal and Disposal—Excavate PCB-contaminated soil for treatment and/or transport the excavated soil to a permitted landfill for treatment or disposal consistent with the Off-Site Rule.

HANGAR PAD AREA (SS013)

Transformer stand on west side of hangar.

Site Background and Description

The Hangar Pad Area consists of a gravel pad on relatively flat tundra upon which the hangar is constructed. It is in the southeast corner of the main gravel pad at the installation. The hangar has a gravel floor covered with continuous metal flooring. An inactive 1,000-gallon above ground storage tank used to store diesel fuel is located east of the hangar, near the edge of the gravel pad. A stand with an electrical transformer is located on the west side of the hangar adjacent to the building. The gravel pad is bordered by tundra to the east and south.

Remedial Investigations (RIs)

Soil, sediment, and surface water samples were collected during the 1993 RI around the diesel tank. The tank was reportedly empty and cleaned. Samples were analyzed for petroleum hydrocarbons and related compounds (VOCs and SVOCs). A sediment sample collected east of the diesel tank in the tundra had the highest concentrations of GRO, DRO, and RRO (40, 190, and 200 mg/Kg, respectively). TAH (total aromatic hydrocarbons) in the surface water at the same location had a total concentration of 6 micrograms per liter (µg/L). The soil near the transformer was not sampled. SS013 was recommended for no further action due to minimal migration and low levels of petroleum contaminants.

During the 2005 RI, soil, sediment, and surface water samples were collected near the diesel tank and analyzed for fuel-related compounds. The maximum DRO concentration was 3,020 mg/Kg collected at the south end of the diesel tank. No compounds exceeded Method Two cleanup levels for the Arctic Zone. No sediment or water sample results exceeded screening criteria (Table 2). In addition, two soil samples were collected from beneath the transformer stand and analyzed for PCBs. One of the samples contained PCBs at a concentration of 5.83 mg/Kg. The other had nondetectable concentrations of PCBs. The RI report recommended no further action with respect to the petroleum hydrocarbons detected in the soil near the diesel tank. The transformer area was recommended for additional sampling to delineate the extent of contaminated soil with PCBs above 1 mg/Kg.

As part of a supplemental RI in 2006, three soil samples were collected and analyzed for PCBs near the transformer. The samples were collected around and beneath the 2005 sample location with detectable PCBs. No PCBs were detected in any of the 2006 samples. Based on the additional samples, the maximum extent of PCB contamination above the 1 mg/Kg cleanup level was estimated to be 3 feet in diameter and 1 foot deep (approximately 0.25 cubic yards), (Figure 6).

Figure 6—Hangar Pad Area (SS013) Site Features

HANGAR PAD AREA (SS013), CONTINUED

Table 11—Hangar Pad Area (SS013) Summary

Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation[1]
DRO[2]	Soil (milligrams per kilogram [mg/Kg])	3,020	12,500	18 AAC 75.341 (Table B2)
PCBs		5.83	1.0	18 AAC 75.341 (Table B1)

[1] All citations and the associated cleanup levels are for the Arctic Zone.
[2] DRO is considered a potential COC.

Risk Evaluation Summary

The contaminants of concern (COCs) for the site are listed in Table 11. PCBs were detected in one sample near the transformer exceeding the ADEC Method Two soil cleanup level. The cumulative risk calculation following ADEC guidance indicated an excess cancer risk of 2×10^{-5} and a hazard index (non-carcinogenic health effects risk) of 2. Both of these are above the ADEC risk management standards (18 AAC 75.325[h]). This calculated risk is based on the single detected concentration of PCBs (5.83 mg/Kg) and a residential exposure scenario. However, a residential scenario is not representative of the current or projected site use. The cumulative risk calculated under an industrial scenario does not exceed risk management standards. Furthermore, the volume of contaminated soil is so small and localized that actual risk is probably much less than calculated using these standard calculations.

PCBs are stable compounds and persistent in the environment. Due to the low surface gradient and the insolubility of PCBs in water, migration of the PCBs is unlikely to occur via surface water runoff. However, dispersion of the contaminated soil could occur by wind or vehicle traffic at the site. PCBs can bioaccumulate. This risk is not accounted for in the cumulative risk calculations but is probably minimal due to the small volume of contaminated soil.

The diesel spill area near the tank has low levels of petroleum hydrocarbons in the soil and minimal migration has occurred from the point of release. Downgradient water sample results do not indicate any impact to surface water. No petroleum hydrocarbons exceeded ADEC Method Two cleanup levels for the Arctic Zone, which are protective of human health under a conservative residential scenario. Unless moved by human activity, the petroleum hydrocarbons in the soil should remain in place and naturally attenuate. No cleanup of the petroleum hydrocarbons needs to be taken to protect human health or the environment.

Proposed Action

The site is proposed for remedial action under CERCLA and Alaska State laws and regulations to address the PCB contaminated soil above 1 mg/Kg. The soil with PCBs above 1 mg/Kg beneath the transformer stand is proposed for removal and offsite (out of state) disposal consistent with the Off-Site Rule (40 CFR 300.440). The estimated volume of soil above the cleanup level is approximately 0.25 cubic yards.

The remedial alternatives considered for the PCB contaminated soil at SS013 were no action, institutional controls, solidification, onsite treatment via thermal desorption, and offsite disposal. A comparison of the alternatives is shown in Table 10. For the same reasons as discussed for SS012, removal and offsite disposal is the most cost-effective and readily implementable approach to meet the remedial objectives established for Point Lonely SRRS.

No cleanup action will be taken to address the petroleum hydrocarbons detected in the soil near the tank. The concentrations of DRO in the soil near the tank are between levels established for conditional and full closure (Table 3). Therefore, the site will be conditionally closed under 18 AAC 75 following removal of the PCB contaminated soil above 1 mg/Kg. The conditions associated with the closure will be as described on page 8. The restrictions on soil movement will only apply to the area (soil) with DRO concentrations above full closure cleanup levels (Table 3).

NON-CERCLA SITES

Samples and analyses collected at these sites have not identified CERCLA hazardous substances. Therefore, no CERCLA action is necessary at these sites and no action will be taken in regards to CERCLA. Instead, these sites are being investigated and addressed under Alaska State laws and regulations, particularly those promulgated in 18 AAC 75. If necessary, any remedial actions will be conducted in accordance with 18 AAC 75.

SEWAGE DISPOSAL AREA (SS001)

Site Background and Description

SS001 is the former location of an old domestic sewage outfall located on the beach northwest of the installation. During the 1993 RI, three inactive outfall pipes leading from the installation were present and discharged from the bluff onto the beach. Since 1993, a significant amount of shoreline erosion has occurred. No evidence of the outfall pipes was observed during the 2005 RI. Based on a review of historical aerial photography conducted as part of the 2005 RI, the end of the former outfall pipes are estimated to be located 130 feet offshore (see Figure 9).

Remedial Investigations (RIs)

During the 1993 RI, the pumphouse and pipeline that are part of SS003 were investigated along with the Sewage Disposal Area. Soil, sediment, and water samples were collected during the 1993 RI, but only a few of the soil samples were associated with SS001. Samples were not collected directly below the outfall pipes. Samples were analyzed for petroleum hydrocarbons, VOCs, and SVOCs. Petroleum hydrocarbons were detected. However, the contamination was attributed to the pipeline and diesel tanks. Sample results from adjacent sides of the outfall did not detect significant contamination.

During the 2005 RI, one sediment sample was collected from a surface drainage leading from the tundra bluff line to the beach and analyzed for VOCs, PAHs, PCBs, and metals. The sample location was near the route traversed by the sewage line. All results were low to nondetectable. The sample was not collected at the actual location of the sewage outfall because the area had eroded.

Risk Evaluation Summary

There are no contaminants of concern (COCs) at this site. A risk assessment using the 1993 RI data determined that the risks to human health and ecological receptors posed by contamination at the site were minimal given the current and future site uses. The extensive erosion along the shoreline has left no evidence of the sewage outfall. No samples collected in 2005 exceeded screening criteria.

No remedial action or land use controls are necessary to ensure protection of human health and the environment. The site has eroded and no longer exists. Residential land use of the area is not possible.

Proposed Action

The site is proposed for closure under Alaska State laws and regulations.

DIESEL SPILLS (SS005)

Site Background and Description

The Diesel Spills site consists of two above ground tank farms and a pumphouse on a gravel pad located southwest of the main installation. The eastern tank farm contains the installation's original two diesel tanks. It was reported that a 25,000-gallon diesel spill occurred from a break in the fuel line in 1978 near these two tanks. The specific location of the spill is not documented, but is believed to be near the western side of the area based on a 1981 site figure. The western tank farm is located approximately 200 feet west of the eastern tank farm. It contains six large tanks with a combined capacity greater than two million gallons. The area between the two tank farms consists of a large gravel pad. A road separates the two tank farms that provides access to site SS006 / LF011 and a lake approximately two-thirds of a mile to the south.

Looking west at the western tank farm.

DIESEL SPILLS (SS005), CONTINUED

Remedial Investigations (RIs)

Soil, sediment, and surface water samples were collected outside the containment areas during the 1993 RI. Samples were analyzed for petroleum hydrocarbons and related compounds. The maximum soil concentrations of GRO and DRO were 120 and 4,300 mg/Kg, respectively. The sample was collected in the gravel pad between the two tank farms. The maximum benzene concentration in surface water was 21 µg/L, which exceeds the drinking water MCL. The 1993 RI/FS recommended the site for remedial action due to the exceedances of ADEC Method One soil cleanup levels.

During the 2005 RI, soil samples were collected within the containment areas and in the central gravel pad. In addition, surface water and sediment samples were collected in the surrounding tundra. The sample results indicated that portions of the pad had been impacted by diesel spills. In general, petroleum concentrations were higher in the eastern tank farm with a maximum DRO concentration of 6,040 mg/Kg. The western tank farm had a maximum DRO concentration of 2,070 mg/Kg. DRO was also detected in the pad areas between the two tank farms with a concentration up to 1,400 mg/Kg. DRO was detected in the soils at the pumphouse up to 1,850 mg/Kg. The average concentrations of DRO in these areas were considerably less than these maximums. No contaminants exceeded ADEC Method Two cleanup levels and surface water samples indicated minimal migration on contamination. Most compounds in the water were nondetectable and none exceeded screening criteria (Table 2). The 2005 RI report recommended SS005 for no further action.

Risk Evaluation Summary

There are no contaminants of concern (COCs) at this site that warrant cleanup action (Table 12). The concentrations of DRO detected in the soil are between levels established for conditional and full closure (Table 3). No soil samples exceeded the risk-based screening criteria protective of human health under a residential exposure scenario (Table 2). Surface water samples from the surrounding tundra indicate little migration has occurred from the containment areas. The site is not susceptible to erosion. The petroleum hydrocarbons in the soil should remain in place and naturally attenuate over time.

Cumulative risk calculations performed during the 2005 RI resulted in a human cancer risk of 0 and a hazard index (non-cancer health effects risk) of 0.02. The current site conditions meet the ADEC risk management standards of 18 AAC 75.325(h). No remedial action is necessary to ensure protection of human health and the environment under the current conditions. However, the maximum DRO and RRO concentrations exceeded full closure cleanup levels (Table 3). If the soils were moved and placed in contact with surface water, Alaska Water Quality Standard exceedances may occur.

Figure 7—Diesel Spills (SS005) Site Features

DIESEL SPILLS (SS005), CONTINUED

Table 12—Diesel Spills (SS005) Summary

Potential Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation[1]
DRO	Soil (milligrams per kilogram [mg/Kg])	6,040	12,500	18 AAC 75.341 (Table B2, Arctic Zone)

Proposed Action

The site is proposed for conditional closure under Alaska State laws and regulations. The conditions associated with the closure will be as described on page 8.

VEHICLE STORAGE AREA (SS006)/ INACTIVE LANDFILL (LF011)

Site Background and Description

The Inactive Landfill/Vehicle Storage Area is located directly south of site SS005 and southwest of the main installation. It is adjacent to the road leading to the freshwater lake one-half mile to the south, which was the facility's drinking water source. The site consists of a gravel pad surrounded by tundra. Administratively, there are two sites at this location, SS006 and LF011. However, the boundaries of these two sites are indistinct. The pad has historically been a storage area for materials and vehicles. It is also a permitted Class III landfill under the ADEC Solid Waste Management Program (18 AAC 60), Permit No. 8636-BA-010. It was permitted to receive solid waste between July 31, 1986 and August 1, 1991, but never received formal closure under 18 AAC 60.

Looking north at SS006/LF011 following 2005 capping and grading. Tanks of SS005 in background.

During the summer of 2005, the USAF recapped and graded the surface of the landfill to fulfill landfill closure requirements under 18 AAC 60. The USAF is continuing to pursue closure of the landfill under 18 AAC 60 as part of its Environmental Compliance Program. The USAF intends to retain the Right-of-Way for the landfill area indefinitely unless it is removed or another entity takes responsibility for its management. The site is not listed in the ADEC Contaminated Sites database. ADEC manages the site under its Solid Waste Program.

Remedial Investigations (RIs)

Sediment, surface water, and surface soil samples were collected during the 1993 RI. Samples were analyzed for a wide variety of compounds including GRO, DRO, RRO, BTEX, VOCs, SVOCs, PCBs, pesticides, and metals. The only compound to exceed screening criteria was in a surface water sample northwest of the gravel pad where total aromatic hydrocarbons (TAH; the sum of BTEX compounds) was 28 micrograms per liter (µg/L), which is above the Alaska Water Quality Standard (18 AAC 70) of 10 µg/L. The 1993 RI recommended the site for no further action due to the minimal contamination and human health risk associated with the site.

During the 2005 RI, a subsurface geophysical (electromagnetic) survey of the landfill area was conducted to determine the location of buried metallic debris. Two broad geophysical anomalies were detected: one at the north end and another in the central portion of the gravel pad (Figure 8). The anomalies were approximately 5,000 and 3,000 square feet in size. The anomalies correspond to areas where significant quantities of buried metal debris are likely to be buried. A site inspection revealed no evidence of surface staining, petroleum sheens on waterbodies, or stressed vegetation. A single surface water sample was collected northwest of the gravel pad in a similar location as the 1993 water quality exceedance. The sample was analyzed for VOCs and PAHs. The sample results were all nondetectable or below Alaska Water Quality Standards. The site was recommended for no further action under CERCLA or 18 AAC 75.

VEHICLE STORAGE AREA (SS006)/ INACTIVE LANDFILL (LF011), CONTINUED

Risk Evaluation Summary

There are no contaminants of concern (COCs) at the site. The 1993 RI found no compounds above ADEC Method One cleanup levels in the soil. The 1993 RI surface water exceedance of benzene had attenuated to nondetectable in 2005. Migration of contaminants from the gravel pad is not occurring. No remedial action or land use controls are necessary to ensure protection of human health and the environment from contaminants.

Proposed Action

No action or closure is necessary under 18 AAC 75 because the site is a permitted landfill under 18 AAC 60.

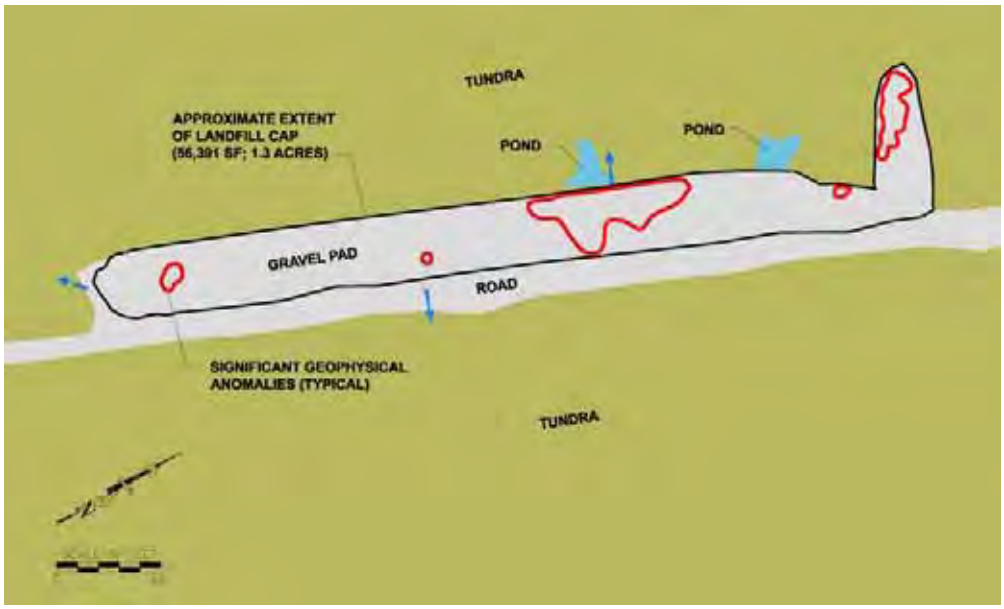


Figure 8—Vehicle Storage Area/Inactive Landfill (SS006/LF011) Site Features

DIESEL TANK (SS010)

Site Background and Description

The Diesel Tank site is the former location of a 20,000-gallon fuel tank and is located southwest of the hangar. Based on a review of historical photographs, the tank was removed some time between 1981 and 1992. The site currently consists of a gravel bermed area, a pumphouse to the west of the berm, and tundra to the south and west. Tank supports within the bermed area and associated piping to the pumphouse are still present. A liner is present in the containment area and covered with approximately 3 to 4 inches of gravel.

Looking west at bermed area and pumphouse.

Remedial Investigations (RIs)

Soil, sediment, and surface water samples were collected during the 1993 RI. The results indicated that the site was contaminated with compounds associated with diesel fuel. Soil samples were focused outside the bermed area and concentrated on possible migration pathways. The maximum sediment concentrations of GRO and DRO were 380 and 900 mg/Kg, respectively, collected at the southwest corner of the bermed area. The baseline risk assessment concluded the risk posed to human health or ecological receptors was minimal. The site was recommended for no further action due to the low contaminant concentrations and minimal risk to human health.

DIESEL TANK (SS010), CONTINUED

Soil, sediment, and surface water samples were collected during the 2005 RI to evaluate the current site conditions and associated risk. These samples were analyzed for fuel-related compounds. Soil samples were collected within the bermed containment area at multiple depths, and outside the containment area to assess migration pathways. The maximum DRO and RRO concentrations detected in soil were 2,510 and 572 mg/Kg, respectively. DRO was the only compound to exceed the most stringent ADEC Method Two cleanup level. BTEX and PAH compounds were low or nondetectable in soil samples. Surface water samples contained very low to nondetectable levels of BTEX and PAHs. The sediment sample directly southwest of the pumphouse exceeded NOAA SQuiRT permissible exposure limits (PELs) for acenaphthene, fluorene, naphthalene, and total PAHs. However, the PELs were for marine environments, and the only aquatic habitat at the site is small freshwater ponds. The site was recommended for no further action.

Risk Evaluation Summary

There are no contaminants of concern (COCs) at SS010 that warrant cleanup (Table 13). No samples exceeded the risk-based screening criteria protective of human health and the environment. The concentrations of DRO detected in the soil are between levels established for conditional and full closure (Table 3). Cumulative risk calculations were not performed in 2005 because no compounds exceeded 1/10 Method Two soil cleanup levels. The site conditions are protective of surface water. Water samples collected along the edge of the pad indicate that the petroleum hydrocarbons attenuate to nondetectable or very low concentrations before reaching adjacent water bodies. There are no Alaska Water Quality Standard exceedances. No remedial action is necessary to ensure protection of human health and the environment under the current site conditions. The site is not susceptible to erosion. The petroleum hydrocarbons in the soil should remain in place and naturally attenuate over time. However, if the soils were moved and placed in contact with surface water, Alaska Water Quality Standard exceedances may occur.

Proposed Action

The site is proposed for conditional closure under Alaska state laws and regulations. The conditions associated with the closure were described on page 8.

Table 13—Diesel Tank (SS010) Summary

Potential Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation
DRO	Soil (milligrams per kilogram [mg/Kg])	2,510	12,500	18 AAC 75.341 (Table B2, Arctic Zone)

DRUM STORAGE AREA (SS002)

Site Background and Description

The Drum Storage Area consists of an approximately 45-foot by 100-foot gravel pad directly adjacent to the access road leading from the installation to the Beaufort Sea. Due to its location next to the barge landing, its historical and current use is primarily temporary storage during the loading and off loading of materials. SS002 was reportedly used for temporary storage of drummed products. No drums or other materials were present on the pad during the 1993 RI. During the 2005 RI, the gravel pad was used as a staging area during the demolition of the tanks and pipeline at SS003. The pad is bordered to the west and east by vegetated tundra with some ponded surface water to the west. The pad is located approximately 300 feet from the current shoreline. Based on historical rates of coastal erosion, the pad is likely to begin to erode on its northwest (seaward) end around year 2025. However, the shoreline could reach the area sooner if the erosion rates increase.

Looking north at SS002 with road to beach on the right side of photograph. Materials were stored at the site during cleanup work in 2005.

DRUM STORAGE AREA (SS002), CONTINUED

Remedial Investigations (RIs)

Soil, sediment, and surface water samples collected during the 1993 RI detected low levels of petroleum hydrocarbons. A stained area several feet in diameter was noted in the southwest corner of the gravel pad. A soil sample from the stained area contained DRO and RRO at concentrations of 1,000 and 1,300 mg/Kg, respectively. The petroleum contamination was attributed to leaks or spills from previous drum storage activities. The site was recommended for remedial action to address the stained soil in the southwest corner of the pad, which exceeded the ADEC Method One soil cleanup level.

During the 2005 RI, soil and water samples were collected to confirm the 1993 RI results. Samples were analyzed for DRO, RRO, BTEX, and PAHs. The maximum DRO and RRO soil results were 1,600 and 3,200 mg/Kg, respectively. ADEC Method Two cleanup levels for the Arctic Zone were not exceeded in any sample. The surface water sample collected northwest of the site did not contain compounds above risk-based screening criteria (Table 2). The site was recommended for closure based on the low concentrations of compounds. However, the ADEC requested cleanup of the pad to Method One cleanup levels due to the potential for erosion of the pad. The concentrations of DRO and RRO exceed the cleanup levels proposed for coastal sites (Table 3).

Table 14—Drum Storage Area (SS002) Summary

Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation
DRO	Soil (milligrams per kilogram [mg/Kg])	1,600	200 (500)[1]	18 AAC 75.341 (Table A2, Arctic Zone)
RRO		3,200	2,000	18 AAC 75.341 (Table A2, Arctic Zone)

[1] The DRO cleanup level of 500 mg/Kg is applicable if the total BTEX is < 15 mg/Kg and benzene is < 0.5 mg/Kg.

Risk Evaluation Summary

The contaminants of concern (COCs) at the site are DRO and RRO in the soil (Table 14). The concentrations of all detected compounds are below the risk-based Method Two cleanup levels for the Arctic Zone. The contaminated areas appear to be small and confined to the gravel pad. Downgradient water samples indicate significant contaminant migration is not occurring. Under the current site conditions, the site does not pose a significant risk to human health and the environment. However, the site is susceptible to erosion. Erosion of the contaminated areas of the pad may cause the petroleum hydrocarbons to come in contact with surface water. This may cause temporary and localized sheening on surface water, which could be a violation of Alaska Water Quality Standards (18 AAC 70).

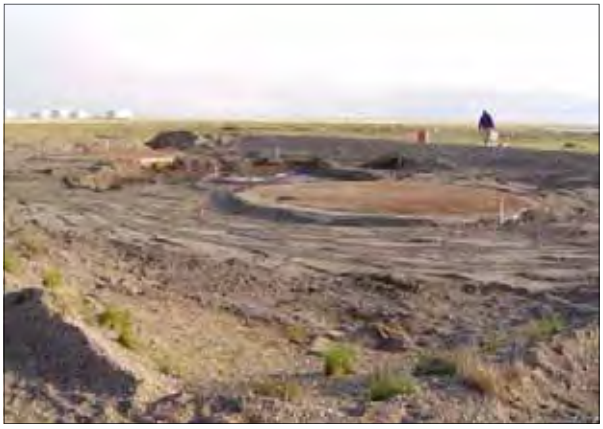
Proposed Action

The site is proposed for remedial action under Alaska State laws and regulations. The proposed action is to excavate the soil with concentrations above cleanup levels proposed for coastal areas in Table 3. It is anticipated the excavated soil will contain concentrations of petroleum hydrocarbons significantly below ADEC Method Two cleanup levels for the Arctic Zone. Therefore, the soil will be moved inland and spread on the ground surface in a location where it no longer poses a risk to surface water. The proposed landspreading location is SS005, which is proposed for conditional closure due to concentrations of DRO in the soil (see page 23 regarding SS005). If the excavated soil is above Method Two cleanup levels, it will be shipped offsite to a treatment, storage and disposal facility permitted to accept the waste. After the soil above the proposed cleanup levels has been removed, SS002 can receive unconditional closure under 18 AAC 75.

BEACH DIESEL TANKS, PUMPHOUSE, AND PIPELINE (SS003)

Site Background and Description

Site SS003 consists of a former fuel storage and distribution facility located near the beach northwest of the main installation. It contained two diesel tanks in a bermed containment area, a pumphouse located approximately 300 feet northwest of the tank farm, and a pipeline running from the tank farm to the beach. The structures and piping were removed in 2005. The concrete slabs that formed the bases of the tanks are still present. The coastline in this area has undergone significant erosion. The pumphouse was located on the bluff above the beach. However, the bluff has receded and most of the soil around the pumphouse has been deposited on the beach or washed away. It is estimated the pumphouse area will be entirely eroded by 2010. The tank farm is located less than 200 feet from the coastline. It is estimated the tank farm area will begin to erode around 2020.



Looking southeast at concrete slabs remaining after fuel tanks were removed.

Remedial Investigations (RIs)

During the 1993 RI, soil, sediment, and surface water samples were collected around the pumphouse, the beach tanks, and the beach area near where the fuel pipeline terminated. Samples were analyzed for compounds associated with diesel fuel. The maximum DRO concentration was 16,000 mg/Kg collected on the bluff above the beach near a valve on the fuel pipeline from the beach tanks. This area has since eroded. In the pumphouse area, the maximum DRO concentration was 6,300 mg/Kg. Surface water near the pumphouse contained only low levels of VOCs, which were below screening criteria. A stained area was noted between the two beach diesel tanks where piping and valves were located. A soil sample collected at this location had the highest concentrations of GRO and DRO (150 and 15,200 mg/Kg) detected in the tank farm area. Surface water samples near the beach tanks did not detect any contaminants and migration did not appear to be occurring. A risk assessment associated with the 1993 RI/FS indicated minimal risk at the beach and the tank farm. However, both areas were recommended for remedial action to address the exceedances of ADEC Method One cleanup levels for DRO.

A large storm in August 2002 caused significant erosion of the coastline and the pumphouse fell off the bluff onto the beach. In 2005, the USAF removed the diesel tanks, pumphouse, and piping from the area. In addition, approximately 200 cubic yards of petroleum contaminated soil was excavated within the tank farm. Soil was primarily removed from between the two tanks. The excavated soil was placed in super sacks and is currently stored at SS005. Soil samples were collected in the tank farm and along the former pipeline route following demolition and soil removal. No contamination was detected along the former pipeline route to the beach from the tank farm. Three soil samples within the tank farm contained DRO above 500 mg/Kg, with a maximum concentration of 4,270 mg/Kg.

Soil, sediment, and surface water samples were collected during the 2005 RI near the pumphouse and at the tank farm. At the pumphouse area, DRO was the only compound to exceed ADEC Method One or Two soil cleanup levels. The maximum DRO detected was 28,000 mg/Kg. This surface soil sample was collected where the pipeline had entered the building. This was the only sample to exceed ADEC Method Two cleanup levels for the Arctic Zone. DRO levels decreased toward the ocean, and were less than the 100 mg/Kg on the beach. A sediment sample collected near the pumphouse on top of the bluff exceeded NOAA SQuiRTs for marine sediments for acenaphthene, fluorene, phenanthrene, and total PAHs. The surface water sample at the same location did not exceed screening criteria. Two soil samples within the tank farm exceeded the ADEC Method One cleanup level of 500 mg/Kg for DRO. The maximum DRO concentration in the tank farm was 4,780 mg/Kg (Table 15). Two areas at the tank farm and one at the pumphouse exceed the DRO Method One cleanup level of 500 mg/Kg (Figure 9).

Risk Evaluation Summary

The only contaminant of concern (COC) at SS003 is DRO in the soil (Table 15). DRO was detected above the ADEC Method Two cleanup level in one sample at the pumphouse, but the exceedance appeared localized. The typical DRO concentrations were less than 1,000 mg/Kg. BTEX and PAH compounds were detected at low to nondetectable concentrations in the soil. None exceeded risk-based screening criteria (1/10 Method Two cleanup levels). Therefore, the risk to human health is considered low. However, the pumphouse and tank farm are located in close proximity to an actively eroding shoreline. The pumphouse area is already eroding, and the tank farm is anticipated to incur erosion in less than 20 years. The eroding soil containing petroleum hydrocarbons may cause localized and temporary sheening on the surface water when it erodes. This may be a violation Alaska Water Quality Standards.

BEACH DIESEL TANKS, PUMPHOUSE, AND PIPELINE (SS003), CONTINUED

Table 15—Beach Diesel Tanks, Pumphouse, and Pipeline (SS003) Summary

Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation
Beach Diesel Tanks Area				
DRO	Soil (mg/Kg)	4,780	200 (500)[1]	18 AAC 75.341 (Table A2, Arctic Zone)
Pumphouse Area				
DRO	Soil (mg/Kg)	28,000	200 (500)[1]	18 AAC 75.341 (Table A2, Arctic Zone)

[1] The DRO cleanup level of 500 mg/Kg is applicable if the total BTEX is < 15 mg/Kg and benzene is < 0.5 mg/Kg.

Proposed Action

Site SS003 is proposed for remedial action under Alaska State laws and regulations. The proposed action is to remove the soil with concentrations above those proposed for a coastal site (Table 3) at both the pumphouse and beach diesel tanks. The soil with concentrations above Method Two cleanup levels for the Arctic Zone will be shipped offsite to a treatment, storage or disposal facility permitted to accept the waste. The excavated soil not shipped offsite will be moved inland and spread on the ground surface in a location where it no longer poses a risk to surface water. The proposed landspreading location is SS005, which is proposed for conditional closure (see page 23 regarding SS005). After the soil above the proposed cleanup levels has been removed, SS003 can receive unconditional closure under 18 AAC 75.

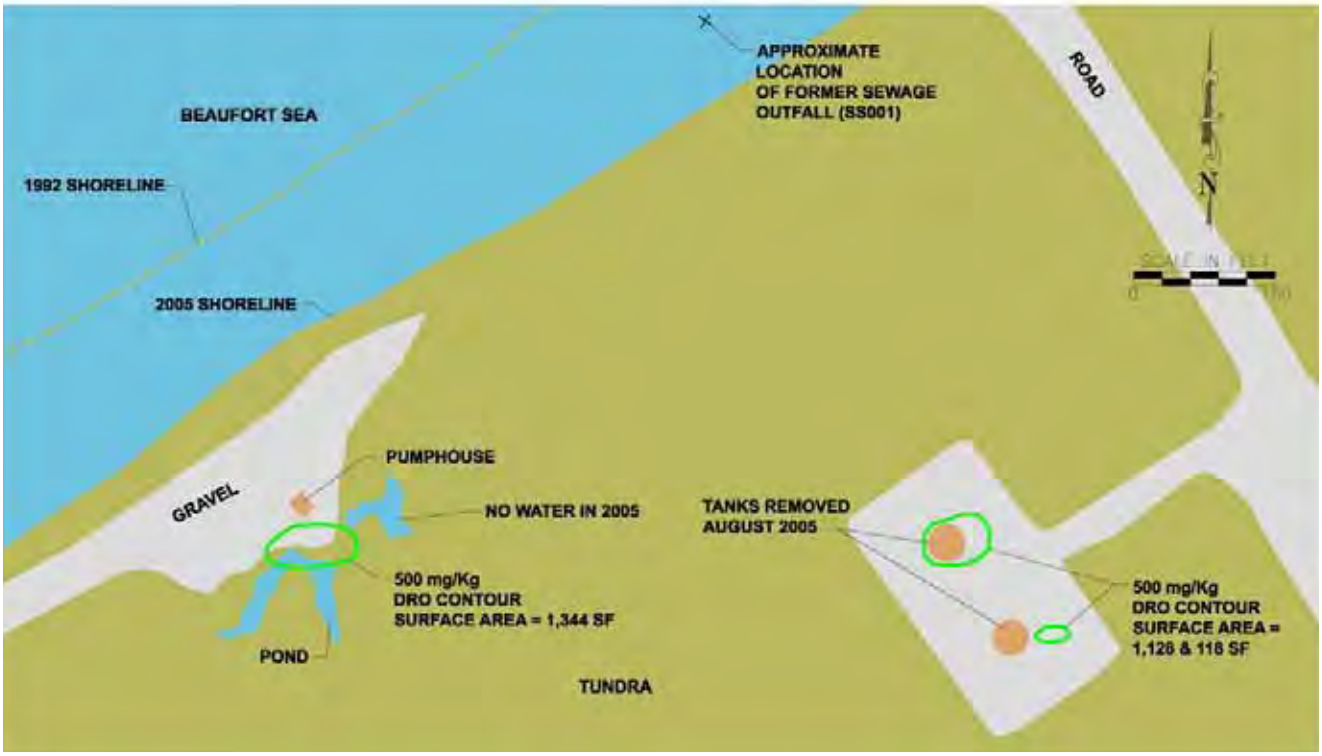


Figure 9—Beach Diesel Tanks, Pumphouse, and Pipeline (SS003) Site Features

AREAS OF CONCERN

Six areas of concern (AOCs) were identified and investigated as part of the 2005 and 2006 remedial investigations. The AOCs were areas that had not been previously investigated, but were considered to have the potential to be contaminated based on their site history. The site investigations were conducted to determine if further investigation was warranted. Of those six AOCs, only three had concentrations of contaminants above the most stringent Method Two cleanup levels (Table 3). These three AOCs are shown on Figure 1 and listed below:

- Aircraft Fuel Stand 1 (AOC01);
- Aircraft Fuel Stand 2 (AOC02); and
- Central Tank Farm (AOC03).

The three AOCs listed above are located on the large gravel pad in the central portion of the installation. They were facilities used for fuel storage or distribution. All three AOCs are currently listed in the ADEC Contaminated Sites database as open sites (not closed).

Soil and water samples were collected at the AOCs and analyzed for compounds associated with diesel or aviation fuel. Method Two soil cleanup levels for the Arctic Zone were not exceeded for any compounds. BTEX and PAH compounds did not exceed 1/10 Method Two cleanup levels for the Arctic Zone. However, the most stringent Method Two cleanup level (Table 3) was exceeded for DRO. Table 16 lists the maximum concentrations of DRO detected at each AOC. Surface water samples were collected downgradient of each AOC. The surface water samples contained low to nondetectable concentrations of contaminants, indicating the petroleum hydrocarbons in the soil were not adversely impacting surface water. The pad areas are stable and not threatened by erosion. It is anticipated the petroleum hydrocarbons in the soil will remain in place and naturally degrade over time.

Table 16—Area of Concern (AOC) Site Summary

AOC	Potential Contaminant of Concern (COC)	Media	Maximum Sample Result	Regulatory Standard & Proposed Cleanup Level	Citation[1]
AOC01 (Aircraft Fuel Stand 1)	DRO	Soil (milligrams per kilogram [mg/Kg])	3,540	12,500	18 AAC 75.341 (Table B2)
AOC02 (Aircraft Fuel Stand 2)	DRO		1,640	12,500	18 AAC 75.341 (Table B2)
AOC03 (Central Tank Farm)	DRO		4,380	12,500	18 AAC 75.341 (Table B2)

[1] All citations and the associated cleanup levels are for the Arctic Zone.

Based on these investigations, there is minimal risk to human health and environment at the three AOCs. No remedial action is necessary to ensure protection of human health and the environment based on the current site conditions. However, the maximum DRO concentrations exceeded the full closure cleanup level (Table 3) at each AOC. Therefore, all three AOCs are proposed for conditional closure under Alaska state laws and regulations (18 AAC 75). The conditions associated with the closure will be as described on page 8.

Questions?

If you have any questions about the information provided in this Proposed Plan, or if you would like to be added to or deleted from the mailing list, please contact the Air Force Community Relations Coordinator:

611 CES/CEVR
10471 20th Street, Suite 340
Elmendorf Air Force Base, AK 99506-2200
(907) 552-4506 or (800) 222-4137

Additional Information

You are encouraged to provide comments on any of the alternatives presented in this Proposed Plan for Point Lonely SRRS. Use the comment form provided on page 33. A final decision on the alternatives for each of these sites will not be made until public comments are considered. Your comments can be provided to the USAF by any of the following methods:

- Mailing in the included Comment Form;
- Discussing your comments or questions over the phone with USAF Project Manager Stan Slagle at 1-800-222-4137 or 907-552-4489;
- Submitting a completed Comment Form at the public meeting (see scheduled date and time below); or
- Presenting your comments verbally at the following scheduled public meeting:

Date: December 13, 2007

Time: 7:00 pm

Place: North Slope Borough Assembly Chambers, Barrow, Alaska

The public comment period will end **January 11, 2008**.

Involving the public in the ERP decision-making process is required by 40 Code of Federal Regulations (CFR) 300 for sites on the NPL. Although Point Lonely SRRS is not on the NPL, the USAF is committed to keeping the community informed of activities, investigations, and cleanup schedules at the site. Some of the community relations activities that the 611 Civil Engineering Squadron (CES) spearheads include the following:

Information Repositories and Online Web Site

Additional information can be found in the information repositories located at Elmendorf Air Force Base (AFB). The information repositories contain newspaper clippings and community relations documents relating to Proposed Plans and response actions for all of the ERP sites maintained by the 611 CES Community Relations Coordinator at Elmendorf AFB.

A Web Site is also available to the public for additional information on Point Lonely SRRS:

http://www.adminrec.com/PACAF.asp?Location=Alaska

Some of the more recent reports are available online at the following website:

http://www.hoeflernet.com/reports/point_lonely/point_lonely.html

Continued on page 35

Point Lonely SRRS Proposed Plan Comment Form

You are encouraged to comment on this Point Lonely SRRS Proposed Plan. The USAF and ADEC will consider all comments received. Use the space provided to submit your comments. Fold, tape, and mail this form when you are finished. A return address has been provided on the back of this page for your convenience. Comments must be postmarked by January 11, 2008. If you have any questions or concerns, feel free to contact the Community Relations Coordinator at (907) 552-4506 or (800) 222-4137.

Name:

Address:

City & State:

Zip Code:

Telephone Number:

Proposed Plan for Twelve ERP Sites
Point Lonely
Short Range Radar Station, Alaska

Please Affix
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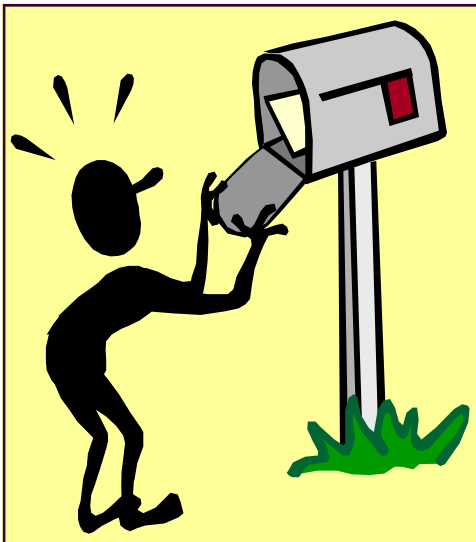
Postage Here

Community Relations Coordinator
10471 20th Street, Suite 340
Elmendorf AFB, AK 99506-2200

Additional Information (Continued)



Updated Mailing List

A mailing list of interested parties is maintained and updated regularly by the USAF Community Relations Coordinator. These mailing lists are used to provide interested parties with copies of the newsletters, fact sheets, and public notices and to announce public meetings that pertain to environmental issues at the various installations.

1-800 Hotline

A toll-free number to the 611 CES Community Relations Coordinator provides immediate access to the 611 CES for questions and information relating to environmental activities at 611 CES sites. The number is **1-800-222-4137**.

Administrative Record

An Administrative Record has been established in the 611 CES offices on Elmendorf AFB. The Administrative Record contains information that has been used to support USAF decision making and is accessible to the public.

Management Action Plan

The Management Action Plan is updated periodically and made available to the public to provide a summary of all restoration activities in one document.

Restoration Advisory Board

Restoration Advisory Boards (RABs) provide a forum for discussion and exchange of information among federal and state agencies and the community regarding cleanup of a military site. The RAB plays an important role in the decision-making process. Environmental concerns regarding the Point Lonely SRRS are addressed by the Barrow RAB.

Proposed Plan Online

An electronic copy of this Proposed Plan can be found on the following website:

www.dec.state.ak.us/spar/csp/docs/northern/ptlonely_pp_12_07.pdf

Community Relations Coordinator
611 CES/CEVR
10471 20th Street, Suite 340
Elmendorf AFB, AK 99506-2200

AFFIX ADDRESS LABEL HERE

Please remember to complete the included Comment Form.