



THE STATE  
of **ALASKA**  
GOVERNOR BILL WALKER

## Department of Environmental Conservation

Division of Spill Prevention and Response  
Contaminated Sites Program

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File No: 320.38.004

November 7, 2016

Lori Roy, USAF Remedial Project Manager USAF - Elmendorf  
611 CES/CEAR  
1047 20th Street  
Elmendorf AFB, JBER, Alaska 99506-2201

### **Re: Decision Document: Lonely AFS Dewline – Site SS004 (Pond A), Cleanup Complete Determination**

Dear Ms. Roy:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the Lonely AFS Dewline, Site SS004 – Petroleum Oil and Lubricant (POL) Storage Area, located within the U.S. Air Force (USAF) Point Lonely Short Range Radar Station (SRRS). The SS004 activities have been underway since the signing of the August 2008 Record of Decision (ROD), with the most recent sampling activities completed during the summer field seasons of 2016, which were conducted in accordance with DEC-approved project work plans. Based on the information provided to date, DEC has determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment and no further remedial action will be required unless new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the Lonely AFS Dewline Site, which is located in the DEC office in Fairbanks, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

#### **Site Name and Location**

Lonely AFS Dewline – Landfill SS004  
Point Lonely SRRS  
75 miles northwest of Nuiqsut, AK 99789 Section 17, Township 18 North, Range 5 West, Umiat Meridian

#### **Name and Mailing Address of Contact Party**

Lori Roy, USAF Remedial Project Manager USAF – Elmendorf  
611 CES/CEAR  
1047 20th Street

Elmendorf AFB, JBER, Alaska 99506-2201

### **DEC Site Identifiers**

File No: 320.38.004

Hazard ID: 2926

### **Regulatory Authority for Determination**

18 AAC 75 (18 AAC 70 by reference)

### **Site Description and Background**

The Point Lonely SRRS was constructed in 1953 as an auxiliary Distant Early Warning Line Station and was active until 1989. In 1993, the Point Lonely installation was converted to an SRRS, which operated until 2005. It is situated approximately one-mile west of Pitt Point and occupies approximately 1,800 acres consisting of manmade gravel pads and undisturbed tundra. The nearest communities are Nuiqsut, located 75 miles southeast, and Barrow, located approximately 85 miles northwest. Prudhoe Bay/Deadhorse is located approximately 150 miles to the southeast.

The site was a former POL Storage Area (SS004) and is located approximately 500 feet (ft) southwest of the runway and includes a gravel pad. It is located north of Site SS005 and is adjacent to the road leading to the Beaufort Sea. Site SS004 contains a small surface water body (also referred to as Pond A) located on the west side of a gravel pad that is approximately 4 to 5 feet thick and rests above the native tundra. Previous studies have reported exceedances of volatile organic carbons (VOCs) above their respective Alaska Water Quality Standards (AWQS) in Pond A. The size and depth of the pond vary seasonally from year to year in response to the amount of snow accumulation along with the rate discharge and duration of the active zone water that daylight from the adjacent gravel pad. The former POL area's gravel pad is unvegetated, yet lush vegetation consisting of tundra surrounds Pond A on the north, west, and south sides and to the areas located further to the west of the gravel pad.

### **Contaminants of Concern**

The following contaminants of concern were reported above the approved cleanup levels during the course of the assessments and remedial actions conducted at LF011 as summarized in the Characterization and Cleanup Activities section of this letter:

- Volatile Organic Compounds (VOCs)
- Total Aromatic Hydrocarbons (combined benzene, toluene, ethylbenzene, xylenes, or BTEX)
- Total Aqueous Hydrocarbons (BTEX plus total poly aromatic hydrocarbons)

Soil was not found to exceed cleanup criteria with the exception of a single sample collected at 5.0 – 5.3 feet below grade, where xylenes were detected at 73.7 mg/kg, exceeding the cleanup level of 63 mg/kg for Method 2 Inhalation for Arctic zone. The single sample result was bounded by samples that were significantly below the cleanup level at that time, and the pending cleanup level Human Health cleanup level of 57 mg/kg, to be in effect November 6, 2016.

### **Cleanup Levels**

Concentrations of volatile organic compounds (VOCs) in surface water were found to exceed the Alaska Water Quality Standards (AWQS) for surface water. The DEC migration to groundwater standard is not applicable for SS004 since the underlying permafrost and freezing temperatures prevent the formation of a groundwater aquifer and restrict the vertical migration of contaminants.

The surface water cleanup criteria for the COCs for SS004 are summarized on Table 1 below per the August 2008 Final Decision Document:

**Table 1 – Point Lonely SS004 Surface Water Cleanup Levels**

<b>Chemical of Concern</b>	<b>18 AAC 70 Alaska Water Quality Standards (µg/l)</b>	<b>Highest Concentration Detected in Surface Water (µg/l)</b>
Benzene	5	562
Toluene	1,000	1,220
1,1-Dichloroethene	7	8.74
cis-1,2-Dichloroethene	70	1,360
Tetrachloroethene	5	1,883
Trichloroethene	5	285
TAH	10	2,313
TAqH	15	2,313

Notes:

µg/L – micrograms per Liter

1. TAH - total aromatic hydrocarbons, means the sum of benzene, ethylbenzene, toluene, and xylene isomers.
2. TAqH - total aqueous hydrocarbons, means those collective dissolved and water-accommodated monoaromatic and polynuclear aromatic hydrocarbons.
3. 18 AAC 70.020 Water Quality Standards Table

### **Characterization and Cleanup Activities**

The source of the contamination is believed to be from fuel and solvents stored at SS004. It is suspected that over time drums leaked and spilled substances onto the surface of the pad. However, the only significant source of contamination was found in Pond A surface water adjacent to the pad. Pond A is located directly down gradient from the former location of the JP-4 tank. However, soil samples collected up gradient from the pond did not indicate the presence of fuel or solvent contamination, and sediment samples collected from Pond A contained only trace levels of solvents. Therefore, sample results have provided no indication that contaminants are leaching into the water from the soils or sediments. There are currently no drums or tanks in the area that could serve as active sources for leaks or spills. No source has been definitively identified for the contamination in Pond A, but the area of impact appears to be localized.

Investigations were conducted at SS004 in 1993, 2005, 2006, 2007, and 2015. During the 1993 RI, soil, sediment, and surface water samples were collected and analyzed for petroleum hydrocarbons, fuel related VOCs and SVOCs, and metals. No soil samples contained compounds above DEC Method One or Method Two cleanup levels for the Arctic Zone. Sediment sample results were all below NOAA Screening Quick Reference Tables (SQiRT) criteria. A surface water sample collected from Pond A contained concentrations above AWQS for benzene, toluene, cis-1, 2-dichloroethene, methylene chloride, PCE, and TCE.

During the 2005 RI, soil, sediment and surface water samples were collected. Soil samples were collected on the gravel pad and in the tundra and analyzed for petroleum hydrocarbons and other fuel related compounds. The 2005 RI was conducted to verify the presence of chlorinated solvents

and to determine whether contaminant concentrations posed a risk to human health and the environment. The soil samples contained no contaminants above then current (2008) DEC Method One or Two cleanup levels and the sediment samples contained no contaminants above NOAA SQuiRT screening levels. A surface water sample, collected in the same location (Pond A) as the 1993 sample that showed exceedances of AWQS for volatile hydrocarbons, Total Aromatic Hydrocarbons (TAH) (the sum of BTEX compounds), and Total Aqueous Hydrocarbons (TAQH) (the sum of TAH and PAH). Concentrations of COCs had decreased in comparison to 1993 data. A surface water sample collected further down gradient from Pond A (in Pond B) did not exceed the standards, and the majority of the compounds were not detectable (Pond B). The site was recommended for further evaluation to determine if a contaminant plume was present in the pore water.

The supplemental RI in 2006 had the surface water sample show two VOCs above AWQS, benzene and cis-1, 2-dichloroethene. Sample results showed a decrease in VOC concentrations compared to 2005 data. The active zone water (pore water) surrounding Pond A was also sampled to determine the potential source of contamination. Five well points were installed around the perimeter of Pond A (Figure 2-1). Four of the five well point samples contained benzene and chlorinated compounds above AWQS, although AWQS are not applicable to pore water. Concentrations of contaminants were higher in the pore water than in the surface water and indicated that the contamination in Pond A is originating from the east (pad) and that the extent of the plume is relatively small (approximately 40 by 60 feet in area).

The 2006 supplemental RI also included a small-scale treatability study. The treatability study was conducted to assess the potential of reducing the VOC concentrations in the surface water by active treatment (pump and treat) and to investigate the magnitude and persistence of the contaminants present in the active zone water at SS004. The treatability study indicated that applying the pump and treat method to Pond A would not be effective long term. In addition, it would not be practical since treatment of Pond A would not be adequate. Unless treated, the pore water would continue to be a source of contamination.

An additional investigation was undertaken in 2007 to further delineate the extent of a VOC plume in the pad, yet there were no significant findings of soil impacts, but anaerobic degradation was occurring. The surface water contaminant concentrations for most VOCs were less than in 2006 and indicated natural attenuation was occurring. Only one VOC, cis-1, 2-dichloroethene, exceeded AWQS in the surface water sample.

Pond A surface water monitoring continued into 2013 where analytical results reported cis-1,2-dichloroethene reporting an exceeding concentration of 264 µg/L compared to its respective Table C Groundwater Standard of 70 µg/L per 18 AAC 75. The reported concentration of cis-1, 2-dichloroethene for the September 2013 sampling event was only 3% less than the concentration reported for the 2007 assessment which indicated that the unidentified source area in the gravel pad may be contributing dissolved VOCs to the surface water of Pond A. This led to further pad assessment.

From July through September 2014 field assessment efforts to further identify the potential source of the VOCs within the adjacent gravel pad were conducted. Cis-1, 2-dichloroethene was reported at a concentration of 56.9 µg/L during the July 2014 surface water sampling event which was greater than a 75% reduction when compared to the September 2013 surface water result; however, based upon the persistent presence of dissolved VOCs in the surface water of Pond A, six soil borings were

advanced in the adjacent eastern gravel pad in an attempt to locate the potential source of VOC contamination associated with SS004. Pore water and soil boring headspace screening identified the presence of organic contamination, but no specific source was identifiable.

In 2015, further soil, pore water and sediment were investigated. Pore water was previously identified above Table C groundwater cleanup levels (although not applicable to the site), but are indicative of a potential source in the pad. An electromagnetic survey was conducted to assess for the presence of any buried drums or debris that could be a potential source for dissolved VOCs. Following the identification of two anomalies, exploratory trenching was completed to investigate. Only a single sample exceeded DEC's 2016 Method 2 cleanup levels for xylenes. The sample was bounded on all sides by clean material and was considered to be of de minimis quantity.

Subsequent sampling of surface water in September 2015 yielded VOC results below their respective Table C Criteria, and not resulting in an exceedance of TAH or TAqH. In 2016, a sampling event on July 29 yielded all non-detectable concentrations. The two successive sampling events with results below the cleanup levels met the monitoring requirements of the Decision Document.

### Cumulative Risk Evaluation

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

Based on a review of the environmental record, DEC has determined that residual contaminant concentrations meet the human health cumulative risk criteria for residential land use.

### Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 3.

**Table 3 – Exposure Pathway Evaluation**

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	Contamination is not present in surface soil (0 to 2 feet below ground surface).
Sub-Surface Soil Contact	De-Minimis Exposure	Contaminant concentrations remaining in the sub-surface are below DEC Method Two Direct Contact cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Contaminant concentrations remaining in the sub-surface are below the DEC Method Two Inhalation cleanup levels with the exception of a de-minimis quantity of xylenes.

<b>Pathway</b>	<b>Result</b>	<b>Explanation</b>
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	There are no buildings located at this site and it is not reasonable to assume any in the future due to the proximity to the water.
Groundwater Ingestion	Pathway Incomplete	Groundwater is not present at this site.
Surface Water Ingestion	Pathway Incomplete	Contaminant concentrations in surface water samples are below cleanup levels.
Wild and Farmed Foods Ingestion	De-Minimis Exposure	Contaminant concentrations remaining in the sub-surface are below DEC Method Two Human Health cleanup levels.
Exposure to Ecological Receptors	Pathway Incomplete	Ecological receptors are unlikely to come into contact with residual contamination and contaminants are not bio-accumulative.

**Notes to Table 3:** “De-Minimis Exposure” means that in DEC’s judgment receptors are unlikely to be adversely affected by the minimal volume or concentration of remaining contamination. “Pathway Incomplete” means that in DEC’s judgment contamination has no potential to contact receptors.

### **DEC Decision**

Remaining soil contaminant concentrations at this site are below the approved cleanup levels. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions:

### **Standard Conditions**

1. Any proposal to transport soil or groundwater off-site requires DEC approval in accordance with 18 AAC 75.325(i). A “site” as defined by 18 AAC 75.990 (115) means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

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

### **Appeal**

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 15 days after receiving the department’s decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or

within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

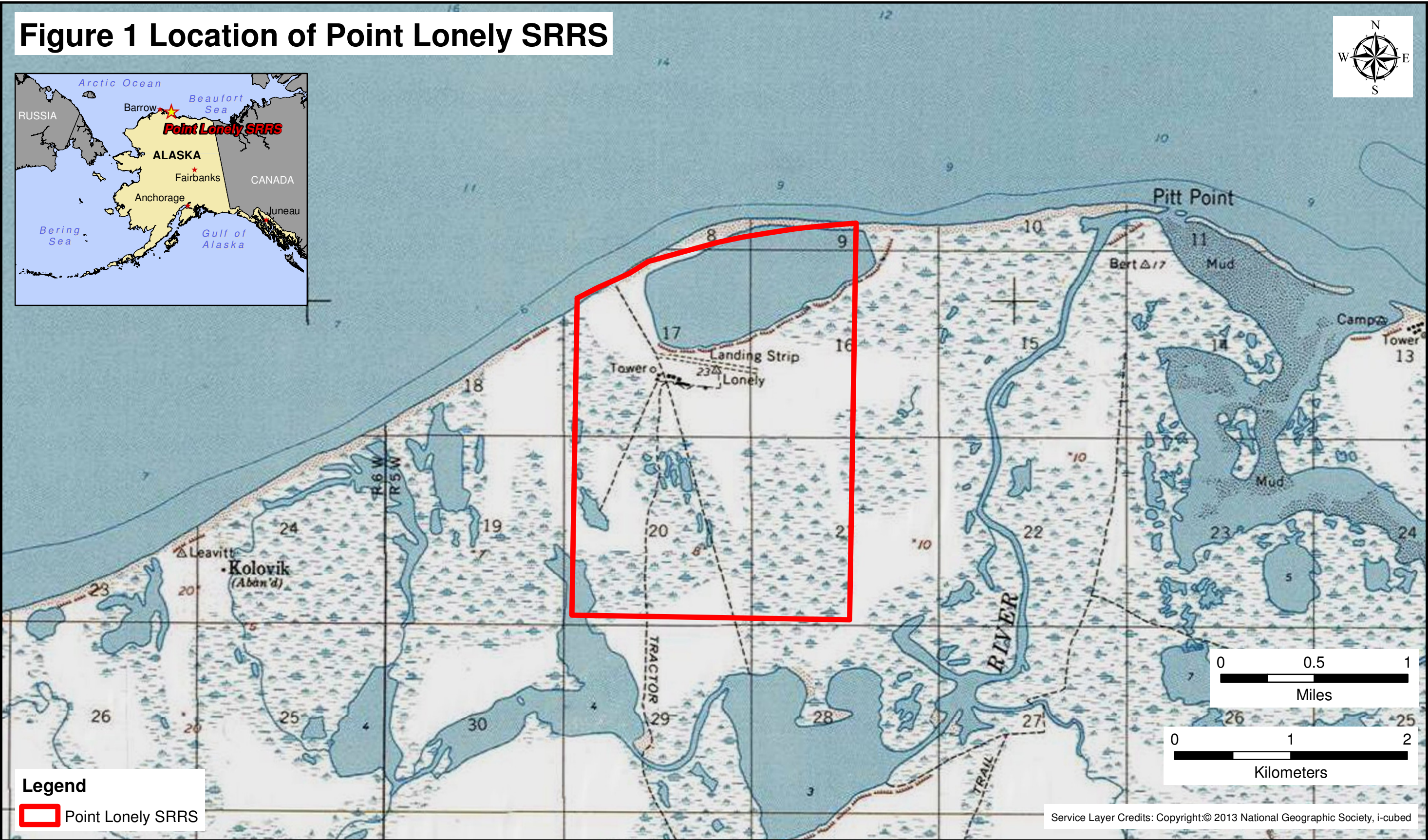
If you have questions about this closure decision, please feel free to contact me at (907) 451-2166 or email at [john.carnahan@alaska.gov](mailto:john.carnahan@alaska.gov).

Sincerely,

John B. Carnahan  
Environmental Program Specialist

Attach: Site Figures (BEM reporting) depicting location of site and Pond A

# Figure 1 Location of Point Lonely SRRS



**Legend**  
[Red Box] Point Lonely SRRS

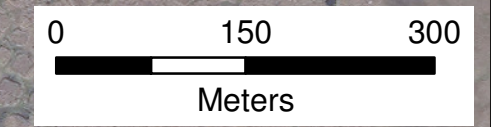
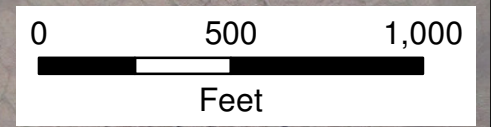
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Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed



**Figure 2 Point Lonely Site Plan**






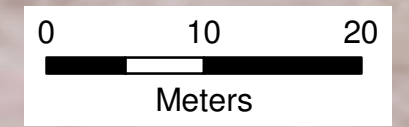
**Figure3 Site SS004 - Proposed Surface Water Sample Location Map**



SW-01

**Legend**

-  Proposed 2016 Surface Water Sample Location
-  Approximate 2015 Pond Area
-  Approximate 2013 Pond Area



Aerial: Digital Earth (20140827)