Decision Document
Diesel Spill (SS005)

Final

Oliktok LRRS, Alaska

Prepared By

United States Air Force
Pacific Air Forces Command
611 CES, Alaska

March 2008

Part 1: THE DECLARATION

SITE NAME AND LOCATION: This Environmental Restoration Program (ERP) site is known as the Diesel Spill site (SS005). It is located at the Oliktok Long Range Radar Station (LRRS), approximately 30 miles northeast of the Village of Nuiqsut on Alaska's Arctic Coastal Plain. The Alaska Department of Environmental Conservation (ADEC) Record Key number is 198931X102557. The site is located at 70˚15' 02.75" N latitude and 140˚38' 22.65" W longitude. These coordinates represent the location of sample SS5SS02, which is the approximate center of site SS005. Oliktok LRRS is not listed on the National Priorities List (NPL).

STATEMENT OF BASIS AND PURPOSE: This Decision Document presents the USAF's decision that no action is necessary at SS005 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Therefore, no CERCLA action is being proposed or selected. This Decision Document was developed in accordance with the Defense Environmental Restoration Program, 10 United States Code (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC 9601 (et seq.); Executive Order 12580, 52 Federal Register 2923, and to the extent practicable, with Title 40, Part 300 of the Code of Federal Regulations (CFR): National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under CERCLA Section 101(14): "petroleum including crude oil or any fraction thereof," are substances excluded from CERCLA. At SS005, petroleum (or fuel-related) compounds are the sole contaminants; therefore, the cleanup and closure of the site is being address in accordance with State of Alaska laws and regulations.

This decision is based on the Administrative Record file for this site. The Administrative Record can be accessed by the public by contacting the Community Relations Coordinator at (907) 552-8166 or (800) 222-4137. A website with the Administrative Record current through 2003 is also available at:
http://www.adminrec.com/PACAF.asp?Location=Alaska

The United States Air Force (USAF) and the State of Alaska, through the ADEC, agree with the decision of no further action under CERCLA. The United States Environmental Protection Agency (USEPA) has deferred regulatory authority for the Oliktok LRRS to the ADEC.

DESCRIPTION OF SELECTED REMEDY UNDER CERCLA: No remedy has been proposed or selected under CERCLA, as releases at the site are excluded from the CERCLA definitions of hazardous substances, pollutants, or contaminants.

STATUTORY DETERMINATIONS: Because only fuel and related substances are associated with this site, no action is required under CERCLA. Petroleum is excluded from the definition of hazardous substances and pollutants and contaminants under 42 USC § 9601 (14) and (33). The release of petroleum products at this site will be addressed under State of Alaska laws and regulations.

DESCRIPTION OF THE SELECTED REMEDY UNDER STATE LAW: The risk attributed to the concentrations of petroleum and related substances detected at SS005 has been determined to be insignificant to human health and the environment, including surface water.

No contaminants remain above ADEC Method Two Soil cleanup levels for the Arctic Zone (18 AAC 75.341, Tables B1 and B2). These cleanup levels meet the risk management standards of 18 AAC 75.325 (h), (i.e., the risk from hazardous substances does not exceed a cumulative carcinogenic risk of 1 in 100,000 and a cumulative non-carcinogenic hazard index of 1.0). The site conditions are protective of human health under all current and projected site uses, including unrestricted residential land use.

However, residual levels of petroleum contaminants gasoline range organics (GRO), diesel range organics (DRO) and benzene remain at SS005 above the most stringent Method Two soil cleanup levels (18 AAC 75.341, Tables B1 and B2, Over 40-inch Zone, Migration to Groundwater); therefore the site is appropriate for 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. The following is the selected remedy for site SS005 under state law:

- Site boundaries will be surveyed to provide a description of the locations where soil has concentrations of GRO above 260 milligrams per kilograms (mg/Kg), DRO above 230 mg/Kg or benzene above 0.020 mg/Kg;

- The Base Master Plan for Oliktok LRRS will include a statement that ADEC approval is required prior to off-site transportation or disposal of site SS005 soil containing GRO above 260 mg/Kg, DRO above 230 mg/Kg or benzene above 0.020 mg/Kg;

- If the site is transferred, the statement that ADEC approval is required prior to off-site transportation or disposal of site SS005 soil containing GRO above 260 mg/Kg, DRO above 230 mg/Kg or benzene above 0.020 mg/Kg will be included in the property transfer documents.

The site status will be listed as "conditional closure" in the ADEC contaminated sites database. The site will be granted closure without conditions when concentrations of contaminants in the soil are determined to be less than the limits provided above.

AUTHORIZING SIGNATURES: These signatures document the USAF and ADEC approval of the remedy selected in this Record of Decision for site SS005 at the Oliktok LRRS.

This decision may be reviewed and modified in the future if new information becomes available which indicates the presence of contamination or exposure that may cause a risk to human health or the environment.

6/2/08

JOHN HALVERSON
DoD Cleanup Unit Lead
Federal Facilities Environmental Restoration
Alaska Department of Environmental Conservation

Date

30 MAY 2008

BRENT A. JOHNSON
Colonel, USAF
Commander, 611th Air Support Group

Date

Part 2: THE DECISION SUMMARY

SITE NAME, LOCATION, AND DESCRIPTION: The Diesel Spill site is designated as SS005. Site SS005 is part of the Oliktok LRRS, located on the shore of the Beaufort Sea and east of the Colville River. The general site vicinity is shown in Figure 2-1. The spill site is located on the east side of the hangar building south of the installation (Figure 2-2). The primary feature of SS005 is a gravel pad constructed over relatively flat tundra (Figure 2-3). The adjacent hangar building is located on the gravel pad. Wetlands and tundra border the south and east sides of the gravel pad. The land surrounding the Oliktok LRRS is typical of the region with numerous small lakes and wetland areas. The installation is located close to sea level and is moderately susceptible to coastal flooding. The gravel pad is approximately 6 feet above mean sea level (AMSL) and provides the greatest topographic relief at the site. The pad extends east approximately 40 feet from the hangar and then gradually slopes down toward the tundra. Site SS005 is the reported location of a diesel fuel spill that occurred in 1978. Approximately 300 gallons of fuel was reported to have spilled when a diesel day tank located near the northeast corner of the hangar was overfilled (ICF 1996a). There are no tanks remaining on the gravel pad.

The Oliktok LRRS presently consists of a 22-unit module train containing living quarters, a power generation plant, sewage and water systems, and an incinerator. The radome tower is attached to the west end of the module train. The radome tower houses the rotating radar and is supported on a steel-framed platform straddling the modular train. A 4,020-foot long lighted gravel runway that is part of the facility is located south of the main installation.

The CERCLA lead agency addressing SS005 is the USAF, and the support agency is the ADEC.

SITE HISTORY AND ENFORCEMENT ACTIVITIES: Oliktok LRRS, also known as POW-2, was one of the many Distant Early Warning Line stations located across the arctic region of North America and Greenland. The installation was originally constructed as an auxiliary station by the USAF between 1954 and 1955. It has been operated by contractors since 1957. In the mid-1980s, a Minimally Attended Radar was installed, which reduced the number of workers required to operate the facility. Generally, two contractor personnel are stationed at the Oliktok LRRS installation year-round. The contract personnel are responsible for maintenance and management of real property facilities, which include the buildings, roads, grounds, aircraft facilities, antenna structures, and utility plants. Clean Sweep activities were completed at the Oliktok LRRS in Summer 2007.

Some of the contaminants encountered during investigations at Oliktok LRRS are GRO; polynuclear aromatic hydrocarbons (PAHs); polychlorinated biphenyls (PCBs); petroleum, oil, and lubricants (POL); DRO; residual range organics (RRO); semivolatile organic compounds (SVOCs); metals; and volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene and xylene (BTEX), and solvents. These contaminants are the result of fuel or oil spills.

Past activities potentially resulting in contaminant release at the Oliktok LRRS include:

- Spills during the transfer of fuels in and out of storage tanks;
- Leaks from fuel lines, tanks, and 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 PCBs; and
- Disposal of wastes and other discarded material containing hazardous substances.

In 1993, DRO was detected above the ADEC Method Two soil cleanup level for the Arctic Zone at 17,300 mg/Kg in one of 11 samples collected from the tundra, approximately 175 feet from the reported spill location. Further investigation was performed during the 2004 RI and no contaminants, including DRO, exceeded Method Two soil cleanup levels at SS005. During the 2004 RI, sixteen samples (including two field duplicates) were collected. For these samples, DRO concentrations ranged from an estimated 4.79 to 3,950 mg/Kg. DRO concentrations in soil at SS005 were determined to be similar to, or slightly less, than those detected during the 1993 RI with the exception of one 1993 result of 17,300 mg/Kg. The sample corresponding to the DRO exceedance was determined to be due to biogenic interference from peat present in the soil sample (HCG, 2005). Typical DRO concentrations at the site in 1993 ranged from 100 to 3,000 mg/Kg. In 2004, total xylene(s) were detected at a maximum concentration of 19.2 mg/Kg, which is above the one-tenth the Method Two soil cleanup level. However, cumulative risk calculations using 2004 data resulted in an excess cancer risk of zero (xylene is not known to be carcinogenic) and a hazard index (HI) of 0.24. Based on findings in the human health and ecological risk assessments and sampling conducted during the 2004 RI, there are no current risks to human health or the environment, including surface water. Therefore, the Diesel Spill site (SS005) was recommended for closure. Investigation reports providing details of these findings can be found in the Administrative Record file or the Information Repository. All investigations and actions of SS005 from 1993 to 2004 are summarized or documented in the *Oliktok, Remedial Investigation/Feasibility Study Report for 8 Sites, Final, July 2005* (USAF 2005).

COMMUNITY PARTICIPATION: A Proposed Plan that presented the cleanup alternatives proposed by the USAF for Oliktok LRRS was submitted for public review at a public meeting in Nuiqsut on June 25, 2007. The public comment period for the Proposed Plan was June 25, 2007 to July 24, 2007. The USAF received no requests to extend the public comment period, and no written or verbal comments were received regarding the Proposed Plan.

Additional community involvement activities for Oliktok LRRS include Restoration Advisory Board meetings (RAB). The Oliktok LRRS is part of the Nuiqsut RAB, which typically meets annually, occasionally semiannually. A mailing list of interested parties is maintained and updated regularly by the Air Force Community Relations Coordinator. The administrative record for the Oliktok LRRS contains the information used to support this decision and is accessible to the public. A website with the administrative record current up to 2003 is also available to the public at:

http://www.adminrec.com/PACAF.asp?Location=Alaska. Four information repositories are located in Nuiqsut: the city manager's office, the Nuiqsut High School library, the Native Village of Nuiqsut, and with the RAB community co-chair. The most recent Management Action Plan was published in 2002 (USAF 2002).

SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION: The site is not part of an operable unit. There are 10 other sites at Oliktok LRRS being addressed separately under the Air Force Environmental Restoration Program. There is no anticipated migration of contaminants or chemical interaction between this site and the other sites, and therefore, there is no potential for a response action at this site to affect response action at any other site.

SITE CHARACTERISTICS: During the 1993 RI, soil, sediment, and surface water was sampled to determine the extent of contamination at SS005. Soil samples were analyzed for GRO, DRO, VOCs (including BTEX) and PAHs. Sediment samples were analyzed for GRO, DRO, and BTEX. Surface water samples were analyzed for DRO (Table 2-1). Analytical results indicated the presence of petroleum contamination from constituents commonly associated with diesel fuel (e.g. BTEX and DRO). The site was recommended for remedial action because levels of petroleum-related compounds exceeded existing ADEC cleanup levels for GRO and DRO in soils (ICF 1996a).

In 2004, an RI was conducted at SS005 to characterize the residual petroleum-related compounds in the soil, sediment, and surface water. Soil samples were analyzed for GRO, DRO, RRO, BTEX, and PAHs (Table 2-1). Analytical results indicated the petroleum contamination was significantly weathered. No contaminants were detected above ADEC Method Two soil cleanup levels for the Arctic Zone (18 AAC 75.341, Table(s) B1 and B2). Total Xylene was detected above 1/10 ADEC Method Two soil cleanup levels for the site. However, cumulative risk calculations resulted in a cancer risk of zero (xylene is not known to be carcinogenic) and a HI of 0.24 which is below the ADEC risk management standards (18 AAC 75.3259[h]) (Table 2-2). The risk calculations indicated that site soils do not pose a risk to human health even in a residential scenario. GRO, DRO and benzene exceeded the most stringent Method Two soil cleanup levels (18 AAC 75.341 Table(s) B1 and B2, Over 40-inch Zone, Migration to Groundwater). Sediment samples were analyzed for BTEX and PAHs. These analytes were either ND or below applicable screening levels (Table 2-1). Surface water samples were analyzed for BTEX and PAHs. These compounds were either non-detect or below 1/10 Method Two risk screening levels. Residual fuel in the pad adheres to fine grained sediments (mainly organic carbon) and, therefore, under current site conditions the further migration of fuels in the pad is unlikely.

No CERCLA hazardous substances are associated with the site. The ADEC has indicated that the remedial investigation report has met the requirements of State regulation in regards to the investigation of SS005. The site was recommended for NFA and closure (HCG 2005). Details may be found in the Administrative Record File or the Information Repository.

Based on the current concentrations of petroleum contaminants remaining at SS005, the site has been selected for NFA and conditional closure under State of Alaska laws and regulations. No comments were received, therefore, there were no changes required in response to public comment. The site boundaries shall be surveyed and included in the Base Master Plan along with a statement that ADEC approval is required prior to off-site transportation or disposal of soil containing residual contaminants. Details may be found in the Administrative Record File or the Information Repository.

STATUTORY AUTHORITY FINDING: Because only fuel and related substances are associated with this site, no action is necessary under CERCLA. Releases of petroleum and related substances at SS005 will be addressed in accordance with State of Alaska laws and regulations. The release of fuel and related substances in Alaska are regulated by Alaska State Statute Title 46, Water, Air, Energy and Environmental Conservation which is consistent with CERCLA and the NCP. No action at site SS005 is necessary to ensure protection of human health. However, restrictions on the relocation of soils are necessary to ensure protection of the environment, specifically water quality. The remedy will result in no hazardous substances or contaminants remaining at site SS005 above levels that allow for unlimited use and unrestricted exposure; therefore, no five-year review is required.

REFERENCES:

ICF, 1996a. *Remedial Investigation and Feasibility Study, Oliktok Point Radar Installation, Alaska.* Prepared for USAF. April.

Hoefler, 2005. *Remedial Investigation/Feasibility Study for Eight Sites, Oliktok LRRS, Alaska.* Prepared for USAF. October.

USAF. 2002a. *Final Management Action Plan Oliktok Point Long Range Radar Station, Alaska.* Prepared for the USAF and the Army.

Table 2-1 - SS005 Summary of Detected Contaminants in Soil, Sediment, and Water

Media	Analyte	Screening Critieria				1993 RI/FS Maximum Concentration (ICF 1996a)[5,6]	2004 RI/FS Maximum Concentration (HCG 2005)[5,6]	2004 RI/FS Frequency of Detection (HCG 2004)[6]
		18 AAC 75 Cleanup Level (Arctic Zone) for Soil[1]	NOAA SQuiRT for Sediment[2]	18 AAC 70 for Surface Water[3]	NOAA SQuiRT for Surface Water[4]			
Soil (mg/Kg)	**Fuels**							
	GRO (AK101)/GRPH[a]	1,400 (100)	--	--	--	422	418 J	13/13
	DRO (AK102)/DRPH[a]	12,500 (200/500)	--	--	--	17,300	3,950	14/14
	RRO (AK103)/RRPH[a]	13,700 (2,000)	--	--	--	NS	205	14/14
	VOCs							
	Benzene	13	--	--	--	ND (< 3)	0.0621	4/13
	Ethylbenzene	89	--	--	--	2.35	2.3	9/13
	total Xylenes	81	--	--	--	9.90	19.19	11/13
	Toluene	180	--	--	--	ND (< 3)	1.37	8/13
	n-Butylbenzene					0.079	NS	NS
	p-Isopropyltoluene					0.057	NS	NS
	1,2,4-trimethylbenzene					0.486	NS	NS
	1,3,5-trimethylbenzene					0.232	NS	NS
	PAHs							
	Acenaphthene	8,200	--	--	--	NS	0.187	1/3
	Anthracene	41,000	--	--	--	NS	0.02020	1/3
	Benzo(a)anthracene	15	--	--	--	NS	0.00671	1/3
	Benzo(a)pyrene	1.5	--	--	--	NS	0.00174 F	1/3
	Benzo(b)fluoranthene	15	--	--	--	NS	0.00268 F	1/3
	Benzo(g,h,i)perylene	--	--	--	--	NS	0.0017 F	1/3
	Benzo(k)fluoranthene	150	--	--	--	NS	0.00209 F	1/3
	Chrysene	1,500	--	--	--	NS	0.00978	1/3
	Fluoranthene	5,500	--	--	--	NS	0.04730	0/3
	Fluorene	5,500	--	--	--	NS	0.246	1/3
	Naphthalene	15	--	--	--	0.501	0.656	1/3
	Phenanthrene	--	--	--	--	NS	0.185	1/3
	Pyrene	4,100	--	--	--	NS	0.0299	1/3
Sediment (mg/Kg)	**Fuels**							
	GRO (AK101)/GRPH[a]	--	--	--	--	43.3	NS	NS
	DRO (AK102)/DRPH[a]	--	--	--	--	821	NS	NS
	RRO (AK103)/RRPH[a]	--	--	--	--	NS	NS	NS
	VOCs							
	Benzene	--	--	--	--	ND (< 0.035)	ND (0.0084)	0/2
	Ethylbenzene	--	--	--	--	0.256	ND (0.0315)	0/2
	total Xylenes	--	--	--	--	0.850	0.075 F	1/2
	Toluene	--	--	--	--	0.29	ND (0.0315)	0/2
	PAHs							
	Acenaphthene	--	-- (0.089)	--	--	NS	0.065	1/2
	Anthracene	--	-- (0.245)	--	--	NS	0.04	1/2
	Benzo(a)anthracene	--	0.385 (0.693)	--	--	NS	0.0131 F	1/2
	Benzo(g,h,i)perylene	--	--	--	--	NS	0.0176 F	1/2
	Chrysene	--	0.862 (0.846)	--	--	NS	0.0134 F	1/2
	Fluoranthene	--	2.355 (1.49)	--	--	NS	0.127	1/2
	Fluorene	--	-- (0.144)	--	--	NS	0.131	1/2
	Naphthalene	--	-- (0.391)	--	--	NS	0.0126 F	2/2
	Phenanthrene	--	0.515 (0.544)	--	--	NS	0.295	2/2
	Pyrene	--	0.875 (1.39)	--	--	NS	0.0808	1/2
Surface Water (ug/L)	**Fuels**							
	DRO (AK102)/DRPH[a]	--	--	15	--	425[b]	NS	NS
	PAHs							
	Acenaphthene	--	--	--	520 (710)	NS	0.0155 F	0/2
	Naphthalene[7]	--	--	700	620 (2,350[CMC])	NS	0.245 M	0/2

1- Lowest value of ingestion or inhalation shown from 18 AAC 75, Tables B1 and B2, referred to as "Method Two Cleanup Levels" for th Arctic Zone.
Method Two cleanup levels are considered protective of surface water. Method One Cleanup Levels for GRO, DRO and RRO in parenthesis.
The cleanup level for DRO may be 500 mg/Kg for diesel spills to gravel pads if total BTEX concentrations are less than 15 mg/Kg and benzene is less than 0.5 mg/Kg.

2- NOAA SQuiRT values shown is the probable effects level (PEL) for freshwater sediment followed by marine sediment in ( ).

3- 18 AAC 70 Maximum Contaminant Levels (MCLs).

4- NOAA SQuiRT values shown for fresh water criteria continuous concentration (CCC) unless otherwise indicated (NOAA 1999). Marine criteria in ( ).

5- All detections shown. Only the highest historically detected values shown, if multiple detections.

6- 1993 data taken from *RI/FS, Oliktok Point Radar Installation* (ICF 1996a).
2004 data from *RI/FS Report for Eight Sites* (HCG 2005).

7- The Alaska groundwater cleanup standard for naphthalene (18 AAC 75.341, Table C) is 700 ug/L. The EPA has not published a drinking water MCL.

a - Methods used in 1993 were GRPH, DRPH and RRPH, which are comparable to current AK Methods for GRO, DRO and RRO.

b - Although the sample exceeded the 18 AAC 70 criteria, the chromatograph was not consistent with a middle distillate fuel.

Abbreviations

" -- "	Screening criteria did not exist for this compound.	M	Compound exhibited a matrix effect
" = "	A detected compound.	NS	Not sampled
F	Estimated quantity below the PQL.	PQL	Practical Quantitation Limit
ND	Compound not detected (with PQL in adjacent parentheses).	MDL	Method Detection Limit
J	Estimated value	CMC	Criteria maximum concentration
B	Compound detected in the blank.		

Shaded result indicates an exceedance of the corresponding media-specific screening criteria (soil =Method Two Cleanup Levels; sediment =NOAA SQuiRT values; water = 18 AAC 70 criteria or NOAA SQuiRT values)

Table 2-2 SS005 Cumulative Risk Calculation - Soil

Scenario Timeframe: Current **Receptor Population: Resident** **Receptor Age: Child**						
Medium	**Exposure Point**	**Chemical of Concern**	**Carcinogenic Risk**			
			Ingestion[1]	**Inhalation**[1]	**Dermal**	**Cumulative Risk**
Soil	Soil - Direct Contact	Xylenes	0	0	N/A	0
					Soil risk total =	**0**
Groundwater	N/A		N/A	N/A	N/A	
					Ground-water risk total =	**N/A**
					Total Risk =	**0**

Scenario Timeframe: Current **Receptor Population: Resident** **Receptor Age: Child**							
Medium	**Exposure Point**	**Chemical of Concern**	**Primary Target Organ**	**Non-Carcinogenic Hazard Quotient**			
				Ingestion	**Inhalation**	**Dermal**	**Cumulative Hazard Index**
Soil	Soil - Direct Contact	Xylenes	CNS, Skin, Eyes	0.24	0.00	N/A	0.24
						Non-carcinogenic Soil Hazard Index Total =	**0.24**
Groundwater	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
						Ground-Water Hazard Index Total =	**N/A**
						Receptor Hazard Index =	**0.24**

Notes
1 – Methodology and Risk Based Concentration (RBC) per Cumulative Risk Guidance (ADEC 2002).
NA – No effects through the specified exposure route
CNS – Central Nervous System

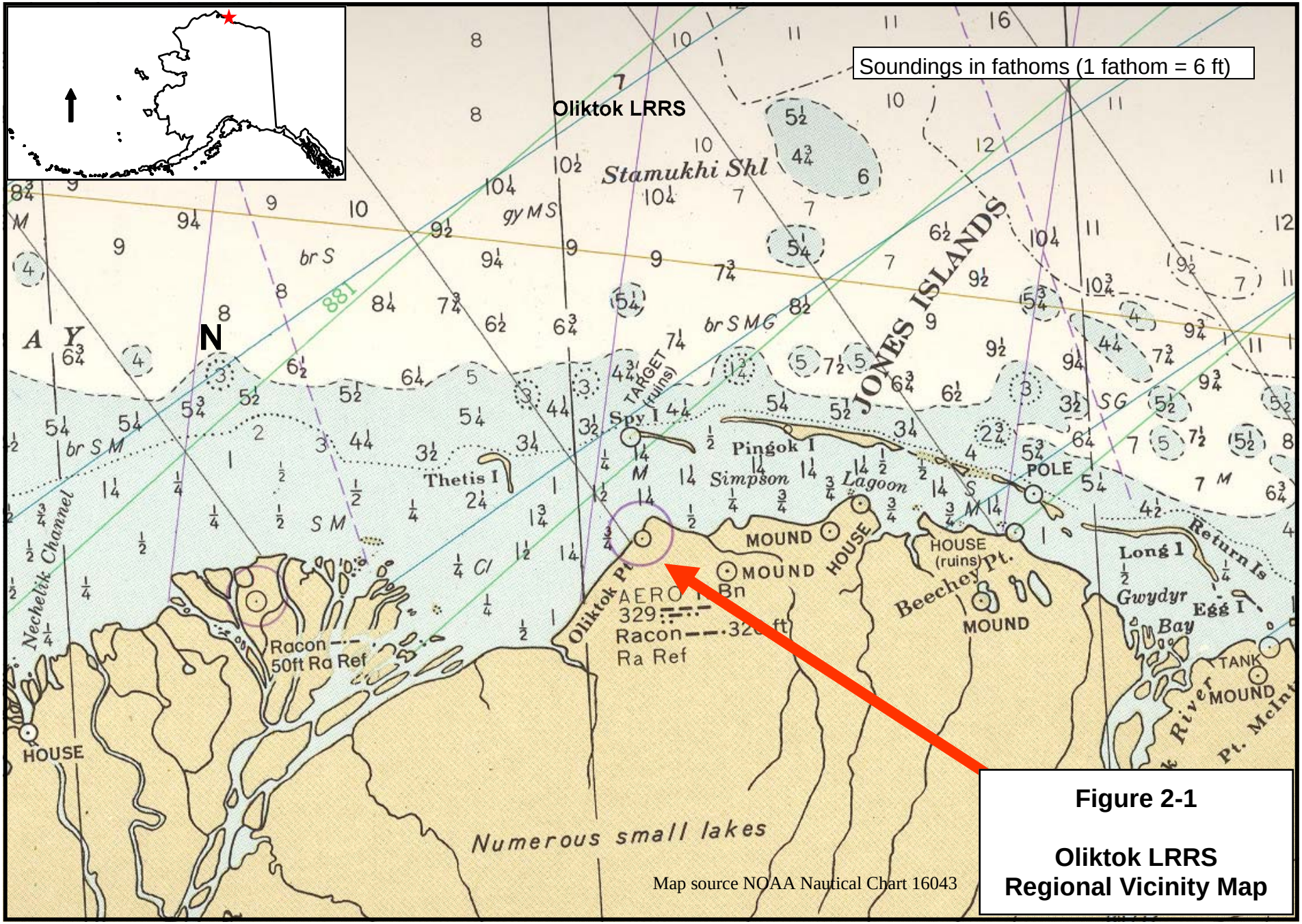

Figure 2-1

Oliktok LRRS
Regional Vicinity Map

Figure 2-2

Oliktok LRRS
IRP Sites

OLIKTOK LRRS

SITE PLAN OF DIESEL SPILL (SS005) SUMMARY OF SAMPLE LOCATIONS

OLIKTOK LRRS, ALASKA

PROJECT NO: 9702-042

1-16-08

FIGURE NO: 2-3

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