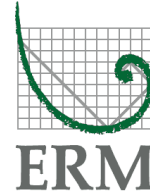


**Environmental
Resources
Management**

825 West 8th Avenue
Anchorage, AK 99501
(907) 258-4880
(907) 258-4033 (fax)
www.ermalaska.com

26 July 2013

Bill O'Connell
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501



**Subject: Little Red Services Deadhorse Facility, Removal
Action Plan - Revised**

Dear Mr. O'Connell:

The Little Red Services Inc. (LRS) Deadhorse facility is currently a conditionally closed contaminated site. However, LRS would like to achieve site closure without conditions. To this end, ERM Alaska, Inc. (ERM) was contracted by LRS to perform a site characterization to determine current contaminant concentrations in the gravel pad. Laboratory results indicate that the soil exceeds ADEC cleanup levels and the site will require remedial action to achieve unconditional closure. This letter presents a summary of the site characterization results and a plan to remediate the site and has been revised based on your 25 July 2013 comments. Figures 1 and 2 show the location and aerial view of the LRS pad.

BACKGROUND

The subject property is owned by the Alaska Department of Natural Resources (DNR) and is leased (Lease Assignment 53543, Tract 11, North Slope Lease Tracts) to LRS of Anchorage, AK. Reportedly, LRS has leased the tract since approximately 1983. Prior to LRS, the site was leased to Pipe Line Technologist, Inc. The subject property is flat, rectangular in shape and 12.59 acres in size. Improvements on the property consist of a gravel pad roughly 400 feet by 1,000 feet in size, a shop building, worker housing, and various smaller structures to support LRS operations. The pad is constructed of approximately 4 feet of gravel fill placed on the tundra.

In 1993, DNR performed a Phase I Environmental Audit on the lease, which indicated that several areas on the property may be contaminated and that a Phase II Audit was required. Between 1993 and 2005 AK Technical Environmental Services, Inc. (ATES) conducted a number of investigations and remedial actions to address diesel contamination at the site. The remedial actions conducted by ATES consisted primarily of excavating diesel-contaminated soil and transporting it off-site for thermal treatment.

Excavated areas were backfilled with uncontaminated material. In several areas, excavation of all the diesel-contaminated soil was not possible due to buildings and other infrastructure at the site.

In May 2006, the Alaska Department of Environmental Conservation issued a Record of Decision (ROD) for the site stating that the contaminant of concern at the site is diesel-range organics (DRO) and that the site was conditionally closed, subject to the following conditions:

- A Notice of Residual Contamination be recorded in the ADEC database;
- A visual inspection of the surface water and sediment in wetlands surrounding the area is conducted summer 2006 (this was accomplished with no contamination noted); and
- ADEC approval is required to transport soil or pore water off site.

In 2008, the buildings which had limited previous removal actions at the site were removed, which allowed access to impacted soil that had been left in place. Additional site characterization was conducted during 2008. Based on review of results it was determined there were additional areas of the pad that were impacted with DRO above ADEC cleanup limits.

In 2008 and 2009, DMC Technologies, Inc. (DMC) excavated contaminated soil from the pad for treatment in a cell constructed at the site. The objective was to achieve site closure without conditions. The treated soils were then used to backfill the excavations.

In June 2013, ERM conducted a site characterization to determine if contaminant concentrations in the soil at the site were below applicable ADEC cleanup levels. The laboratory analysis results indicated that DRO still exceeds ADEC cleanup levels in a portion of the gravel pad. Results of the site characterization are summarized in this plan.

Given that contaminants in the soil at the site remain above ADEC cleanup levels, and LRS's desire to have the site unconditionally closed, this removal action plan has been prepared to excavate the impacted soil and dispose of it in the Oxbow Landfill in Deadhorse.

REGULATORY FRAMEWORK

The cleanup levels for petroleum hydrocarbon-contaminated soil on man-made gravel pads and roads in the Arctic Zone are established in 18 AAC 75.341 Method One, Table A2, and 18 AAC 75.341 Method Two, Tables B1 and B2.

The contaminant of concern at the site is DRO in soil and the default cleanup level listed in 18 AAC 75.341(b), Table A2 for DRO is 200 mg/kg. However, if benzene, toluene, ethylbenzene and total xylenes (BTEX) concentrations are less than 15 mg/kg, and benzene concentrations are less than 0.5 mg/kg, then ADEC may allow a cleanup level

of 500 mg/kg. The ROD that ADEC issued in 2006 (Appendix B) states that full closure will be allowed if these cleanup levels are met.

SITE CHARACTERIZATION

The site characterization of the LRS pad was conducted from 29 May to 01 June, 2013 and the results are discussed below.

Field Activities

ERM advanced 24 boreholes at the locations shown in Figure 3 using direct push methods and a GeoProbe™ drill rig. The direct push method produces a continuous core of soil within a plastic liner. ERM logged the soil lithology and collected at least two laboratory analytical samples from each core.

ERM used an expedited field screening technique over each core immediately after slicing the plastic sleeve open. This technique involved using a photoionization detector (PID) along the entire length of the 5-foot soil core by making small divots at 3- to 6-inch intervals along the length of the core and placing the probe of the PID over the freshly exposed divot. This expedited field screening will be referred to in this document as “in-situ PID.”

A heated headspace screening sample was collected from the depth with the highest in-situ PID result. Two laboratory analytical samples were collected from each borehole; one from the gravel pad at the depth of the highest in-situ PID result and one at the gravel/native soil interface. The laboratory samples were analyzed for diesel-range organics (DRO) using Alaska Method 102 and benzene, toluene, ethylbenzene, and xylenes (BTEX) using U.S. Environmental Protection Agency Method 8021B.

Once the samples were collected, the ERM field team lead logged the borehole for soil lithology, color, moisture content, and presence of hydrocarbon odor.

Results

The total depth of the boreholes ranged from 5 feet to 8 feet below ground surface (bgs). The boreholes crossed the following soil types:

- Sandy gravel (gravel pad material) from 4 feet to 5.5 feet thick,
- Tundra material (silty sand and organics) from 0.5 to 1.5 feet thick,
- Silty sand with trace organics, only intercepted in some of the boreholes.

Tables 1 and 2 present a summary of the analytical results. Thirty-two out of the 51 primary samples collected have DRO results exceeding 200 mg/kg. Of these, 13 samples have DRO also exceeding 500 mg/kg. All of the results in Table 1 that are between 200 and 500 mg/kg DRO have corresponding total BTEX results below 15 mg/kg. For this site, a cleanup level of 500 mg/kg is appropriate. Table 2 displays the

PAH results; all PAH concentrations are well below the ADEC Method Two Cleanup Levels in the Arctic Zone.

Figure 3 show the boreholes with DRO results color coded to different ranges of concentrations. Black locations have laboratory analytical results below 200 mg/kg. Green locations have DRO results between 200 and 500 mg/kg. Red locations have DRO results greater than 500 mg/kg.

ERM did not drill within 10 feet of the buried utilities that are shown as colored lines on Figure 3 for safety reasons. Several planned boreholes had to be moved to the southwest to miss the buried utilities. These boreholes encountered clean soil (less than 500 mg/kg DRO). However, boreholes SB-09, SB-14, and SB-18, located in the southwestern portion of the figure, had DRO results that exceeded 2,000 mg/kg. It is possible that the contamination extends beneath the utility traces.

In order to achieve site closure without conditions it will be necessary to remove and treat or dispose of the contaminated soil. The next section presents a work plan for excavation and disposal of the soil.

REMOVAL ACTION PLAN

ERM plans to excavate the contaminated soil and transport it to the Oxbow Landfill for disposal. The landfill has agreed to receive the soil and the approval is included as Attachment 9. LRS will provide the heavy equipment (excavator, loader, dump trucks) for excavating and hauling the soil. ERM will oversee the excavation and collect soil samples from temporary stockpiles and from the floor and sides of the excavation.

Figure 3 shows an excavation plan for the site overlaying the borehole DRO results. The analytical results from Table 1 and the site characterization screening results (Table 3) were used to estimate thicknesses of clean (<500 mg/kg DRO) and contaminated (> 500 mg/kg DRO). Seven areas of the excavation are blocked off based on depth to top and bottom of contamination. The fractions within each block denote the depth of contamination. The numerator is the depth to the bottom of clean soil and the denominator denotes the depth to the bottom of soil contamination.

The area around SB-01 and SB-04 has not been included in the excavation plan as the DRO results from these two boreholes are only slightly above 500 mg/kg. The DRO concentration in nearby borehole SB-03 was below the cleanup level. If the soil in this area was excavated and stockpiled for sampling, it is likely that the DRO concentration would be below 500 mg/kg.

Volume Estimates

Table 4 displays the volume estimates for clean and contaminated soil in each of the seven blocks. The table shows both banked volumes (the volume of soil in place) in banked cubic yards and fluffed soil (the volume of soil once it is removed from the excavation) in loose cubic yards (LCY). The fluffed volume is based on an estimated

fluff factor of 30%. Varying thicknesses of clean soil overlie the contaminated soil. Approximately 1,300 LCY of clean soil will be removed from the surface of the excavation. Approximately 3,200 LCY of contaminated soil will be removed from the base of the excavation. These volumes exceed our previous estimates due to the more simplified delineation of the impacted soil and likely represent an upper limit on the amount of soil to be excavated. The actual volume excavated will be driven by field screening confirmation analytical results.

Excavation Activities

Before beginning excavation activities, buried utilities will be located and ERM will use a Global Positioning System (GPS) to locate the corners of each excavation area.

An excavator will be used to remove the soil from each area. Soil known to be clean based on analytical and screening sample results will be stockpiled onsite. Obviously contaminated soil, based on analytical and screening results or on visual or olfactory evidence, will be placed in a dump truck to be hauled to the Oxbow Landfill or, if all trucks are in transit, the soil will be temporarily stockpiled near the excavation without the use of a liner.

Soil with questionable contamination will be placed into approximately 200 cubic yard stockpiles for analytical sampling. One five-point composite sample will be collected from each stockpile for analysis of DRO using Alaska Method (AK) 102 and BTEX using EPA Method 8021B. The samples will be shipped to TestAmerica in Anchorage for analysis with a rushed turnaround requested. If the results for a stockpile exceed 500 mg/kg DRO, the soil will be loaded into dump trucks and hauled to the Oxbow Landfill. The BTEX and PAH samples associated with these piles will not be analyzed. Stockpile with results lower than 200 mg/kg DRO will be retained onsite to be used for excavation backfill. For DRO results between 200 and 500 mg/kg, the BTEX results will be used to determine whether the soil will be used as backfill (less than 15 mg/kg total BTEX and benzene below 0.5 mg/kg).

The southwestern portion of excavation Area A will be excavated first. The edges of the excavation in this area are located 10 feet from buried utilities. If contamination extends beyond this limit towards the buried utilities, the excavator will proceed with caution, using a spotter, until within 3 feet of the utility markings. At that point alternate method of excavating the soil will be used to expose the utility and confirm its location, such as:

- Hand digging along the side wall to locate the buried utility;
- Using a vacuum truck to remove the soil around the buried utility;
- Using an air knife to blow the soil away from around the buried utility; or

- A method determined through a hazard analysis determined by discussions between the excavator operator, the field team lead, and the ERM project manager.

If the crew is unsure whether the soil within the 10 foot safety zone is contaminated, five-point composite sidewall samples will be collected and sent for rush analysis of DRO. If the sample results are greater than 500 mg/kg, methods such as those above should be used to extend the excavation. Excavating this portion of Area A first will allow the excavation activities to continue in other areas while awaiting results from the sidewall samples.

ERM will use in-situ and heated headspace PID screening techniques to aid in determining when the contamination has been removed in both vertical and horizontal directions. Once all contaminated soil in an area appears to have been removed, based on field screening, analytical confirmation samples will be collected from the floor and sidewalls of the excavation to verify the field screening results. Confirmation sampling details are described below.

Confirmation Sampling

Confirmation samples will be collected from the floor and sidewalls of each excavation area and analyzed for DRO and BTEX. Again, the DRO analyses will be rushed to expedite backfilling the excavation. Based on the results from the site characterization, PAH does not appear to be a concern at the site and PAH confirmation samples will not be collected.

Confirmation sampling of each area of the excavation (Areas A through G on Figure 3) will begin with collection of field screening samples. The excavation bottom will be divided into a 20-foot by 20-foot grid. One field screening sample will be collected from the center of each grid cell and tested using heated headspace PID screening techniques. Analytical sample locations will be based on the field screening results with analytical samples collected from the locations with the highest PID readings. Discrete analytical floor samples will be collected at the rate of at least 1 per 2 field screening locations (e.g., if an area has 8 field screening locations, 4 analytical samples will be collected from the 4 locations with the highest PID readings).

Confirmation sampling of the sidewalls will be conducted similarly. A field screening sample will be collected from every 25 feet of sidewall and the headspace screened with a PID. Discrete analytical samples will then be collected from at least one third of the locations with the highest field screening results (e.g., if 9 sidewall locations were screened, 3 analytical samples will be collected from the 3 highest PID reading locations).

Table 5 shows the estimated number of confirmation samples needed for the floor and sidewalls of the excavation. If conditions change in the field, the number of samples

required will be re-evaluated. No sample summary for sampling the stockpiled soil is included as the number of samples required may vary according to field conditions.

Investigation Derived Waste

Investigation derived waste from the project will include disposable sampling equipment, disposable personal protective equipment (PPE), contaminated soil, and contaminated water.

The sampling equipment and PPE will be bagged and transported to the Oxbow Landfill. The contaminated soil will also be hauled to the Oxbow Landfill.

Excess water that accumulates in the excavation must be removed for proper compaction of the backfill. If necessary, the water will be removed by Emerald Alaska, Inc. using a vacuum truck and transported to their Palmer facility for treatment.

Excavation Backfill

The excavation will be backfilled with the clean soil stockpile(s) onsite and imported fill. The total volume of the excavation is estimated at 3,456 BCY. Approximately 1,300 LCY of clean soil will be available onsite for backfill. Approximately 2,150 LCY of additional clean fill will be needed. The filled excavation will be compacted and graded to the original pad elevation.

Reporting

Following the removal action and confirmation sampling activities, a report will be prepared documenting the impacted soil volume excavated and disposed of, excavation depths and lateral limits, stockpile sample results, excavation confirmation sample results.

Sincerely,



Rick Girouard
Project Manager

Attachments:

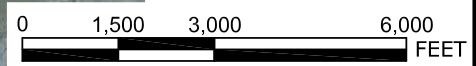
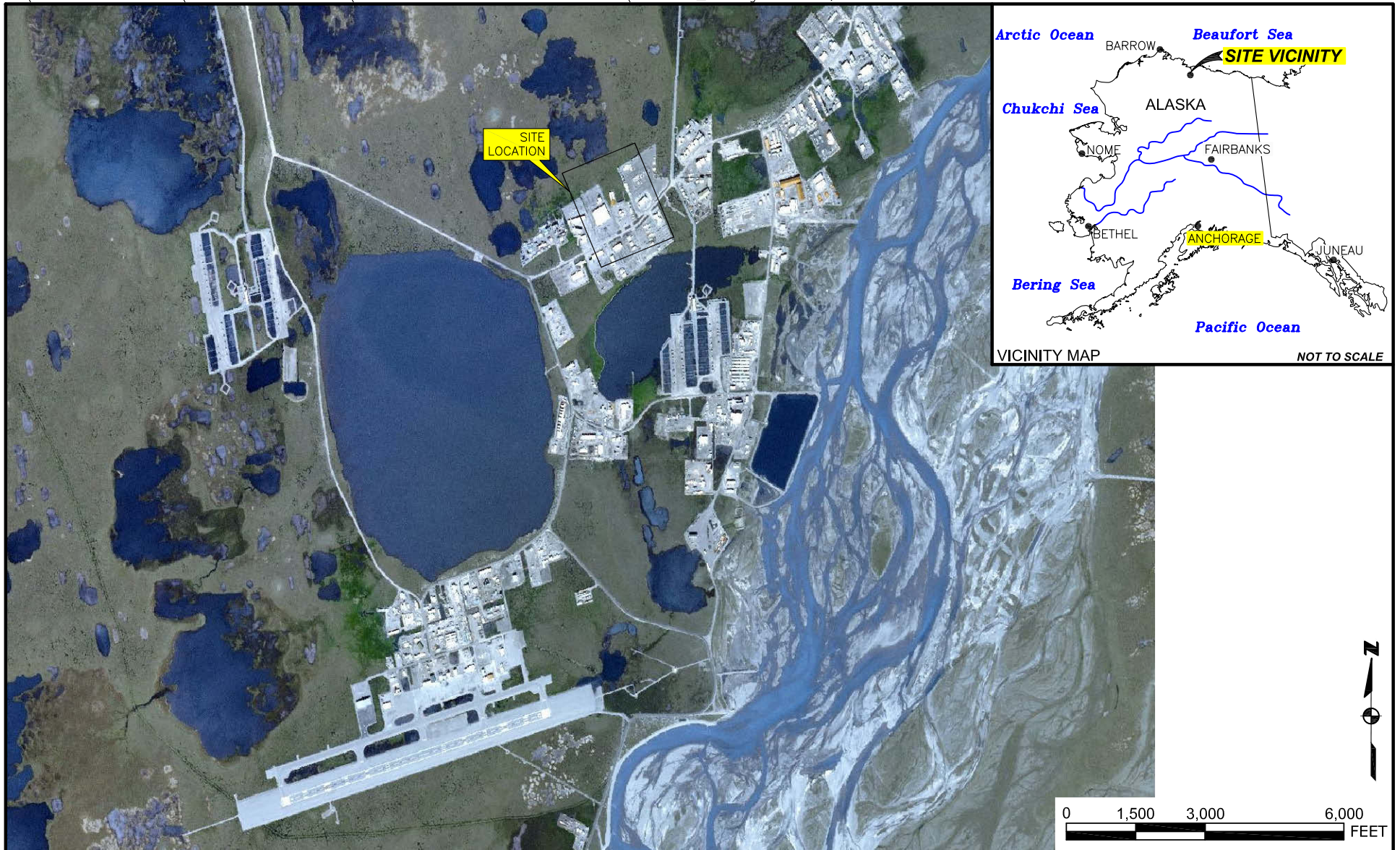
1. Figures
2. Tables
3. Approved Landfill Disposal Request

- Page Intentionally Left Blank -

ATTACHMENT 1

Figures

- Page Intentionally Left Blank -



VICINITY MAP
LITTLE RED SERVICES PAD

REMOVAL ACTION WORK PLAN
Deadhorse, Alaska

FIGURE

1



DATE: JUNE 2013
 CHKD: L.N.
 DRAWN: D.R.F.
 PROJ. No.: 0200465
 825 W. 8th Ave., Anchorage,
 AK 99501, (907) 258-4880

- Page Intentionally Left Blank -



LITTLE RED SERVICES PAD



DATE: JUNE 2013

CHKD: L.N.

DRAWN: D.R.F.

PROJ. No.: 0200465

825 W. 8th Ave., Anchorage,
AK 99501, (907) 258-4880

SITE PLAN
LITTLE RED SERVICES PAD

REMOVAL ACTION WORK PLAN
Deadhorse, Alaska

FIGURE

2

- Page Intentionally Left Blank -

V:\PROJECT DRAWINGS\LITTLE RED SERVICES\2013 REMOVAL ACTION WORK PLAN\0200465_F3.dwg Jun 27, 2013.

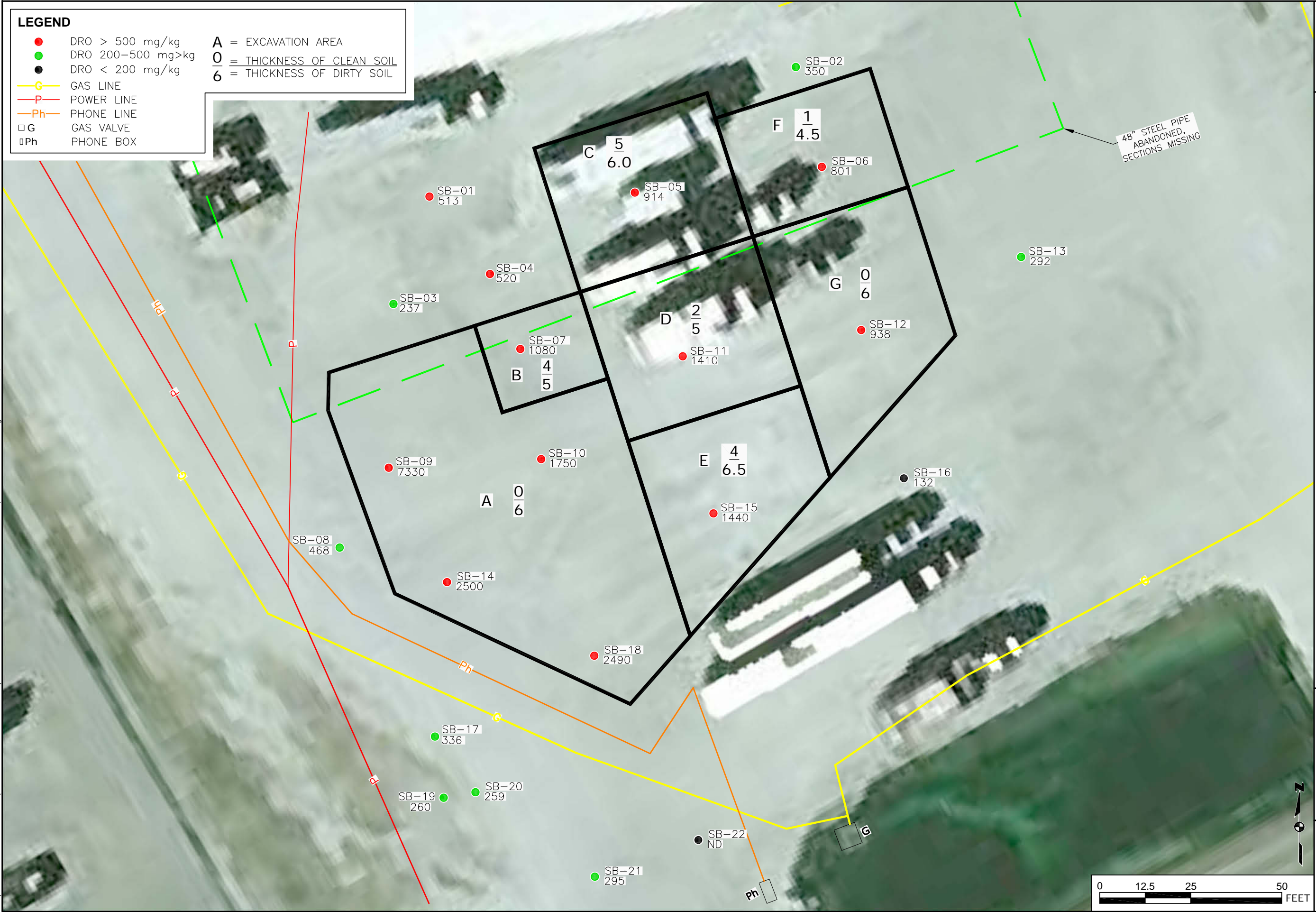
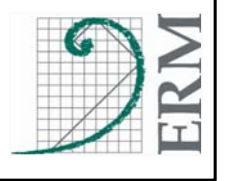


FIGURE
3

**DRO RESULTS ADN EXCAVATION PLAN
LITTLE RED SERVICES PAD**

REMOVAL ACTION WORK PLAN
Deadhorse, Alaska

DATE: JUNE 2013
CHKD: L.N.
DRAWN: D.R.F.
PROJ. No.: 0200465
825 W. 8th Ave., Anchorage,
AK 99501, (907) 258-4880



SOURCE: AEROMETRIC AERIAL PHOTOGRAPH, DATED 7/11/2012

- Page Intentionally Left Blank -

ATTACHMENT 2

Tables

- Page Intentionally Left Blank -

**TABLE 1: DRO AND BTEX RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Borehole ID	Sample Depth (ft)	Analytical Results (mg/kg)					
		DRO	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX
SB-01	4.0	ND	ND	ND	ND	0.033	0.033
SB-25**	4.0	ND	ND	ND	ND	ND	ND
SB-01	5.5	513	ND	ND	ND	0.086	0.086
SB-02	3.5	ND	ND	0.4	ND	0.172	0.572
SB-02	5.0	350	ND	ND	ND	ND	ND
SB-03	3.5	ND	0.183	6.17	10.7	59.1	76.2
SB-03	6.5	160	0.065	1.08	0.614	6.01	7.77
SB-03B	5.5	237	ND	ND	ND	ND	ND
SB-04	4.0	520	0.0603	1.75	2.13	13.6	17.5
SB-04	6.0	316	ND	0.529	1.03	4.67	6.23
SB-05	5.5	914	ND	ND	0.043	0.490	0.533
SB-05	7.0	369	ND	ND	ND	ND	ND
SB-06	3.5	801	ND	0.710	0.190	3.00	3.90
SB-06	5.5	270	ND	ND	ND	ND	ND
SB-07	4.5	1080	0.047	2.200	4.800	43.00	50.0
SB-07	5.0	265	ND	ND	ND	0.34	0.34
SB-08	4.5	468	ND	0.201	0.333	2.05	2.58
SB-08	5.0	191	0.163	ND	1.42	7.43	9.01
SB-09	2.0	2030	0.0589	6.78	1.06	29.5	37.4
SB-09	5.5	7330	0.462	18.4	36.7	207	263
SB-09	7.5	300	ND	ND	ND	ND	ND
SB-10	1.5	1750	ND	0.055	0.089	2.90	3.04
SB-10	6.0	447	ND	0.2	0.31	1.55	2.06
SB-11	4.0	1410	0.0282	3.64	0.765	13.70	18.1
SB-11	6.5	375	ND	0.167	0.213	1.26	1.64
SB-12	1.0	938	ND	0.660	0.085	1.36	2.11
SB-26**	1.0	795	ND	0.870	0.15	3	4.02
SB-12	6.0	435	ND	ND	ND	0.100	0.100
SB-13	0.5	28.2	ND	ND	ND	ND	ND
SB-13	6.0	292	ND	ND	ND	ND	ND
SB-14	4.0	2500	0.145	4.850	2.270	26.90	34.2
SB-14	5.5	202	0.0402	0.19	0.304	1.49	2.02
SB-15	5.0	1440	ND	3.170	6.370	15.90	25.4
SB-15	6.5	166	ND	ND	ND	ND	ND
SB-16	4.5	ND	ND	ND	0.048	0.27	0.31
SB-16	6.0	132	ND	ND	ND	ND	ND
SB-17	3.0	ND	ND	ND	ND	ND	ND
SB-17	5.5	336	ND	ND	ND	ND	ND
SB-18	3.5	2490	0.152	4.250	2.800	35.50	42.7
SB-18	6.0	239	0.0989	0.450	2.12	10.3	13.0
SB-19	3.5	ND	ND	ND	ND	ND	ND
SB-19	7.5	260	0.16	ND	1.2	6.7	8.06
SB-20	4.5	ND	ND	ND	ND	ND	ND
SB-20	5.5	259	0.2	ND	0.45	2.16	2.81

**TABLE 1: DRO AND BTEX RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Borehole ID	Sample Depth (ft)	Analytical Results (mg/kg)					
		DRO	Benzene	Toluene	Ethylbenzene	Xylenes	Total BTEX
SB-21	2.5	295	0.047	0.085	0.140	1.09	1.36
SB-21	5.0	222	ND	ND	0.560	4.40	4.96
SB-22	1.5	ND	ND	ND	ND	ND	ND
SB-28**	1.5	ND	ND	ND	ND	ND	ND
SB-22	5.0	ND	ND	ND	ND	ND	ND
SB-23	2.5	ND	ND	ND	ND	ND	ND
SB-23	5.5	151	ND	ND	ND	ND	ND
SB-24	3.5	ND	ND	ND	ND	ND	ND
SB-29**	3.5	ND	ND	ND	ND	ND	ND
SB-24	5.5	449	ND	ND	ND	ND	ND

Notes

ND = not detected.

Bolded and shaded values denote concentrations above the regulatory criteria. Total BTEX values that are bolded and shaded denote values exceeding the 15 mg/kg condition for 500 mg/kg DRO cleanup level.

DRO cleanup level is based on ADEC Method One cleanup level in the Arctic Zone [18 AAC 75.341(b)].

DRO cleanup level is 200 mg/kg, but ADEC will allow a 500 mg/kg if total BTEX is below 15 mg/kg and benzene is below 0.5 mg/kg.

** Sample is a field duplicate of the sample immediately above.

TABLE 2: PAH RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA

Borehole ID	Sample Depth (ft)	Polynuclear Aromatic Hydrocarbon Results (mg/kg)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthylene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(e)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
ADEC Cleanup Level		380	380	3800	3800	27800	6.6	0.66	6.6	66	1900	660	0.66	2500	3200	6.6	42	27800	1900
SB-03	3.5	0.87	1.1	0.009	0.011	ND	ND	ND	ND	ND	ND	ND	ND	0.039	ND	0.480	0.049	ND	ND
SB-04	4.0	2.4	2.7	0.032	0.021	ND	ND	ND	ND	ND	ND	ND	ND	0.084	ND	1.00	0.120	ND	ND
SB-04	6.0	0.61	0.78	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND	1.00	0.013	ND	ND
SB-07	4.5	0.570	0.470	0.031	0.042	0.064	0.059	ND	0.057	ND	ND	0.011	ND	0.029	0.046	ND	0.089	0.110	0.029
SB-09	2.0	ND	ND	0.08	0.071	0.019	ND	ND	ND	ND	ND	0.075	ND	0.023	ND	ND	3.30	ND	0.016
SB-09	5.5	ND	ND	0.820	0.860	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.80	ND	ND	1.20	ND
SB-09	7.5	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-10	1.5	7.40	4.90	0.058	0.059	0.024	0.005	ND	0.006	ND	ND	0.010	ND	0.029	0.180	ND	1.80	0.570	0.021
SB-11	4.0	5	4.9	0.087	0.043	0.046	0.008	ND	0.008	ND	ND	0.010	ND	0.040	0.150	ND	2.00	0.430	0.300
SB-14	4.0	9.9	10	0.085	0.093	0.010	ND	ND	ND	ND	ND	ND	ND	0.005	0.300	ND	3.90	0.440	ND
SB-14	5.5	0.14	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.078	0.008	ND	ND
SB-15	6.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-27*	6.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SB-23	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes

** Sample is a field duplicate of the sample immediately above.

ND = not detected.

ADEC cleanup levels are based on the more stringent of Method Two Soil Cleanup Levels in the Arctic Zone; direct contact or outdoor inhalation [18 AAC 75.341(c)].

- Page Intentionally Left Blank -

**TABLE 3: IN-SITU PID RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Location	Result (ppm)
SB-01 (0)	0.4
SB-01 (0.5)	0.4
SB-01 (1)	0.4
SB-01 (1.5)	0.3
SB-01 (2)	0.5
SB-01 (2.5)	0.4
SB-01 (3)	0.5
SB-01 (3.5)	0.9
SB-01 (4)	74.8
SB-01 (4.5)	23
SB-01 (5)	6
SB-01 (5.5)	2.9
SB-02 (0)	1.6
SB-02 (0.5)	1.7
SB-02 (1)	1.9
SB-02 (1.5)	1.7
SB-02 (2)	2.1
SB-02 (2.5)	1.8
SB-02 (3)	1.9
SB-02 (3.5)	2.8
SB-02 (4)	2.2
SB-02 (4.5)	1.9
SB-02 (5)	1.6
SB-03 (0)	0.5
SB-03 (0.5)	1
SB-03 (1)	0.6
SB-03 (1.5)	0.5
SB-03 (2)	0.6
SB-03 (2.5)	0.6
SB-03 (3)	7.1
SB-03 (3.5)	234
SB-03 (4)	123
SB-03 (4.5)	143
SB-03 (5)	26.1
SB-03 (5.5)	92.7
SB-03 (6)	16.9
SB-03 (6.5)	15.2

Location	Result (ppm)
SB-04 (0)	0.5
SB-04 (0.5)	1.8
SB-04 (1)	0.7
SB-04 (1.5)	0.6
SB-04 (2)	1.3
SB-04 (2.5)	1.7
SB-04 (3)	0.9
SB-04 (3.5)	2.7
SB-04 (4)	83.6
SB-04 (4.5)	305
SB-04 (5)	24.2
SB-04 (6)	16.7
SB-05 (0)	1.2
SB-05 (0.5)	1.3
SB-05 (1.5)	1.3
SB-05 (2)	1.1
SB-05 (2.5)	1.2
SB-05 (3)	1.3
SB-05 (3.5)	2.5
SB-05 (4)	0.5
SB-05 (4.5)	2
SB-05 (5)	9.6
SB-05 (5.5)	53
SB-05 (6)	14.3
SB-05 (6.5)	5.9
SB-05 (7)	4
SB-06 (0)	0.7
SB-06 (0.5)	2.5
SB-06 (1)	9.2
SB-06 (1.5)	103
SB-06 (2)	32.1
SB-06 (2.5)	87.9
SB-06 (3)	76.9
SB-06 (3.5)	138
SB-06 (4)	56.2
SB-06 (4.5)	16
SB-06 (5)	7.4
SB-06 (5.5)	5.3

Location	Result (ppm)
SB-07 (0)	1.5
SB-07 (0.5)	12.1
SB-07 (1)	6.1
SB-07 (1.5)	4
SB-07 (2)	10.7
SB-07 (2.5)	10.8
SB-07 (3)	6.6
SB-07 (3.5)	5.4
SB-07 (4)	12.9
SB-07 (4.5)	183
SB-07 (5)	1.1
SB-07 (5.5)	1
SB-07 (6)	0.9
SB-07 (6.5)	1
SB-07 (7)	0.9
SB-07 (7.5)	0.9
SB-07 (8)	0.9
SB-08 (0)	0.4
SB-08 (0.5)	0.5
SB-08 (1)	0.4
SB-08 (1.5)	1.2
SB-08 (2)	9
SB-08 (2.5)	10.6
SB-08 (3)	7.8
SB-08 (3.5)	122
SB-08 (4)	22.6
SB-08 (4.5)	229
SB-08 (5)	11.2
SB-09 (0)	1.3
SB-09 (0.5)	81.3
SB-09 (1)	128
SB-09 (1.5)	99.7
SB-09 (2)	161
SB-09 (2.5)	109
SB-09 (3)	122
SB-09 (3.5)	88
SB-09 (4)	91.4
SB-09 (4.5)	132
SB-09 (5)	210
SB-09 (5.5)	258
SB-09 (6)	34.3
SB-09 (6.5)	3.8
SB-09 (7)	2
SB-09 (7.5)	1.3
SB-09 (8)	1.1

Highlighted values exceed 20 ppm

**TABLE 3: IN-SITU PID RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Location	Result (ppm)
SB-10 (0)	9.5
SB-10 (0.5)	73.9
SB-10 (1)	74.6
SB-10 (1.5)	100
SB-10 (2)	41.4
SB-10 (2.5)	53.2
SB-10 (3)	73.4
SB-10 (3.5)	31.7
SB-10 (4)	38.4
SB-10 (4.5)	96.4
SB-10 (5)	34.7
SB-10 (5.5)	90.1
SB-10 (6)	20
SB-10 (6.5)	12
SB-10 (7)	6.7
SB-10 (7.5)	5
SB-10 (8)	2.9
SB-11 (0)	8.5
SB-11 (0.5)	9
SB-11 (1)	16.6
SB-11 (1.5)	14.9
SB-11 (2)	19.5
SB-11 (2.5)	84.4
SB-11 (3)	32.9
SB-11 (3.5)	39.7
SB-11 (4)	91.1
SB-11 (4.5)	56.8
SB-11 (5)	4.2
SB-11 (5.5)	3.4
SB-12 (0)	4.5
SB-12 (0.5)	30.8
SB-12 (1)	105
SB-12 (1.5)	101.2
SB-12 (2)	82.6
SB-12 (2.5)	70.6
SB-12 (3)	21.1
SB-12 (3.5)	50.1
SB-12 (4)	43.4
SB-12 (4.5)	40.6
SB-12 (5)	15.9
SB-12 (5.5)	30.3
SB-12 (6)	7.3

Location	Result (ppm)
SB-13 (0)	2.1
SB-13 (0.5)	2.4
SB-13 (1)	0.5
SB-13 (1.5)	0.2
SB-13 (2)	0.1
SB-13 (2.5)	0.1
SB-13 (3)	0.1
SB-13 (3.5)	0.2
SB-13 (4)	0.8
SB-13 (4.5)	3.9
SB-13 (5)	0.7
SB-13 (5.5)	0.3
SB-13 (6)	0.2
SB-14 (0)	1.8
SB-14 (0.5)	4.4
SB-14 (1)	34.9
SB-14 (1.5)	42.9
SB-14 (2)	45.6
SB-14 (2.5)	18.9
SB-14 (3)	30.2
SB-14 (3.5)	145
SB-14 (4)	203
SB-14 (4.5)	157
SB-14 (5)	9
SB-14 (5.5)	6.4
SB-15 (0)	5.5
SB-15 (0.5)	6.7
SB-15 (1)	4.2
SB-15 (1.5)	3.1
SB-15 (2)	2.9
SB-15 (2.5)	2.5
SB-15 (3)	2.1
SB-15 (3.5)	3.2
SB-15 (4)	3.1
SB-15 (4.5)	34.2
SB-15 (5)	151
SB-15 (5.5)	224
SB-15 (6)	33.1
SB-15 (6.5)	0
SB-15 (7)	0
SB-15 (7.5)	0
SB-15 (8)	0

Location	Result (ppm)
SB-16 (0)	0
SB-16 (0.5)	0
SB-16 (1)	0
SB-16 (1.5)	0.1
SB-16 (2)	0.1
SB-16 (2.5)	0.2
SB-16 (3)	0.3
SB-16 (3.5)	0.2
SB-16 (4)	0.4
SB-16 (4.5)	0.7
SB-16 (5)	0.3
SB-16 (5.5)	0.3
SB-16 (6)	0.2
SB-17 (0)	0.5
SB-17 (0.5)	0.5
SB-17 (1)	0.6
SB-17 (1.5)	0.7
SB-17 (2)	0.6
SB-17 (2.5)	0.6
SB-17 (3)	0.7
SB-17 (3.5)	0.5
SB-17 (4)	0.5
SB-17 (4.5)	0.3
SB-17 (5)	0.7
SB-17 (5.5)	0.3
SB-18 (0)	3.3
SB-18 (0.5)	20.5
SB-18 (1)	47.9
SB-18 (1.5)	40.1
SB-18 (2)	19.7
SB-18 (2.5)	20
SB-18 (3)	27.9
SB-18 (3.5)	191
SB-18 (4)	133
SB-18 (4.5)	71.2
SB-18 (5)	63.3
SB-18 (5.5)	78.9
SB-18 (6)	0.9

Highlighted values exceed 20 ppm

**TABLE 3: IN-SITU PID RESULTS
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Location	Result (ppm)
SB-19 (0)	0.4
SB-19 (0.5)	0.4
SB-19 (1)	0.4
SB-19 (1.5)	0.5
SB-19 (2)	0.5
SB-19 (2.5)	0.5
SB-19 (3)	0.5
SB-19 (3.5)	0.7
SB-19 (4)	0.6
SB-19 (4.5)	0.5
SB-19 (5)	0.5
SB-19 (5.5)	1.1
SB-19 (6)	0.5
SB-19 (6.5)	0.6
SB-19 (7)	3.9
SB-19 (7.5)	0.8
SB-19 (8)	0.7
SB-20 (0)	0.2
SB-20 (0.5)	0.3
SB-20 (1)	0.2
SB-20 (1.5)	0.4
SB-20 (2)	0.2
SB-20 (2.5)	0.3
SB-20 (3)	0.4
SB-20 (3.5)	0.3
SB-20 (4)	0.3
SB-20 (4.5)	0.5
SB-20 (5)	3
SB-21 (0)	2.2
SB-21 (0.5)	2.5
SB-21 (1)	2.5
SB-21 (1.5)	7.2
SB-21 (2)	18.7
SB-21 (2.5)	24
SB-21 (3)	13.4
SB-21 (3.5)	21.1
SB-21 (4)	9.3
SB-21 (4.5)	4.9
SB-21 (5)	3.4

Location	Result (ppm)
SB-22 (0)	0.1
SB-22 (0.5)	0.1
SB-22 (1)	0.1
SB-22 (1.5)	0.2
SB-22 (2)	0.1
SB-22 (2.5)	0.1
SB-22 (3)	0.1
SB-22 (3.5)	0.1
SB-22 (4)	0.2
SB-22 (4.5)	0.2
SB-22 (5)	0.2
SB-23 (0)	0.7
SB-23 (0.5)	0.6
SB-23 (1)	0.7
SB-23 (1.5)	0.7
SB-23 (2)	0.6
SB-23 (2.5)	0.7
SB-23 (3)	0.5
SB-23 (3.5)	0.5
SB-23 (4)	0.5
SB-23 (4.5)	0.5
SB-23 (5)	0.4
SB-23 (5.5)	0.4
SB-23 (6)	0.4
SB-24 (0)	0
SB-24 (0.5)	0
SB-24 (1)	0
SB-24 (1.5)	0
SB-24 (2)	0.1
SB-24 (2.5)	0.2
SB-24 (3)	0
SB-24 (3.5)	1.1
SB-24 (4)	0.7
SB-24 (4.5)	0.5
SB-24 (5)	0.4

Highlighted values exceed 20 ppm

- Page Intentionally Left Blank -

**TABLE 4: ESTIMATED SOIL SEGREGATION VOLUMES
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Material or Waste Category	Surface Area (ft ²)	Depth (thickness) (ft)	Bank (In-Place) Volume (ft ³)	Bank (In-Place) Volume (BCY)	Fluff Factor	Fluffed Volume (LCY)	TOTALS (LCY)
Clean Soil (DRO < 500 mg/kg)	Area A	5,615	0.0	0	0	1.30	0
	Area B	760	4.0	3,040	113	1.30	146
	Area C	2,064	5.0	10,320	382	1.30	497
	Area D	2,141	2.0	4,282	159	1.30	206
	Area E	1,844	4.0	7,376	273	1.30	355
	Area F	1,524	1.0	1,524	56	1.30	73
	Area G	2,314	0.0	0	0	1.30	0
	Total	16,262		26,542	983		1,278
Contaminated Soil (DRO > 500 mg/kg)	Area A	5,615	6.0	33,690	1,248	1.30	1622
	Area B	760	1.0	760	28	1.30	37
	Area C	2,064	1.0	2,064	76	1.30	99
	Area D	2,141	3.0	6,423	238	1.30	309
	Area E	1,844	2.0	3,688	137	1.30	178
	Area F	1,524	3.5	5,334	198	1.30	257
	Area G	2,314	6.0	13,884	514	1.30	668
	Total	16,262		65,843	2,439		3,170

Clean	1,300
Contaminated	3,200
Total	4,500

Notes:

BCY = Banked cubic yards

DRO = Diesel-range organics

LCY = Loose cubic yards

ft = feet

- Page Intentionally Left Blank -

**TABLE 5: CONFIRMATION SAMPLE SUMMARY
LITTLE RED SERVICES FACILITY
DEADHORSE, ALASKA**

Excavation Area	Area (sf)	Length of sidewall (ft)	Area per Screening Floor Sample (sf)	Number of Field Screening Floor Samples	Number of Analytical Floor Samples Needed	Length per Sidewall Screening Sample (ft)	Number of Sidewall Screening Samples	Number of Sidewall Analytical Samples
A	5,615	288	400	15	8	25	12	4
B	760	125	400	2	1	25	5	2
C	2,064	188	400	6	3	25	8	3
D	2,141	188	400	6	3	25	8	3
E	1,844	182	400	5	3	25	8	3
F	1,524	150	400	4	2	25	6	2
G	2,314	194	400	6	3	25	8	3
Total	16,262	1,315	N/A	44	23	N/A	55	20

Notes:

ft = feet

sf = square feet

N/A = Not applicable

- Page Intentionally Left Blank -

ATTACHMENT 3

Approved Landfill Disposal Request

- Page Intentionally Left Blank -

SA-10 / NSB OXBOW LANDFILL – DISPOSAL REQUEST

Date: 24 June, 2013 (NOTE: Gravel is dug up and will be brought out by end of september. *Dust Hare*)

Company/Contractor: Little Red Services / ERM Alaska AFE or PO # 0200465

Name: Rick Girouard

Approver Name Code (if applicable): _____

Phone #: 907-258-4880 Fax #: 907-258-4033

Material / Product Information

Name / Type: Diesel contaminated soil

MSDS / CAS Number: NA

MSDS Attached (circle one): YES NO
Analytical Data Attached (circle one): YES NO

Material Volume: Approximatel 2,000 cu. yds
(lbs., cu. yds., bbl.)

Packaging: Dump truck
(bag, drum, barrels)

Manufacturer: NA

Intended Use: Contamination is a result of historical diesel spills at the Little Red Services pad

Product Condition (new or used): NA

Landfill Hours of Operation:
8am – 4:30pm: Monday through Saturday.
CLOSED all day on: Sunday

***** ATTACH ANY TESTING DATA OR LAB ANALYSIS DOCUMENTATION *****

Approved: Disapproved: _____
Signature: *Dustin Hare* Date: 7-10-13
Jason Brower / Eric Lervig

MSDS Attached (circle one): YES NO
Date Faxed to Customer: 7-10-13

L/F Operator: _____
Date/Time Accepted: _____

Fax To:
Jason Brower / Dustin Hare
Fax: 907-670-1120
Phone: 907-670-1014
Cell: 907-448-3163

*** COPY MUST ACCOMPANY DRIVER
– SUBMIT TO L/F OPERATOR ***