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**FOCUSED SITE INVESTIGATION REPORT
FORMER COASTAL DRILLING SITE,
SOLDOTNA ALASKA
ADEC FILE NO. 2333.38.013**

Prepared for:

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Source: Google Earth

FORMER COASTAL DRILLING SITE

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1.0 INTRODUCTION

This site investigation report summarizes the activities and findings of a focused site investigation conducted at the former Coastal Drilling Site (site) located in Soldotna, Alaska (Figure 1). The work was performed in general accordance with the *Focused Site Investigation Work Plan – Former Coastal Drilling Site*, (ALTA, November 13, 2009). Any changes that were implemented due to field conditions are identified in the appropriate sections of this report. All work was performed under the direction of a Qualified Person as required under 18 AAC 75.

1.1 BACKGROUND

The former Coastal Drilling facility is located at mile 0.5 Kenai Spur Road, Soldotna, Alaska. The legal description of the Property is described as the eastern half of Section 29, T5N, R10W, Seward Meridian. The entire property includes several adjacent parcels totaling approximately 7 acres as shown on Figure 2. The investigation described in this report is focused primarily on the area within the chain link fence also shown on Figure 2.

The site was first developed by Coastal Drilling Company in 1957. Coastal Drilling Company conducted their oil and gas well drilling business from the site. Operations at the site consisted of drill rig maintenance and cleaning. Drilling company operations at the site ceased about 1981, although various companies have continued to operate the machine shop (presently vacant).

Prior reports indicate that site development included digging a debris disposal pit and constructing a machine shop, a drilling shop, and an office building. During the time the drilling companies operated the site, scrap iron, engines, lumber, and other drilling rig junk were placed in the debris disposal pit. A grate and drain associated with the drilling shop (now demolished) is also reported to have received rig wash water which was conducted to the disposal pit via a 6-inch pipe. This pit was subsequently filled and is referred to as the "covered pit". A second pit was excavated and remains open. Its use as a disposal pit has not been verified. This second pit is referred to as the "open pit" and is visible on the air photo in the frontispiece to this report.

Prior reports on the site include the following:

- August 1992: *Environmental Site Investigation Coastal Drilling Facility Soldotna, Alaska*. Shannon & Wilson, Inc.
- June, 1990: *Final Report Coastal Drilling Site Investigation, Soldotna, Alaska*. Harding Lawson Associates.

- 1988: *Preliminary Site Investigation*. ENSR, Inc.
- 1987: *Preliminary Assessment Report*. Tryck, Nyman, Hayes.

1.2 PURPOSE AND SCOPE

The overall goals of the investigation were to update old sampling data and to collect additional information necessary for completing a feasibility analysis for site cleanup. The specific goals of the project were to:

- Update the historical total petroleum hydrocarbon (TPH) data with gasoline-range organics (GRO), diesel-range organics (DRO), and residual-range organics (RRO) data for the purpose of comparing to current cleanup criteria.
- Estimate the volume of the open pit.
- Evaluate the potential for soil contamination in the open pit.
- Evaluate the potential presence of hexavalent chromium.
- Further evaluate the presence of lead in soil.
- Measure the density of the cover material over the covered pit for the suitability of capping.
- Estimate the volume of contaminated soil in the outside grate area.

2.0 INVESTIGATIVE ACTIVITIES

2.1 SITE SURVEY

A site topographic survey was conducted to provide a baseline map for future work. McLane Surveyors conducted the ground survey on November 10, 2009 and re-surveyed it on April 1, 2010. Appendix A provides the site topography and survey details. Figure 3 shows the elevation survey overlain onto a 1970 air photo of the site showing the location of the covered pit prior to being covered.

2.2 TEST PIT EXCAVATIONS

Test pits were excavated to help evaluate the depth of the open pit, collect soil samples from the bottom of the open pit, collect soil samples within the covered pit, and to characterize the cover material over the covered pit. One test pit that was to be excavated adjacent to the outside grate could not be excavated because concrete was present on the east side of the pit, well MW-01 is located on the south side, fencing is located on the west side, and the north side had been previously excavated to a depth of 8 feet in 1989. Although it may have been possible to break up the concrete, it appeared that doing so would result in demolishing the grate.

Six test pits (09TP-01 through 09TP-06) were excavated on December 21, 2009 at the locations shown on Figures 3 and 4. The test pits were excavated by L&J Excavators using a Komatsu PC200, and the excavations were supervised by Sue Kent with Kent & Sullivan, a qualified person as required by 18AAC75. Trees and brushy vegetation had been cleared the previous day around the perimeter of the open pit and across a portion of the covered pit. Slash was piled along the fence lines. The site was snow-covered and the ground was frozen to at least three feet at the time of the investigation. The maximum depth of the test pits around the perimeter of the open pit was generally constrained by long and bulky objects that were frozen into interlocking positions with other objects and/or the ground.

2.3 TEST PIT SOIL SAMPLING AND ANALYSIS

Soil samples were collected from the base of the excavations in all test pits except 09TP-04 and a second sample was collected from test pit 09TP-06 from two feet below the cover cap. The samples were field screened using head-space techniques with a photo-ionization detector (PID). Table 1 provides the field screening and sample descriptions for the soil samples.

The samples were collected for analysis of GRO, DRO, RRO, volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), total lead, total chromium, and hexavalent chromium.

The samples were collected using clean trowels and placed into sample containers as follows:

Analysis	Method	Volume	Container	Preservative
GRO	AK101	4 oz	Amber glass w/ septa	MeOH
VOCs	SW8260B	4 oz	Amber glass w/ septa	MeOH
DRO/RRO	AK102/103	4-oz	Amber glass	None
PCBs	SW8082A	4-oz	Amber glass	None
Lead, Chromium	SW6020	4-oz	Amber glass	None

The sample containers were stored in a cooler with ice and held at 4!2 C and shipped to SGS Laboratory in Anchorage. Tables 2, 3, and 4 provide summaries of the analytical results; Appendix C contains the laboratory report and ADEC checklist.

100 ml. wide-mouth HDPE jar⁵ TLC - According to Table 1 of IUST Procedures Manual

2.4 GRATE SOIL SAMPLING AND ANALYSIS

Two shallow soil samples were collected adjacent to the grate located outside the fenced portion of the site (Figure 4) on July 15, 2010. Sample Grate-1 was collected between on the southwest side of the grate, and sample Grate-2 was collected on the northwest side of the grate, between the grate and the fence. The samples were collected from a depth of 0.5 to 1.0 feet and consisted of compacted sand and gravel with no evidence of staining or odors. The samples were placed in 4-ounce amber glass jars and submitted for PCB analysis by EPA Method 8082A. ~~Table 3~~ includes a summary of the analytical results; Appendix C contains the laboratory report and ADEC checklist.

no Table showing Grate soil sample results

2.5 DATA VALIDATION

This QA summary includes a review, where appropriate, of holding times, blanks, matrix spike (MS) and laboratory control sample (LCS) recoveries, duplicate sample relative percent differences (RPDs), reporting limits, and overall assessment of data in the sample event. Each analysis that was performed is evaluated in the following subsections.

Field samples were reviewed to determine overall precision of sampling and analysis as well as matrix heterogeneity for GRO, BTEX/HVOC, DRO/RRO, PCBs, total chromium, hexavalent chromium, and total lead.

Laboratory data were evaluated using laboratory-supplied control criteria. In the following method-specific discussions, only the criteria exceedances that impact data qualification or require assessment beyond laboratory documentation are discussed.

Samples were submitted to SGS Environmental Services (SGS) in Anchorage. Seven

(7) soil samples, including one trip blank, were submitted in one laboratory batch on December 23, 2009. A field duplicate was not collected with this batch. A matrix spike/matrix spike duplicate (MS/MSD) sample was not designated for this batch.

Why no field dup?

Samples that contained greater than 26 mg/kg total chromium were subcontracted to Columbia Analytical Services (CAS) in Kelso, WA for hexavalent chromium analysis. Sample results are reported under CAS job number K1000269. Approved Method 6010B & 6020

The sample results are reported under SGS job number 1096816, and all samples were received at SGS in good condition with the following exception:

- Samples were received in Anchorage, AK, and Kelso, WA, at temperatures below the recommended 4 ± 2 °C. Ice was not noted on the cooler receipt forms; no qualifications were made based on temperatures.

Two soil samples were submitted in one laboratory batch to SGS on July 16, 2010. A field duplicate sample was not submitted with this batch. A matrix spike/matrix spike duplicate (MS/MSD) sample was not designated for this batch. The sample results are reported under SGS job number 1103492, and all samples were received at SGS, with proper preservation and temperatures (4 ± 2 °C), in good condition.

Why no field dup?

2.5.1.1 GRO/BTEX/HVOC by AK101/8026B

All data elements/indicators are in conformance with the project criteria, with the following exceptions:

- 4-Bromofluorobenzene (surrogate) recoveries in samples 09TP-03 (1480%), 09TP-05 (343%) and 09-TP-06 (250%) (samples 1096816003, -004 and -005, respectively) are above QC limits (50-150%). The positive GRO results for these three samples are qualified as estimated (J).
- The soil Trip Blank collection date was noted as 11/18/09 on the COC, and was noted in the case narrative as being received past the holding time. Technical holding times do not apply for trip blanks.
- The Method Detection Level for several VOC analytes do not meet the most stringent ADEC soil cleanup criteria. See Table 4 for an identification of those samples.
- An MS/MSD was performed on sample 09TP-01 (1096816001) for VOC.
 - The MS and/or MSD recoveries for chloromethane, vinyl chloride and dichlorodifluoromethane are above QC limits (various). Results for these analytes in the un-spiked sample are non-detect; no qualifications were made.
 - The MS/MSD RPD for 2-butanone (51%) is above QC limits (<20%). All

other recoveries and QC limits were met; no qualifications were made.

2.5.1.2 DRO/RRO by AK102/AK103

All data elements/indicators are in conformance with the project criteria, with the following exceptions:

- Surrogate 5a-androstane (27%) and n-triacontane (22%) recoveries in sample 09TP-03 (1096816003) are below QC criteria (50-150%) due to sample dilution. Greater than 5X dilution was performed due to high levels of target analytes. No qualifications were made.

2.5.1.3 PCBs by SW8082

All data elements/indicators are in conformance with the project criteria.

2.5.1.4 Total Chromium and Lead by SW6020

All data elements/indicators are in conformance with the project criteria.

2.5.1.5 Hexavalent Chromium (Cr+6) by EPA 3060A (CAS, Kelso)

All data elements/indicators are in conformance with the project criteria.

2.5.1.6 Overall Assessment

The following summary highlights the data evaluation findings for this sampling event:

- No data are rejected.
- The completeness objectives (greater than 85 percent complete) for this project are met.
- The precision and accuracy of the laboratory data, as measured by laboratory quality control indicators, suggest that the data are useable as qualified for the purposes of this project.

3.0 DISCUSSION OF RESULTS

3.1 OPEN PIT

Four test pits (09TP-1 through 09TP-04) were excavated around the perimeter of the open pit. Test pits 09TP-01 and 09TP-02 appeared to reach the base of the pit at depths of 10 and 12 feet, respectively. The soils underlying the open pit at both locations are sands and gravels, and at the time of the investigation, dry.

Test pit 09TP-03 may not have reached the bottom of the pit at 10 feet, although it was difficult to ascertain because so much of the debris was frozen in place. Test pit 09TP-04 encountered about three feet of debris that was just piled on top of the ground, and the excavation did not extend into the frozen ground.

As reported in prior reports for this site, the pit debris is a heterogeneous mix of large amounts of pallets, tires, drums, lumber, cables, and scrap iron as well as miscellaneous items such as a desk and miscellaneous parts of vehicles and other machinery. The debris generally appears to be uncontaminated solid waste except in the area of test pit 09TP-03 where several vehicle batteries and battery parts were observed and hydrocarbon-impacted soils were encountered at a depth of about 10 feet. Analytical results from a sample of that soil (sample 09TP-03) contained elevated GRO (323 mg/kg) and DRO (9,650 mg/kg) concentrations (Table 2). This sample also contained the highest lead concentration (95.5 mg/kg) detected in the 2009 soil samples, but its concentration is significantly below ADEC Method 2 cleanup criteria (400 mg/kg). Samples collected at the bottom of the other test pits in the open pit did not contain petroleum hydrocarbons, chromium +6, chromium +3, lead, PCBs, or VOCs above soil criteria.

The volume of the open pit was estimated assuming that the pit bottom is essentially flat and by integrating the area within the pit using one foot “slices” based on the topographic contours shown on Figure 5. The total volume of the pit is estimated to be approximately 550 cubic yards.

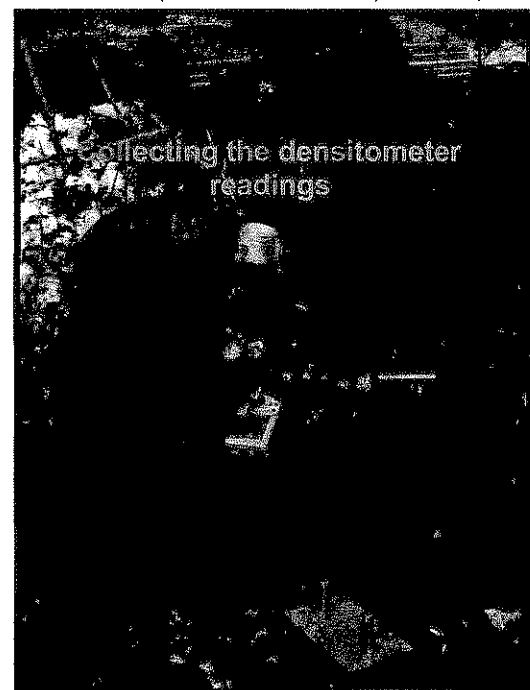
3.2 COVERED PIT

Two test pits (09TP-05 and 09TP-06) were excavated in the covered pit area. The location for test pit 09TP-05 was selected to be near where the drain pipe from the grate area described in prior reports discharged into the pit. The drain pipe was not located during this site investigation however. Both excavations encountered approximately five feet of sandy, gravelly silt cover material, the upper three feet of which were frozen. Underlying the cover material was visibly stained soil with slight hydrocarbon odors and miscellaneous metal debris (including an engine block, cable, and drum). The bottom of test pit 09TP-06 was at 9 feet and appeared to be saturated, as a small volume of water seeped into the test pit while it was open (see adjacent photograph).



Only soil sample 09TP-05 contained an elevated DRO concentration (1,240 mg/kg) from the covered pit area, and none of the samples from the covered pit contained elevated concentrations of GRO, RRO, lead, chromium +6, chromium +3, PCBs, or VOCs.

On December 22, 2009, test pit 09TP-05 was extended about 10 feet to the south and to a depth of about three feet, just below the frost line. McLane Engineers collected a sample of cap soil for grain size analysis and performed a densitometer reading from the base of the excavation. Appendix B contains the results of those tests. The grain size analysis indicated that the soils consist of silty sand with gravel with a maximum density at 130 pounds/cubic foot. The densitometer testing indicated a relative compaction of 92.8%.



3.3 GRATE AREA

The soil sample collected from the northwest side of the grate (sample Grate-2) did not

contain detectable PCBs but the sample from the southwest side of the grate (sample Grate-1) contained 0.553 mg/kg PCBs. Previous sample results from the grate area include the following:

- 1991 shallow soil sample SS-1 collected by Shannon & Wilson from a similar location and depth as sample Grate-1 contained 2.5 mg/kg PCBs.
- 1991 shallow soil sample SS-3 collected by Shannon & Wilson at the 0.5 to 1.0 foot depth from the southeast corner of the grate did not contain detectable PCB concentrations.
- 1989 surface soil sample 89160000 collected by Harding Lawson from Trench 16 on the northeast side of the grate contained 2.4 mg/kg PCBs.
- 1989 soil sample MW011 collected by Harding Lawson at the one-foot depth from monitoring well MW-1 on the southwest side of the grate contained 21 mg/kg PCBs.

The data collected by this study confirms the presence of PCBs in shallow soil in the grate area, but does not support the levels reported from earlier studies. The concentration detected in the 2010 sample is below the ADEC cleanup criteria for unrestricted site land use.

*PCB's from southwest grate
0.553 to 21 mg/kg*

4.0 CONCLUSIONS

The principal findings from this investigation are as follows.

- #1 #3 ▪ Evidence of contamination in the open pit was found only in the northeast side of the pit where several vehicle batteries and battery parts were observed and an apparently localized area of hydrocarbon-saturated soils were encountered at a depth of about 10 feet. A sample from that area contained more than 9,000 mg/kg DRO and more than 300 mg/kg GRO.
- #2 ▪ The volume of the open pit is estimated to be approximately 550 cubic yards based on a topographic survey of the pit and assuming a flat bottom.
- #1 ▪ In samples from the covered pit, only DRO in one sample (1,240 mg/kg) exceeded ADEC Method 2 cleanup criteria.
- #4 ▪ Hexavalent chromium was not detected in samples containing up to 67 mg/kg total chromium, suggesting that chromium may not be a significant concern.
- #5 ▪ Lead concentrations around the perimeter of the open pit are less than 100 mg/kg suggesting that the discarded batteries encountered on the northeast side have only a limited impact.
- Concentrations of volatile organic compounds and PCBs were all below the most restrictive ADEC Method 2 cleanup criteria.
- #4 ▪ The fill soils at the covered pit are of sufficient density to provide structural support for a capping system.
 - A low PCB concentration detected in shallow soil adjacent to the grate is below the ADEC cleanup level for unrestricted land use.

The results of this investigation suggest that capping and some minimal soil and debris removal is a viable remedial option for this site.

5.0 REFERENCES

ENSR, Inc., 1988: *Preliminary Site Investigation*.

Harding Lawson Associates' June, 1990: *Final Report Coastal Drilling Site Investigation, Soldotna, Alaska*.

Shannon & Wilson, Inc., August 1992: *Environmental Site Investigation Coastal Drilling Facility Soldotna, Alaska*.

Tryck, Nyman, Hayes, Inc., 1987: *Preliminary Assessment Report*.

TABLES

Table 1. PID readings and soil sample descriptions, Coastal Drilling Site.

Sample ID	Sample Depth (feet)	PID (ppm)	Sample Description
09TP-01A	10	0.9	Brownish-gray SILT and fine sand, most, no odor.
09TP-01B	11	1.6	Brownish-gray SILT with rounded pebbles and sand, moist, no odor
09TP-02	12	1.1	Medium brown, fine to coarse SAND with gravel (20-40%), dry, no odor.
09TP-03	10	910	Dark brownish-gray, fine to coarse SAND with gravel, heavy hydrocarbon sheens, strong odor, moist.
09TP-05	8	58.9	Dark brown SILT with sand, gravel, and metal debris; slight odor, moist.
09TP-06-6	6	18.2	Medium brown SILT with 10 to 30 percent sand and gravel, moist, slight odor.
09TP-06-9	9	10.1	Bluish-gray and dark brown swirled SILT with 10-15% sand and gravel, wet, slight odor.

Table 2. Soil metals and hydrocabons analyses, Coastal Drilling Site.

			Soil Criteria [1]						
Sample ID	Sample Depth	Sample Date	Total Cr	Cr ⁺⁶	Cr ⁺³ [2]	Lead	GRO	DRO	RRO
<i>Direct Contact:</i>			300	300	152,000	400	--	--	--
<i>Migration to GW:</i>			25	25	>10 ⁶	--	300	250	11,000
<i>Ingestion:</i>			--	--	--	--	1,400	12,500	10,000
<i>Inhalation:</i>			--	--	--	--	1,400	10,250	22,000
09TP-01	10	12/21/2009	30.5	0.58 U	30.5	86.2	4.88 U	90.7	655
09TP-02	11	12/21/2009	29.9	0.52 U	29.9	6.64	2.16 U	20.6 U	20.6 U
09TP-03	12	12/21/2009	67.2	0.59 U	67.2	95.5	323 J	9,650	7,630
09TP-05	8	12/21/2009	43	0.61 U	43	26.1	41.4 J	1,240	2,620
09TP-06-6	6	12/21/2009	38.1	0.64 U	38.1	9.22	39.6 J	177	1,020
09TP-06-9	9	12/21/2009	29	0.65 U	29	8.96	5.06	98.2	416

Concentrations reported in mg/kg.

[1] Table B1. Method two - soil cleanup levels in 18AAC75.341 (January 2009)

[2] Cr⁺³ concentration = (Total Chromium - Cr⁺⁶) concentrations

BOLD Analyte was detected

Concentration exceeds one or more of the soil criteria.

-- Criteria not established.

Cr Chromium

J Estimated concentration.

U The analyte was not detected above the reporting level shown on the table.

Table 3. Soil polychlorinated biphenyl (PCB) analyses, Coastal Drilling Site.

Sample ID	Sample Depth	Sample Date	PCBs	
			Direct Contact:	Migration to GW:
			Ingestion:	Inhalation:
09TP-01	10	12/21/2009	1	--
09TP-02	11	12/21/2009	--	--
09TP-03	12	12/21/2009	--	--
09TP-05	8	12/21/2009	0.154	(Arochlor-1016)
09TP-06-6	6	12/21/2009	ND (0.0656 U)	
09TP-06-9	9	12/21/2009	ND (0.0634 U)	

Results reported in mg/kg.

BOLD Analyte was detected.

Concentration exceeds one or more of the soil criteria.

ND None of the analytes assessed by this method were detected.

Table 4. Soil volatile organic compound (VOC) analyses, Coastal Drilling Site.

Analyte	Soil Cleanup Levels [1]				Sample ID					
	Direct Contact	Ingestion	Outdoor Inhalation	Migration to GW	09TP-01	09TP-02	09TP-03	09TP-05	09TP-06-6	09TP-06-9
1,1,2,2-Tetrachloroethane	42	--	5.5	0.017	<u>0.0293 U</u>	0.0129 U	<u>0.0215 U</u>	<u>0.0321 U</u>	<u>0.0326 U</u>	<u>0.0248 U</u>
1,1,2-Trichloroethane	150	--	11	0.018	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
1,1-Dichloroethane	14	--	0.85	0.03	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
1,2,3-Trichloropropane	1.2	--	0.17	0.00053	<u>0.0293 U</u>	<u>0.0129 U</u>	<u>0.0215 U</u>	<u>0.0321 U</u>	<u>0.0326 U</u>	<u>0.0248 U</u>
1,2,4-Trimethylbenzene	5,100	--	49	23	0.0152 U	0.0673 U	1.010	12.20	0.824	0.173
1,2-Dibromoethane	4.2	--	0.6	0.00016	<u>0.0152 U</u>	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
1,2-Dichloroethane	91	--	4.8	0.016	0.0152 U	<u>0.0673 U</u>	0.0112 U	<u>0.0167 U</u>	<u>0.0170 U</u>	0.0129 U
1,2-Dichloropropane	120	--	5.3	0.018	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
1,3,5-Trimethylbenzene	5,100	--	42	23	0.0152 U	0.0673 U	0.563	4.440	0.241	0.0368 J
4-Isopropyltoluene	--	--	--	--	0.0152 U	0.0673 U	0.528	0.333	0.0170 U	0.051
Benzene	150	--	11	0.025	0.00976 U	0.00431 U	0.00718 U	0.0107 U	0.0109 U	0.0145 J
Bromodichloromethane	130	--	10	0.044	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
Carbon tetrachloride	64	--	3.1	0.023	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
Dibromochloromethane	99	--	14	0.032	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
Ethylbenzene	10,100	--	110	6.9	0.0152 U	0.0673 U	0.216	0.054	0.0170 U	0.0153 J
Isopropylbenzene	10,100	--	62	51	0.0152 U	0.0673 U	0.079	0.262	0.172	0.133
Methylene chloride	1100	--	160	0.016	<u>0.0605 U</u>	<u>0.0267 U</u>	<u>0.0445 U</u>	<u>0.0663 U</u>	<u>0.0674 U</u>	<u>0.0512 U</u>
Naphthalene	1,400	--	28	20	0.0293 U	0.0129 U	0.0215 U	0.251	0.326	0.140
n-Butylbenzene	1,000	--	42	15	0.0152 U	0.0673 U	0.420	0.140	0.148	0.065
n-Propylbenzene	1,000	--	42	15	0.0152 U	0.0673 U	0.219	0.733	0.229	0.134
sec-Butylbenzene	1,000	--	41	12	0.0152 U	0.0673 U	0.363	0.155	0.093	0.050
tert-Butylbenzene	1,000	--	70	12	0.0152 U	0.0673 U	0.071	0.0167 U	0.0217 J	0.0129 U
Tetrachloroethene	15	--	10	0.024	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
Total Xylenes	20,300	--	63	63	0.0585 U	0.0259 U	0.582	0.420	0.135 J	0.0496 U
Trichloroethene	21	--	0.57	0.02	0.0152 U	<u>0.0673 U</u>	0.0112 U	0.0167 U	0.0170 U	0.0129 U
Vinyl chloride	5.5	--	4.3	0.0085	<u>0.0234 U</u>	<u>0.0140 U</u>	<u>0.0172 U</u>	<u>0.0257 U</u>	<u>0.0261 U</u>	<u>0.0198 U</u>

Concentrations are reported in mg/kg.

[1] Table B1. Method two - soil cleanup levels in 18AAC75.341 (January 2009)

BOLD The analyte was detected.

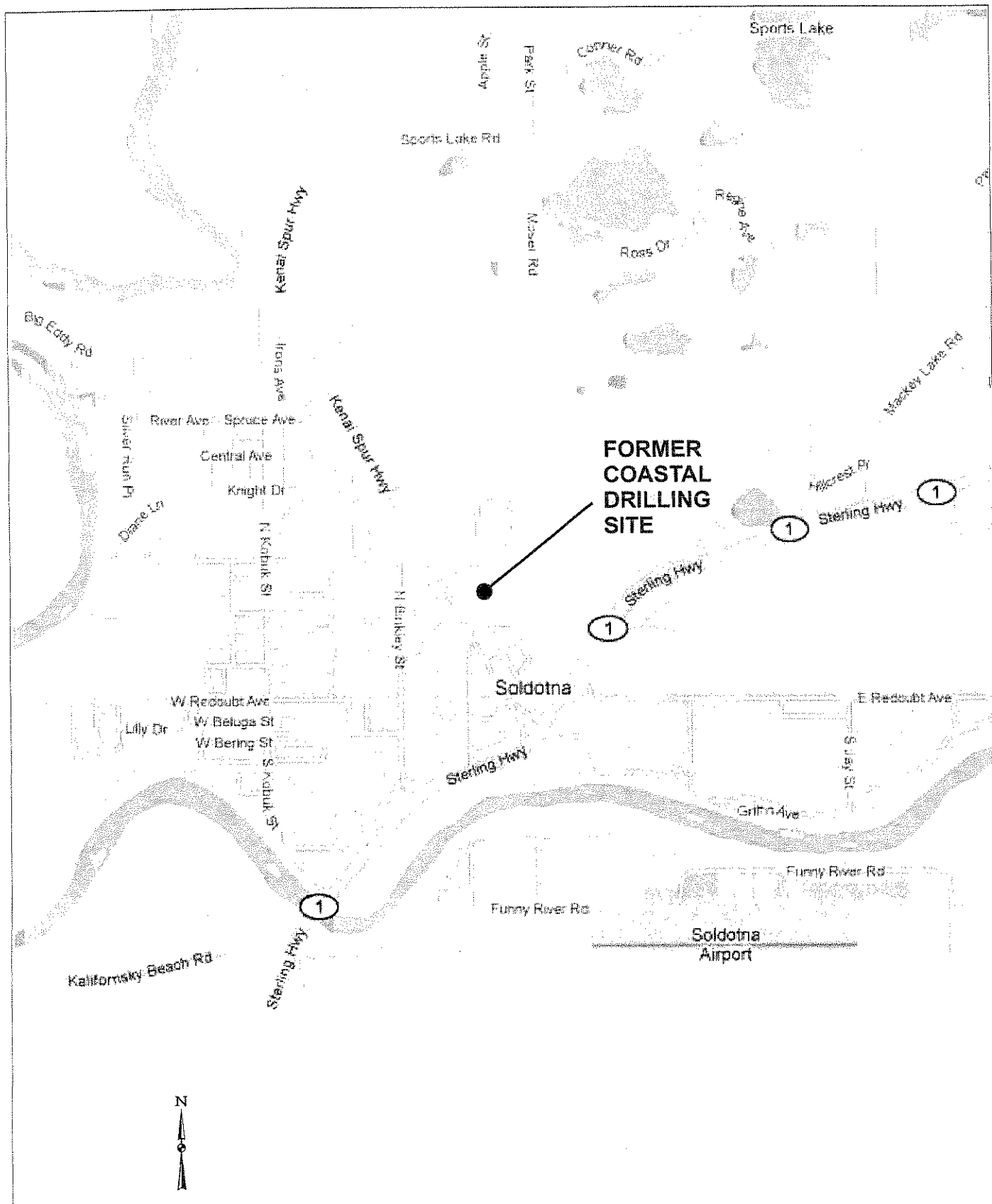
Underlined The detection level exceeds one or more soil criteria

The concentration exceeds one or more soil criteria.

-- Criteria not established.

U The analyte was not detected above the method detection level shown on the table.

FIGURES



ALTA GEOSCIENCES, INC.
 Bothell, Washington
 Prepared For:
 Reeves Amodio LLC

**FORMER COASTAL DRILLING SITE
 SOLDOTNA, ALASKA**

SITE LOCATION

**FIGURE
 1**



FORMER COASTAL DRILLING
PROPERTY BOUNDARY

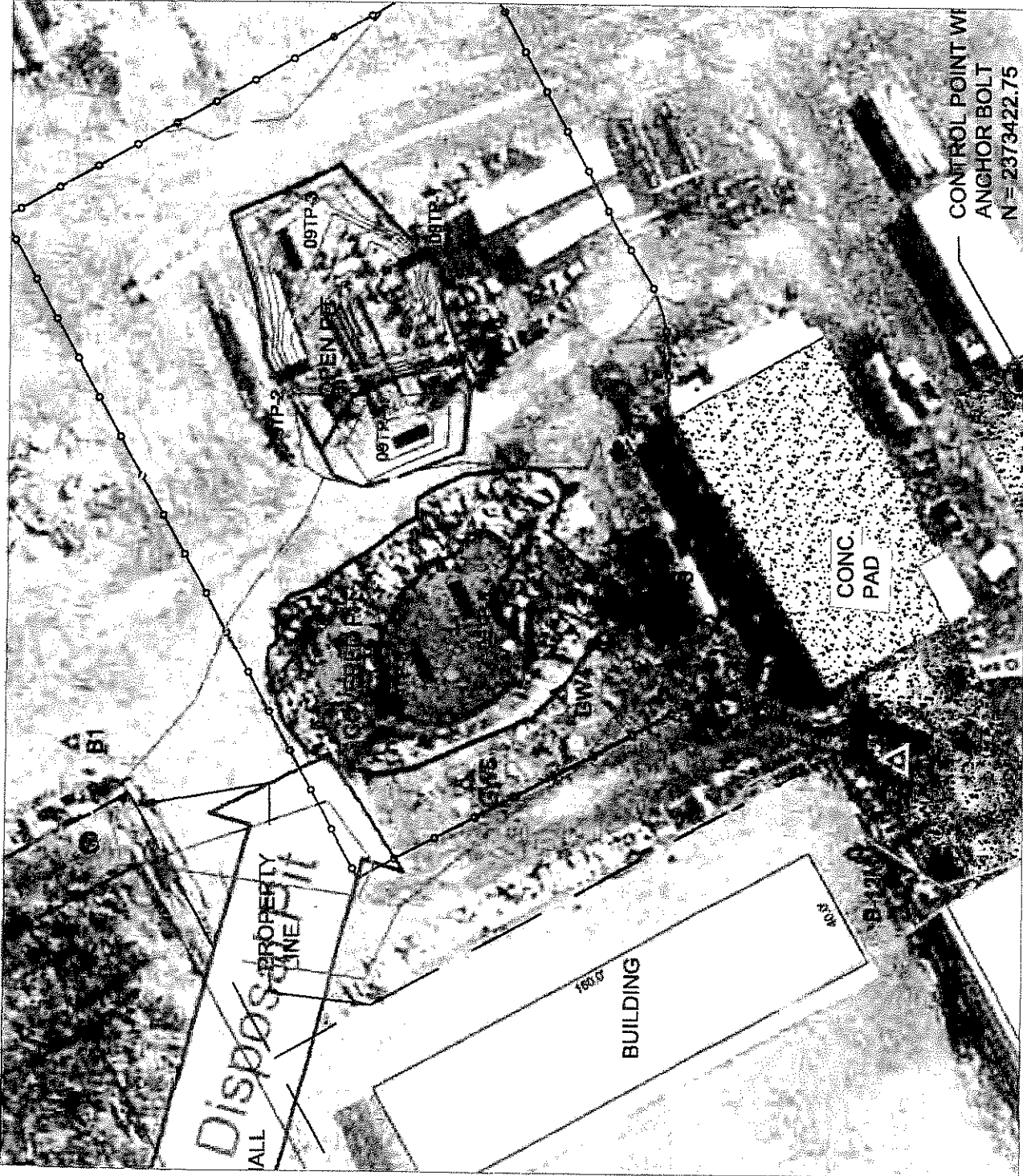


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**FORMER COASTAL DRILLING SITE
SOLDOTNA, ALASKA**

SITE PLAN

**FIGURE
2**



Explanation

- GW5 Monitoring well location
- Water well location
- Survey Monument
- 2009 test pit location with orientation and approximate length indicated
- Disposal pit boundaries, top and deepest part, based on airphoto mapping
- Fence
- Elevation, 1-ft contour interval
- Shallow soil sample location

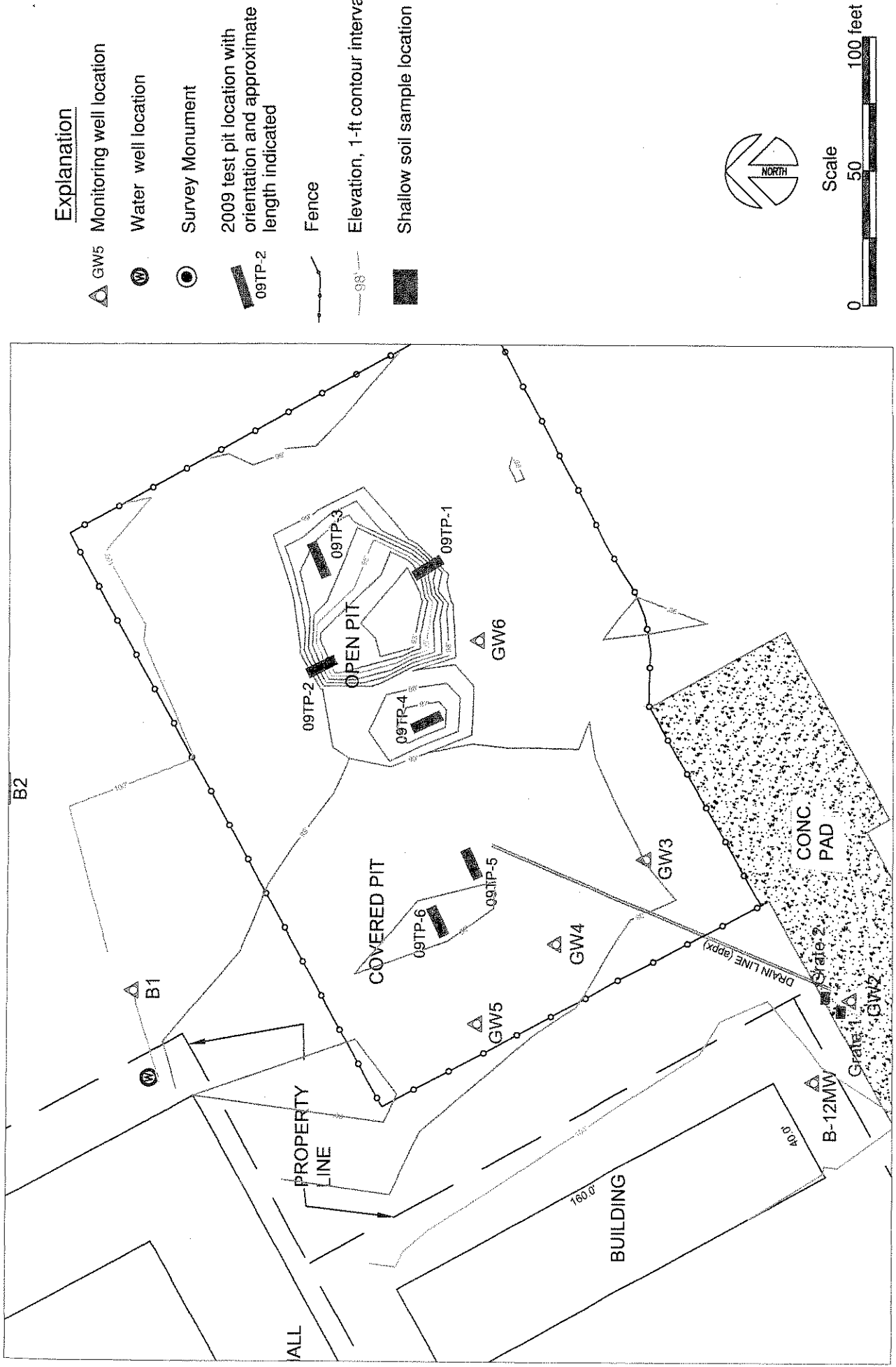


FIGURE
3

**Former Coastal Drilling Site
2009 Focused Investigation Report**

1970 Air Photo with 2009 Ground Survey Data

AITA GEOTECHNICS, INC.
Environmental & Geotechnical Solutions
Bethell, Washington



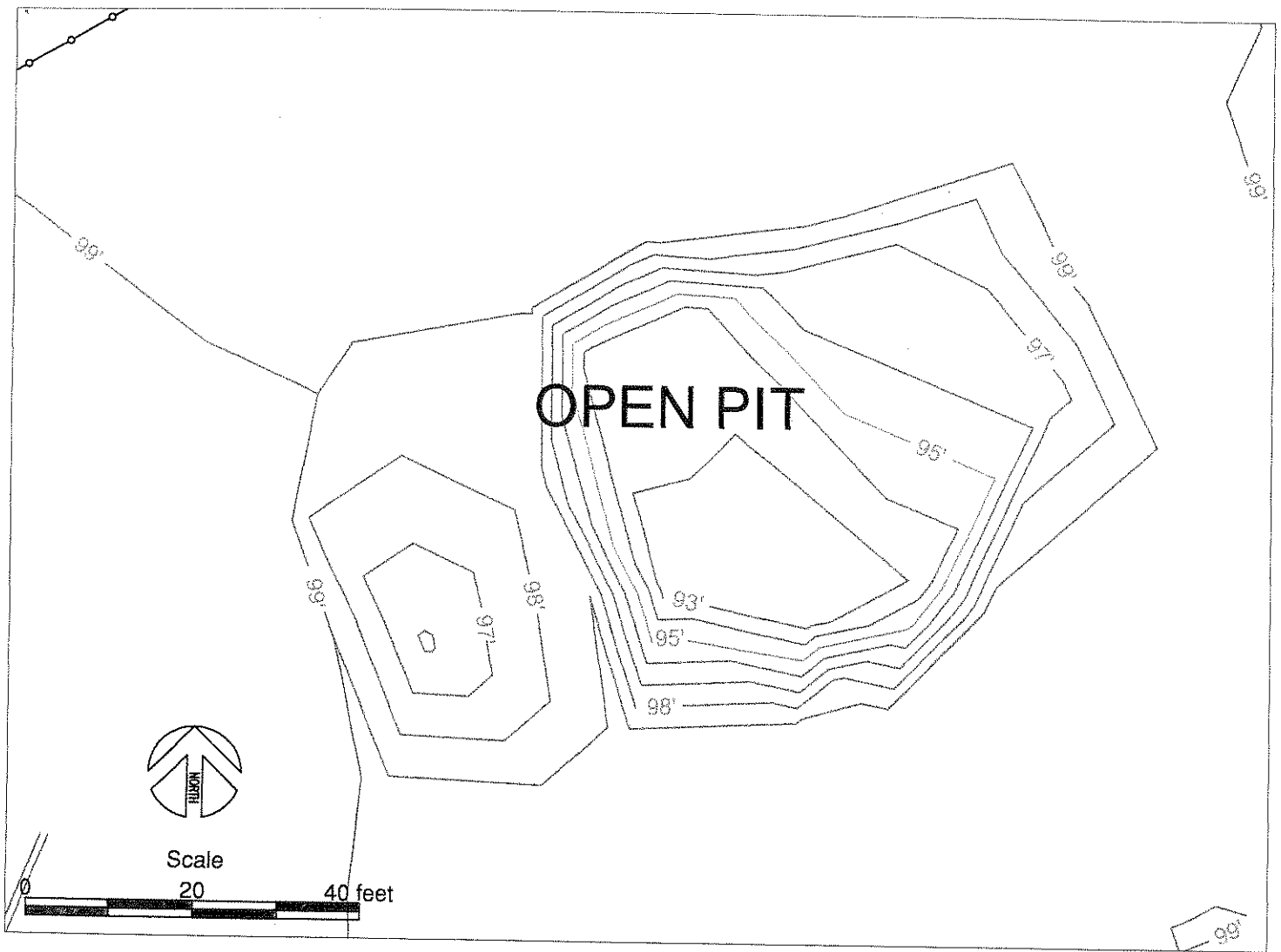
Explanation

- GW5 Monitoring well location
- Water well location
- Survey Monument
- 2009 test pit location with orientation and approximate length indicated
- Fence
- Elevation, 1-ft contour interval
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**Former Coastal Drilling Site
2009 Focused Investigation Report**

2009 Test Pit and 2010 Soil Sample Locations



Contour Elevation 1	Area Inside Contour Interval 1	Contour Elevation 2	Area Inside Contour Interval 2	Cubic Feet
A99	5025.12	A98	3583.49	V0 = 4,304.31
A98	3583.49	A97	2642.5	V1 = 3,113.00
A97	2642.5	A96	1840.58	V2 = 2,241.54
A96	1840.58	A95	1424.54	V3 = 1,632.56
A95	1424.54	A94	1056.66	V4 = 1,240.60
A94	1056.66	A93	428.56	V5 = 742.61
A93	428.56	A92	2115.29	V6 = 1,271.93
Total Cubic Feet =				14,546.54
Total Cubic Yards =				538.76

APPENDIX A
SITE SURVEY DATA

APPENDIX B
GEOTECHNICAL REPORT

FIELD DENSITY REPORT

Project: COASTAL DRILLING SITE, Soldotna Alaska
Client: Kent & Sullivan

McLane Job: 093121

Gauge: TROXLER 3440
Serial No.: 29937

Method: ASTM D 1557 STANDARD DS 2198

DATE: 12/22/2009

Technician: S. A. McLane COUNTS MS 655

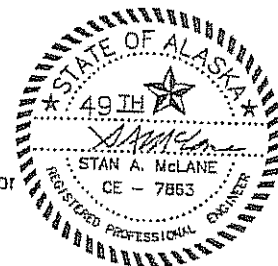
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Test Location	MAT'L (USCS)	MAX (PCF)	OPT. MOIST	DD (PCF)	WD (PCF)	%M	% COMP	SPEC COMP
8" Mid Section of Covered Pit	SM	130	9	120.7	133.3	10.4	92.8%	N/A

Notes:

1. SOIL DENSITY TESTED IN SMALL TEST PIT AT 3.5 FT. DEPTH.
2. MAXIMUM DENSITY ASSUMED AT 130 PCF FOR SILTY SAND WITH GRAVEL TO 3".

Reviewed & approved
23-Dec-09



Kent & Sullivan		
COASTAL DRILLING PIT COVER MATERIAL		
Soldotna Site		
GRADATION SUMMARY SHEET		
Percent Passing by Weight		
Job Gradation	Sample #	TH #1
Gradation Designation	Time Sampled	15:40
Sieve Designation	Date Sampled	12/22/2009
2" (50 mm)		94
1-1/2" (37.5 mm)		89
1" (25 mm)		81
3/4" (19 mm)		80
1/2" (12.5 mm)		77
3/8" (9.5 mm)		75
No. 4 (4.75 mm)		67
No. 8 (2.36 mm)		63
No. 16 (1.18 mm)		59
No. 30 (600 um)		55
No. 50 (300 um)		48
No. 100 (150 um)		39
No. 200 (75 um)		32
Moisture		13.6%
U.S.C.S.		SM
Notes: 1. TEST PIT EXCAVATED THROUGH FROST IN COVER MATERIAL OVER WASTE PIT. 2. SAMPLE OBTAINED AT 3.5' - 4' DEPTH.		