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July 19, 1993

Ms. Gail Braten
Project Manager
United States Army Corps of Engineers,
Alaska District
P.O. Box 898
Anchorage, Alaska 99506-0898

RE: Contract No. DACA85-91-D-0003, Delivery Order No. 32, Inventory Project Reports, Various Locations, Alaska

Dear Ms. Braten:

This letter summarizes the analytical results of sampling conducted at the Ugadaga Bay Fire Control Station site on May 13, 1993. Twelve surface soil samples were collected at four locations. Samples were collected in triplicate from each sample location, at the direction of the United States Army Corps of Engineers, Alaska District (COE). Table 1 lists the analytical results, and Table 2 summarizes regulatory and toxicity action levels of contaminants of concern. Those concentrations in Table 1 that exceed action levels stated in Table 2 are highlighted. This letter references sample location maps provided in the field investigation report for this site.

Overall, the sample analytical data are acceptable. However, sample results for lead for 93UGD005SL, 93UGD007SL, and 93UGD008SL are considered estimated (J) due to a significant difference in the project laboratory's matrix spike and matrix spike duplicate. The following sample analytical results exceeded 20 times the toxicity characteristic (TC) 40 Code of Federal Regulations 261 TC rule regulatory level for lead of 100 milligrams per liter. Therefore, these sample analytical results are expected to exceed the toxicity characteristic leaching procedure (TCLP) regulatory level: 93UGD004SL (5,700 milligrams per kilogram [mg/kg] J), 93UGD005SL (7,700 mg/kg J), and 93UGD006SL (5,410 mg/kg). According to the 1991 Alaska Department of Environmental Conservation *Interim Guidance for Non-UST* (Underground Storage Tank) *Contaminated Soil Cleanup Levels*, the cleanup level for soil contaminated with residual-range petroleum hydrocarbons is 2,000 mg/kg. The cleanup levels for diesel-range petroleum hydrocarbons range from 100 mg/kg to 2,000 mg/kg, depending on-site specific conditions. Please note that the analysis conducted was COE Modified Method 8015 and not the state-specified methods; therefore, the action level and the analytical results are not directly comparable. Two quality assurance (QA) samples, 93UGD003SL (430,000 mg/kg) and 93UGD012SL (180,000 mg/kg), exceeded the residual-range petroleum hydrocarbon (as bunker C) cleanup level. Samples 93UGD001SL (140,000 mg/kg), 93UGD002SL (140,000 mg/kg), 93UGD010SL (47,000 mg/kg), and 93UGD011SL (36,000 mg/kg) exceeded all diesel-range petroleum hydrocarbons (as diesel No. 2) cleanup levels.

Samples 93UGD001SL, 93UGD002SL, and 93UGD003SL were collected from an area of stained soil approximately 60 feet by 40 feet, previously identified as the barrels and fuel spill area. Diesel- and residual-range petroleum hydrocarbons were detected above action levels in these samples. The concentration of diesel No. 2 was 140,000 mg/kg in two of the three samples collected. The third sample contained no diesel No. 2, but contained bunker C at 430,000 mg/kg. Within the same stained area, soil samples from a 2-foot by 2-foot area adjacent to a broken battery (93UGD004SL, 93UGD005SL, and 93UGD006SL) contained lead concentrations above the TCLP action level. Concentrations range from 5,410 mg/kg to 7,700 mg/kg J. Soil samples 93UGD010SL, 93UGD011SL, and 93UGD012SL were collected from a second stained soil area, east of the barrels and fuel spill area, that measured 56 feet by 35 feet. This stained soil area occurred at the source of a small drainage path that extended approximately 150 feet south to a bluff, overlooking Beaver Inlet. Diesel- and residual-range petroleum hydrocarbons were detected in soil samples from this second stained soil area. Diesel No. 2 was detected in two of the three samples in concentrations of 36,000 mg/kg and 47,000 mg/kg. The third sample, 93UGD012SL, contained no diesel No. 2, but did contain 180,000 mg/kg bunker C. This discrepancy may be due to a difference in the project laboratory's and QA laboratory's analytical methods to distinguish specifically between hydrocarbons of similar carbon chain lengths. The analytical results indicate that the soil near the small drainage path is contaminated. This contaminated soil may impact the drainage; however, surface water samples were not collected.

In summary, contaminants of concern at Ugadaga Bay include lead, bunker C, and diesel No. 2. Other contaminants may exist, but sampling was limited and only select analytical test methods were employed. The extent of contamination has not been identified.

If you have any questions, please contact Louise Flynn or me at 257-5000.

Sincerely,

Janet Kaps
Environmental Scientist

JK/jb

Table 1

ANALTYICAL RESULTS FOR SOIL SAMPLES
UGADAGA BAY FIRE CONTROL STATION SITE
UNALASKA ISLAND, ALASKA
(mg/kg)

Sample No.	93UGD001SL	93UGD002SL	93UGD003SL(QA)	93UGD004SL
Replicate Samples	93UGD002SL	93UGD001SL	93UGD001SL	93UGD005SL
	93UGD003SL(QA)	93UGD003SL(QA)	93UGD002SL	93UGD006SL(QA)
Date	5-13-93	5-13-93	5-13-93	5-13-93
Fuel ID (Corps Modified Method 8015)				
Bunker C	ND(18)	ND(15)	430,000	NA
Diesel No. 2	140,000	140,000	ND(2,500)	NA
Gasoline	ND(18)	ND(15)	ND(2,500)	NA
Jet Fuel	ND(18)	ND(15)	N(5,000)	NA
Kerosene	ND(18)	ND(15)	ND(2,500)	NA
Metals (EPA Method 6010, 7000 series)				
Arsenic	NA	NA	NA	9.6
Barium	NA	NA	NA	41.0
Cadmium	NA	NA	NA	ND(3.3)
Chromium	NA	NA	NA	15.0
Lead	NA	NA	NA	5,700 J
Mercury	NA	NA	NA	ND(0.10)
Selenium	NA	NA	NA	ND(0.80)
Silver	NA	NA	NA	ND(3.30)

Key at end of table.

Table 1

ANALTYICAL RESULTS FOR SOIL SAMPLES
UGADAGA BAY FIRE CONTROL STATION SITE
UNALASKA ISLAND, ALASKA
(mg/kg)

Sample No.	93UGD005SL	93UGD006SL(QA)	93UGD007SL	93UGD008SL
Replicate Samples	93UGD004SL	93UGD004SL	93UGD008SL	93UGD007SL
	93UGD006SL(QA)	93UGD005SL	93UGD009SL(QA)	93UGD009SL(QA)
Date	5-13-93	5-13-93	5-13-93	5-13-93
Fuel ID (Corps Modified Method 8015)				
Bunker C	NA	NA	NA	NA
Diesel No. 2	NA	NA	NA	NA
Gasoline	NA	NA	NA	NA
Jet Fuel	NA	NA	NA	NA
Kerosene	NA	NA	NA	NA
Metals (EPA Method 6010, 7000 series)				
Arsenic	9.3	32.2	4.2	3.7
Barium	44.0	37.9	35.0	34.0
Cadmium	ND(3.10)	ND(0.61)	ND(3.9)	ND(3.4)
Chromium	16.0	12.8	4.6	4.0
Lead	7,700 J	5,410	6.0 J	5.0 J
Mercury	ND(0.10)	ND(0.12)	0.2	0.2
Selenium	ND(0.80)	ND(0.76)	1.0	ND(0.80)
Silver	ND(3.10)	ND(0.76)	ND(3.9)	ND(3.40)

Key at end of table.

Table 1

ANALTYICAL RESULTS FOR SOIL SAMPLES
UGADAGA BAY FIRE CONTROL STATION SITE
UNALASKA ISLAND, ALASKA
(mg/kg)

Sample No.	93UGD009SL(QA)	93UGD010SL	93UGD011SL	93UGD012SL(QA)
Replicate Samples	93UGD007SL	93UGD011SL	93UGD010SL	93UGD010SL
	93UGD008SL	93UGD012SL(QA)	93UGD012SL(QA)	93UGD011SL
Date	5-13-93	5-13-93	5-13-93	5-13-93
Fuel ID (Corps Modified Method 8015)				
Bunker C	NA	ND(40)	ND(33)	180,000
Diesel No. 2	NA	47,000	36,000	ND(740)
Gasoline	NA	ND(40)	ND(33)	ND(740)
Jet Fuel	NA	ND(40)	ND(33)	ND(740)
Kerosene	NA	ND(40)	ND(33)	ND(740)
Metals (EPA Method 6010, 7000 series)				
Arsenic	20.4	NA	NA	NA
Barium	32.4	NA	NA	NA
Cadmium	ND(0.77)	NA	NA	NA
Chromium	3.2	NA	NA	NA
Lead	20.4	NA	NA	NA
Mercury	ND(0.15)	NA	NA	NA
Selenium	ND(0.96)	NA	NA	NA
Silver	ND(0.96)	NA	NA	NA

Note: Shaded values are above action levels. Numbers in parentheses indicate the detection limit.

Key:

J = Estimated value.
NA = Not analyzed.
ND = Not detected.

Table 2

CONTAMINANTS OF CONCERN
ACTION LEVELS IN SOILS
UGADAGA BAY FIRE CONTROL STATION SITE
UNALASKA ISLAND, ALASKA

Contaminant	Action Level (mg/kg)
Gasoline-Range Petroleum Hydrocarbons	50[a]
Diesel-Range Petroleum Hydrocarbons (Diesel No. 2 and Kerosene)	100[a]
Residual-Range Petroleum Hydrocarbons (Bunker C and Jet Fuel)	2,000[b]
Arsenic	100 mg/L[c]
Barium	2,000 mg/L[c]
Cadmium	20 mg/L[c]
Chromium	100 mg/L[c]
Lead	100 mg/L[c]
Mercury	4 mg/L[c]
Selenium	20 mg/L[c]
Silver	100 mg/L[c]

[a] Alaska Department of Environmental Conservation, July 17, 1991, *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels*. Matrix score sheet Level A was chosen as the most conservative cleanup level. A matrix score sheet was not completed.

[b] Alaska Department of Environmental Conservation, July 17, 1991, *Interim Guidance for Non-UST Contaminated Soil Cleanup Levels*.

[c] Maximum concentration of contaminants for the toxicity characteristic 40 CFR 261 TC rule regulatory levels was multiplied by 20 to simulate the dilution faction in the TCLP methods for solids.

Key:

CFR = Code of Federal Regulations.
mg/kg = Milligrams per kilogram.
TC = Toxicity characteristic.
TCLP = Toxicity characteristic leaching procedure.