Addendum 2

Final

Addendum 2 to the Remedial Investigation Work Plan

Soil Pile Investigation

FWA 102 Former Communications Site
Fort Wainwright, Alaska

Prepared for

Department of the Army
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ADDENDUM 2

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Purpose

This document serves as an addendum to the May 2007 *Remedial Investigation/Feasibility Study Management Plan FWA 102 Former Communications Site Fort Wainwright Alaska* (*RI Management Plan*). It is being submitted to the FCS Team for review and approval. It addresses the chemical characterization of numerous soil stockpiles (soil piles) located at the Former Communication Site (FCS) for the soil disposal purposes. Multi-incremental sampling will be conducted to characterize the soil stockpiles. This approach was determined to be the most effective, efficient, and appropriate method for investigating this site.

All soil piles will be disposed of offsite in the Fort Wainwright Class I landfill unless they contain constituents that exceed Alaska Department of Environmental Conservation (ADEC) Table B1 or Table B2 soil cleanup levels provided in 18 AAC 75. If stockpile soils exceed these concentrations, they will be disposed of by the Defense Reutilization Management Office (DRMO) Fort Wainwright. If polychlorinated biphenyls (PCBs) are detected in the stockpiles located in the Exclusion Zone above the Fort Wainwright landfill acceptance criterion of 10 mg/kg, they will be disposed of as part of a separate polychlorinated biphenyl (PCB) removal project and will not be part of the work described in this addendum.

The U.S. Army, U.S. Environmental Protection Agency (EPA), and ADEC have agreed to conduct the remedial investigation/feasibility study (RI/FS) for the FCS using the Triad approach. An RI Management Plan addresses this approach and overall site management and includes the Quality Assurance Project Plan (QAPP), and Field Sampling Plan. The RI Management Plan should be used to find additional information on specific RI/FS tasks.

Area of Investigation

There are 47 soil piles at the FCS. The soil piles are generally located around the perimeter of the construction area as depicted in Figure 2-1 (Attachment 1). Table 2-1 (Attachment 1) lists the general location and estimated volume of each soil pile relative to subdivisions of the FCS site. As indicated in Table 2-1, the size of the soil piles range from approximately 10 to several hundred cubic yards. Table 2-1 also summarizes the proposed sampling program of these soil piles using the MI sampling approach.

Background Information

During housing construction activities, high levels of PCBs were encountered in soil in the southwestern corner of the site. Approximately 5 acres of this area were fenced off and designated as the PCB Exclusion Zone. There are 24 soil piles within the PCB exclusion

zone. The remaining 23 soil piles[1] were also generated during housing development from activities such as utility installation and building foundations. During the PSE Phase II Investigation, it was concluded that the stockpiles represented the same material as that found in the test pits excavated to investigate buried debris. The test pits and soil piles were determined to contain soil and debris consisting of scrap metal, concrete, asphalt, wood, and other inert waste materials. Since the final disposition of the soil piles is offsite disposal, they will need to be characterized to meet acceptance requirements.

Available Chemistry Data and Relationship to Soil Pile Characterization

Table 2-2 (Attachment 1) presents analytical results on soil pile sampling that was completed during the Preliminary Source Evaluation (PSE) Phase II Investigation (North Wind, 2007). It identifies any detected chemicals that exceed the Fort Wainwright Class 1 landfill acceptance criteria (i.e., ADEC Table B1 or Table B2 values for soil protective of groundwater, or in the case of PCBs, 10 parts per million [ppm]). Detected sample results that exceed landfill acceptance criteria are indicated in Table 2-2 by the use of bolding and gray shading.

In general, the existing analytical results for the soil samples show no detects or low levels of tested constituents. The data do not show any significant petroleum contamination (including both gasoline-range organic [GRO] and diesel-range organic [DRO] compounds). Similarly, volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were generally not detected above their respective laboratory reporting level, or if they were detected in the case of SVOCs, the reported concentrations were significantly below the landfill acceptance criteria. DDT and its breakdown products were detected in some samples but all pesticide results, are below the landfill acceptance criteria. Similarly, polycyclic aromatic hydrocarbons (PAHs) were detected at low concentrations below the landfill acceptance criteria.

Pentachlorophenol (PCP) was detected above the landfill acceptance criteria in 4 samples (out of 15). In most cases, the reported concentration is J-qualified, meaning that the concentration is estimated. In all cases, the reported concentration was only slightly above the landfill acceptance criteria (0.010 milligrams per kilogram [mg/kg]). Consequently, soil piles outside the Exclusion Zone will be retested for PCP.

Arsenic was detected above landfill acceptance criteria levels (8 mg/kg) in a number of samples. Arsenic is, however, a naturally occurring metal, and the average background concentration calculated for Fort Wainwright was between 8 and 11 ± 6 mg/kg (USACE, 1994). In most instances, the detected concentration of arsenic was only slightly (2 to 5 mg/kg) above the landfill acceptance criteria and within the reasonable range of background. However, the arsenic concentration in one sample collected from Soil Pile 11 was considerably higher (31 mg/kg) than in other samples. Several other metals (antimony, cadmium, chromium, and zinc) also detected in this sample were above the landfill acceptance criteria. The PSE II Report indicated the presence of crushed drums and other metal debris in Soil Pile 11, which accounts for these results. Because of the size of this soil pile (less than 200 cubic yards), the existing analytical results, and the presence of metal

[1] There is no pile 16 shown in Figure 2-1, this pile was clean fill.

debris, Soil Pile 11 will not be sent to the to the Fort Wainwright landfill, but will be disposed of by the DRMO. [1]

Soil pile samples were also analyzed for chemicals associated with explosives. None were detected in the samples or, if detected, the levels were below the landfill acceptance criteria. However, one sample from Soil Pile 18 had a single J-qualified concentration of 2,6-dinitrotoluene at 0.017 mg/kg, which exceeds the landfill acceptance criteria of 0.0044 mg/kg. Since the existing result was flagged, this soil pile will be retested using Method SW8270 to confirm the presence of this chemical.

Data Quality Objectives

The objective of the work associated with this addendum is characterization of contaminant levels in the soil piles so that appropriate decisions about their disposal can be made. An abbreviated data quality objective (DQO) process was used to establish the type and quality of data needed to make the following decision:

> *Can soil from this soil pile (or group of soil piles) be disposed of in the Fort Wainwright municipal landfill, or does it need to be processed by DRMO for treatment and/or disposal?*

Key inputs to the decision are described in the following subsections.

Target Analytes

The soil samples used to characterize the soil for disposal need to be analyzed for all contaminants that are likely to be present based on what is known about the site. Nine piles have already been tested. The remaining 36 soil piles have not been sampled. With a few exceptions, the previous sample results provide a reasonable understanding of the types of contaminants that are not likely to be present in the soil piles, including VOCs, pesticides, explosives, most SVOCs, and most metals. Based on site history, PCBs may be present in soil piles within the PCB Exclusion Zone, but PCBs are not expected in soil piles outside of it.[2] Although SVOC compounds were not significantly represented in the tested soil piles, SVOC analyses (EPA Method SW8270) is recommended because it covers a wide range of organic compounds and is appropriate for chromatographic confirmation of compounds that may have been identified by another technique. Similarly, DRO and RRO constituents were not encountered in the tested soil piles, but due to the ubiquitous nature of these petroleum contaminants, testing for them is proposed in this investigation. Metals testing, particularly to confirm arsenic concentrations in soil piles, is also recommended. The following general list of target analyte groups has been established for the different soil pile areas:

- 24 soil piles in PCB exclusion zone (Soil piles 17 through 39 and soil piles SPF and SPD) **– PCBs**[3]
- 22 soil piles outside PCB exclusion zone (Soil piles 01 through 07; combined soil piles 08 and 09, 14, 15, combined soil piles 40 and 41, and soil piles SPA, SPG, SPB, SPC) **– DRO, RRO, Metals, and SVOCs**[4]

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[1] Soil pile 11 and soil pile 12 are indistinguishable, so both piles will be sent to DRMO for offsite disposal.

[2] Based on 2005 PCB surface soil results (*Field Data Report*, Northwind, Inc., February 2006).

[3] Soil pile 18 also will be sampled for SVOC by Method SW8270 to confirm the detection of 2,6-dinitrotoluene.

4 Soil piles 4 though 9 in the northwest corner of the site also will be sampled for VOCs.

- Soil pile SPE will be sampled for PCBs as shown on Table 2-1.
- Soil piles 11 and 12 – No sampling; this combined soil pile will be processed by DRMO.

Detection Limits

The Fort Wainwright Class I landfill is the expected destination for the soil. According to their permit [Solid Waste Disposal Permit 0131-BA003], the landfill will not accept soil that contains hazardous substances in a concentration exceeding an "over 40-inch zone" migration to groundwater level set in 18 AAC 75.341, Table B1 or Table B2; the landfill will also not accept soil that contains PCBs in concentrations greater than 10 ppm.

The landfill acceptance criteria and the previous sampling results are listed in Table 2-2. The analytical methods used to characterize the soil piles for disposal should be capable of determining whether the target analytes are present in the soil at these levels or correspond to the requirements of the respective analytical methodology.

Representativeness

The soil samples submitted for analysis must be representative of the soil that will be disposed of, both in terms of the mean contaminant concentration and potential contaminant type.

Sampling Approach

A multi-increment (MI) sampling approach will be used to characterize the soil for disposal purposes. The MI sampling approach provides for better representation of the mean concentration within a defined decision unit as compared to a typical discrete sampling program. MI sampling is also advantageous because it reduces the number of analyses and costs compared to a typical discrete sampling program.

All MI field and laboratory sampling and quality assurance and quality control (QA/QC) procedures will follow ADEC guidance (*Draft Guidance on Multi-Increment Soil Sampling*, March 2007). The key elements of the soil pile MI sampling program include the following:

- Grouping small soil piles into single MI Decision Units of approximately 100 cubic yards. [1] Figure 2-1 and Table 2-1 depict the layout of the soil piles and summarize their volumes, respectively.
- Dividing large soil piles in multiple MI Decision Units (one Decision Unit per 500 cubic yards).
- The MI sample for each Decision Unit will be made up of approximately 30 randomly collected subsamples. Both surface and subsurface soil will be sampled. One-third of the subsamples will be obtained from the surface (0 to 2 feet); the remaining subsamples will come from random 2-foot-thick subsurface intervals collected from below half-height within the pile(s).[2] In this investigation, subsurface refers to soil below the surface of the soil pile, not soil below ground surface.

1 It was agreed during 8/6/07 conference call (ADEC, USACE, CH2M HILL) that piles within the same general area are similar in nature and therefore soil piles can be combined into the same decision unit.

2 In the absence of specific guidance, the split between surface and subsurface samples is based on professional judgment.

  - For smaller piles combined into one decision unit, the number of incremental samples per pile is based on the ratio of the pile volume to the total volume of the group of piles (Table 2-1). Each pile is divided into the appropriate number of increments and samples are collected from a random quadrant, A, B, C, or D, by rolling dice.
  - Larger piles are divided into multiple decision units. A grid of 30 increments is overlaid on each decision unit. Samples are collected from a random quadrant within each increment by rolling dice.

- For VOC analysis, samples will be field preserved directly in methanol. VOC samples will not be stored.
- For DRO, RRO, and SVOC analysis, 30 to 60 grams of soil will be collected at each subsample location/interval. The soil will be sieved in the field with a 6-mm (0.25-inch) screen to remove large particles, and the soil will be placed in 1 liter jars for transfer to the laboratory. The laboratory will sieve (#10 sieve to 2 mm size), subsample, and distribute through the lab for analysis.
- For metals analysis, unsieved MI samples will be collected and analyzed for TCLP. Unsieved samples will be collected from each of the 30 incremental sample locations. The entire volume (approximately 1 liter) will be homogenized and sent to the laboratory. The laboratory will subsample and obtain the required 100 g for analysis.
- Hand tools (trowels, shovels, and/or hand augers) will be used to collect the surface samples and subsurface samples.
- Triplicate samples will be collected at 10 percent of the Decision Units. Table 2-3 (Attachment 1) shows locations for the triplicate sampling and associated piles applied to each triplicate section. The relative standard deviation (RSD) results for each triplicate will be evaluated to ensure they are within 30 percent. ADEC MI sampling guidance will be followed to calculate the 95 percent upper confidence limit (UCL) for triplicate and regular samples. If the RSD results for a triplicate do not meet the ADEC criterion, the Decision Unit may need to be sampled discretely to determine the source of the variability.

Table 2-1 summarizes the MI sampling program for the soil piles. Additional information about sampling protocols and QA/QC requirements can be found in the FSC *Field Sampling Plan* and QAPP, respectively.

Analytical Methods

Table 2-4 lists the analytical methods to be used for soil pile characterization.

Evaluation of Results

All analytical results will be compared to the landfill criteria shown in Table 2-2, with the exception of the TCLP analysis for metals. TCLP metals results will be compared to the limits in Table 2-5. If any analytical results exceed the landfill criteria or TCLP results, the soil pile will be disposed offsite via DRMO, or in the case of PCBs, disposed as part of the PCB removal action.

References

ADEC. 2007. *Draft Guidance on Multi-Increment Soil Sampling*. Alaska Department of Environmental Conservation. March.

Code of Federal Regulations 261.24.

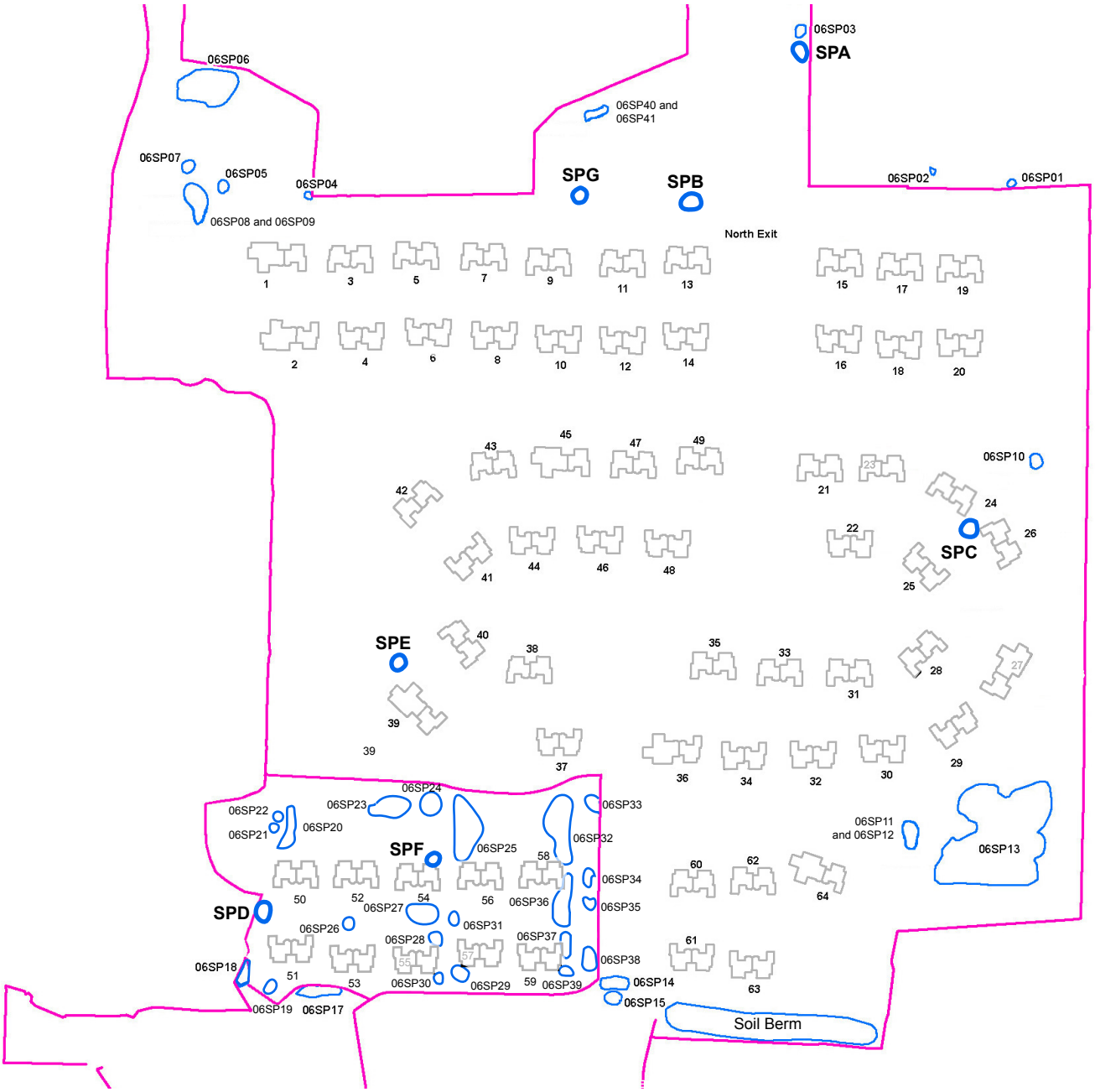
North Wind, Inc. February 2006. *FWA-102 Former Communication Site (Taku Gardens) Field Data Report, Fort Wainwright, Alaska.* Prepared for Department of the Army.

North Wind, Inc. May 2007. *Preliminary Source Evaluation II Report.* Taku Gardens Fort Wainwright, Alaska (Final).

USACE. 1994. *Background Data Analysis for Arsenic, Barium, Cadmium, and Lead on Fort Wainwright, Alaska.* U.S. Army Corps of Engineers, Alaska District. March.

ATTACHMENT 1

Figure and Tables



LEGEND

Buildings

Fence

Soil Piles

Additional Soil Piles SPA – SPG

Adapted from North Wind, Inc., PSEII Report, 2007

North

0 300 600

Approximate scale in feet

FIGURE 2-1
Location of Soil Piles
Remedial Investigation Work Plan, Addendum 2
Former Communications Site, Fort Wainwright, Alaska

TABLE 2-1
Soil Pile Sampling and Analysis Program
Taku Gardens, Fort Wainwright, Alaska

Group	Soil Pile	Volume (cy)	Number of Incremental Samples Per Soil Pile	MI Decision Units	Target Analyte Suites
Group 1 (north/north east corner)	06SP01	7	1	1	DRO, RRO, SVOCs, Metals
	06SP02	3	1		
	06SP03	36	7		
	06SP40[a]	0	0		
	06SP41[a]	28	6		
	SPA	35	7		
	SPB	32	6		
	SPG	8	2		
	Total Volume in Group	**149**			
	Total Number of Incremental Samples		**30**		
Group 2 (north/north west)	06SP04	2	1	1	DRO, RRO, SVOCs, Metals, VOCs
	06SP05	31	10		
	06SP07	58	19		
	Total Volume in Group	**92**			
	Total Number of Incremental Samples		30		
SP06 (northwest corner)	06SP06	1,111	120	4	DRO, RRO, SVOCs, Metals, VOCs
	Total Volume in Group	**1,111**			
	Total Number of Incremental Samples		120		
Group 3 (northwest)	06SP08[a]	296	30	1	DRO, RRO, SVOCs, Metals, VOCs
	06SP09[a]	0			
	Total Volume in Group	**296**			
	Total Number of Incremental Samples		30		
Group 4 (north/north east)	06SP10	78	14	1	DRO, RRO, SVOCs, Metals
	SPC	93	16		
	Total Volume in Group	**171**			
	Total Number of Incremental Samples		30		
Group 5 (southeast corner)	06SP11[a]	0	0	No MI Samples DRMO Disposal	DRO, RRO, SVOCs, Metals
	06SP12[a]	192	0		
	Total Volume in Group	**192**			
	Total Number of Incremental Samples		0		
SP13 (southeast corner)	06SP13 Base	2,111	131	10	DRO, RRO, SVOCs, Metals
	06SP13 Mound 1	510	32		
	06SP13 Mound 2	1,067	66		
	06SP13 Mound 3	1,133	71		
	Total Volume in Group	**4,821**			
	Total Number of Incremental Samples		300		
Group 6 (south)	06SP14	126	25	1	DRO, RRO, SVOCs, Metals
	06SP15	27	5		
	06SP16	0	0		
	Total Volume in Group	**153**			
	Total Number of Incremental Samples		30		
SP17 (southwest corner)	06SP17 Base	25	10	1	DRO, RRO, SVOCs, Metals
	06SP17 Mound	48	20		
	Total Volume in Group	**73**			
	Total Number of Incremental Samples		30		
SP18 (PCB Area)	06SP18	142	30	1	PCBs
	Total Volume in Group	**142**			
	Total Number of Incremental Samples		30		
SP20 (PCB Area)	06SP20	195	30	1	PCBs
	Total Volume in Group	**195**			
	Total Number of Incremental Samples		30		
Group 7 (PCB Area)	06SP19	28	9	1	PCBs
	06SP21	8	2		

TABLE 2-1
Soil Pile Sampling and Analysis Program
Taku Gardens, Fort Wainwright, Alaska

Group	Soil Pile	Volume (cy)	Number of Incremental Samples Per Soil Pile	MI Decision Units	Target Analyte Suites
	06SP22	11	4		
	06SP26	46	15		
	Total Volume in Group	**94**			
	Total Number of Incremental Samples		30		
Group 8 (PCB Area)	06SP23	333	21	2	PCBs
	06SP24	119	9		
	06SP25	600	30		
	Total Volume in Group	**1,052**			
	Total Number of Incremental Samples		60		
SP27 (PCB Area)	06SP27	398	30	1	PCBs
	Total Volume in Group	**398**			
	Total Number of Incremental Samples				
SP29 (PCB Area)	06SP29	107	30	1	PCBs
	Total Volume in Group	**107**			
	Total Number of Incremental Samples		30		
Group 9 (PCB Area)	06SP28	44	16	1	PCBs
	06SP30	17	6		
	06SP31	20	8		
	Total Volume in Group	**82**			
	Total Number of Incremental Samples		30		
Group 10 (PCB Area)	06SP32 Base	275	20	2	PCBs
	06SP32 Mound 1	407	29		
	06SP32 Mound 2	164	11		
	Total Volume in Group	**846**			
	Total Number of Incremental Samples		60		
Group 11 (PCB Area)	06SP33	52	18	1	PCBs
	06SP34	26	9		
	06SP35	9	3		
	Total Volume in Group	**87**			
	Total Number of Incremental Samples				
Group 12 (PCB Area)	06SP36 Mound 1	361	26	1	PCBs
	06SP36 Mound 2	48	4		
	Total Volume in Group	**409**			
	Total Number of Incremental Samples		30		
Group 13 (PCB Area)	06SP37	72	20	1	PCBs
	06SP39	36	10		
	Total Volume in Group	**108**			
	Total Number of Incremental Samples		30		
SP38	06SP38	95	30	1	PCBs
	Total Volume in Group	**95**			
	Total Number of Incremental Samples		30		
Group 14 (PCB Area)	SPD	8	4	1	PCBs
	SPE	19	11		
	SPF	28	15		
	Total Volume in Group	**54**			
	Total Number of Incremental Samples		30		
	Total Estimated Volume to Landfill		**10532**		
	Total Estimate Volume to DRMO		**192**		
			Total MI Samples (Triplicates not listed)	35	

[a]These piles are combined, not separate

TABLE 2-2
Soil Pile Analytical Results Compared to Landfill Criteria
Taku Gardens, Fort Wainwright, Alaska

Sample ID				**06SP01S01**	**06SP03S01**	**06SP03S02**	**06SP10S01**	**06SP11S01**	**06SP11S02**	**06SP11S03**	**06SP11S04**	**06SP14S01**	**06SP15S01**	**06SP16S01**	**06SP16S02**	**06SP16S03**	**06SP17S01**	**06SP17S02**	**06SP18S01**	**06SP18S02**	**06SP18S03**	**06SP40S01**
Location ID				06SP01	06SP03	06SP03	06SP10	06SP11	06SP11	06SP11	06SP11	06SP14	06SP15	06SP16	06SP16	06SP16	06SP17	06SP17	06SP18	06SP18	06SP18	06SP40
Sample Date				6/23/2006	6/27/2006	6/27/2006	6/22/2006	6/19/2006	6/19/2006	6/21/2006	6/21/2006	6/26/2006	6/27/2006	7/25/2006	7/25/2006	7/25/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	6/27/2006
Chemical Group	**Chemical Name**	**Units**	**Landfill Criteria**																			
VOC	1,1,1,2-Tetrachloroethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1,1-Trichloroethane	mg/kg	1.0	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1,2,2-Tetrachloroethane	mg/kg	0.017	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1,2-Trichloroethane	mg/kg	0.017	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1-Dichloroethane	mg/kg	12	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1-Dichloroethene	mg/kg	0.030	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,1-Dichloropropene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,2,3-Trichlorobenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 UJ	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,2,3-Trichloropropane	mg/kg	0.002	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.40 U	--	0.20 U	0.28 UJ	0.16 UJ	0.27 UJ	0.19 UJ	--	0.0055 U
VOC	1,2,4-Trichlorobenzene	mg/kg	2.0	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	1,2,4-Trimethylbenzene	mg/kg	95.2	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,2-Dibromo-3-chloropropane	mg/kg	--	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.40 U	--	0.20 U	0.28 UJ	0.16 UJ	0.27 UJ	0.19 UJ	--	0.011 U
VOC	1,2-Dibromoethane	mg/kg	3.06E-05	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.011 U
VOC	1,2-Dichlorobenzene	mg/kg	7.0	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	1,2-Dichloroethane	mg/kg	0.015	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,2-Dichloropropane	mg/kg	0.017	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,3,5-Trimethylbenzene	mg/kg	25	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,3-Dichlorobenzene	mg/kg	12	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	1,3-Dichloropropane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	1,4-Dichlorobenzene	mg/kg	0.80	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	2,2-Dichloropropane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	2-Butanone	mg/kg	60	0.010 J	0.021 U	0.023 U	0.019 U	0.012 U	0.0062 J	--	--	0.012 U	0.029 J	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.011
VOC	2-Chlorotoluene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	2-Hexanone	mg/kg	--	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.011 U
VOC	4-Chlorotoluene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	4-Isopropyltoluene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	4-Methyl-2-pentanone	mg/kg	--	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.0063 J
VOC	Acetone	mg/kg	10	0.090	0.070	0.068	0.090	0.080	0.085 J	--	--	0.092	0.41	1.3 U	--	0.67 U	0.53 J	0.30 J	0.91 UJ	0.63 UJ	--	0.12
VOC	Benzene	mg/kg	0.020	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0012 J	0.0033 J	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Bromobenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Bromochloromethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Bromodichloromethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Bromoform	mg/kg	0.38	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Bromomethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.0055 U
VOC	Carbon disulfide	mg/kg	17	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.011 U
VOC	Carbon tetrachloride	mg/kg	0.030	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Chlorobenzene	mg/kg	0.60	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Chloroethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Chloroform	mg/kg	0.34	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Chloromethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	cis-1,2-Dichloroethene	mg/kg	0.20	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	cis-1,3-Dichloropropene	mg/kg	0.020	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Dibromochloromethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Dibromomethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Dichlorodifluoromethane	mg/kg	60	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Ethylbenzene	mg/kg	5.5	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Hexachlorobutadiene	mg/kg	8.0	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	Isopropylbenzene	mg/kg	227	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Methylene chloride	mg/kg	0.015	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.011 U
VOC	Methyl-tert-butyl ether (MTBE)	mg/kg	--	0.016 U	0.021 U	0.023 U	0.019 U	0.012 U	0.013 U	--	--	0.012 U	0.040 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.011 U
VOC	Naphthalene	mg/kg	21	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	--	0.13 U	--	0.067 U	--	--	--	--	--	0.0055 U
VOC	n-Butylbenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	n-Propylbenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	o-Xylene	mg/kg	78	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	sec-Butylbenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Styrene	mg/kg	1.3	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 UJ	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	tert-Butylbenzene	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Tetrachloroethene (PCE)	mg/kg	0.030	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Toluene	mg/kg	5.4	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.0031 J	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	trans-1,2-Dichloroethene	mg/kg	0.40	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	trans-1,3-Dichloropropene	mg/kg	0.020	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Trichloroethene (TCE)	mg/kg	0.020	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Trichlorofluoromethane	mg/kg	--	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Vinyl chloride	mg/kg	0.0090	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.13 U	--	0.067 U	0.092 UJ	0.055 UJ	0.091 UJ	0.063 UJ	--	0.0055 U
VOC	Xylene, Isomers m & p	mg/kg	78	0.0080 U	0.011 U	0.012 U	0.0096 U	0.0061 U	0.0063 U	--	--	0.0060 U	0.020 U	0.26 U	--	0.13 U	0.18 UJ	0.11 UJ	0.18 UJ	0.13 UJ	--	0.0055 U
TPH	Diesel Range Organics	mg/kg	250	13	--	--	3.5	6.6	9.3	--	--	0.90 J	7.5 J	1.8	3.1 J	--	6.2 J	5.0	2.3	3.1	--	--
TPH	Gasoline Range Organics (C6-C10)	mg/kg	300	0.80 J	--	--	0.45 J	0.58 U	0.62 U	--	--	2.5 U	0.89 U	1.1 U	--	0.68 U	4.8 U	4.2 U	4.6 U	4.1 U	--	--
TPH	Residual Range Organics	mg/kg	11,000	50	--	--	15	32 J	30	--	--	6.7 J	79 J	9.6 J	18 J	--	33 J	23 J	8.0 J	16 J	--	--
SVOC	1,2,4-Trichlorobenzene	mg/kg	2.0	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.029 U	0.030 U	0.027 U	--	0.029 U	--

TABLE 2-2
Soil Pile Analytical Results Compared to Landfill Criteria
Taku Gardens, Fort Wainwright, Alaska

Sample ID				**06SP01S01**	**06SP03S01**	**06SP03S02**	**06SP10S01**	**06SP11S01**	**06SP11S02**	**06SP11S03**	**06SP11S04**	**06SP14S01**	**06SP15S01**	**06SP16S01**	**06SP16S02**	**06SP16S03**	**06SP17S01**	**06SP17S02**	**06SP18S01**	**06SP18S02**	**06SP18S03**	**06SP40S01**
Location ID				06SP01	06SP03	06SP03	06SP10	06SP11	06SP11	06SP11	06SP11	06SP14	06SP15	06SP16	06SP16	06SP16	06SP17	06SP17	06SP18	06SP18	06SP18	06SP40
Sample Date				6/23/2006	6/27/2006	6/27/2006	6/22/2006	6/19/2006	6/19/2006	6/21/2006	6/21/2006	6/26/2006	6/27/2006	7/25/2006	7/25/2006	7/25/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	6/27/2006
Chemical Group	**Chemical Name**	**Units**	**Landfill Criteria**																			
SVOC	1,2-Dichlorobenzene	mg/kg	7.0	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.029 U	0.030 U	0.027 U	--	0.029 U	--
SVOC	1,3-Dichlorobenzene	mg/kg	12	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.029 U	0.030 U	0.027 U	--	0.029 U	--
SVOC	1,4-Dichlorobenzene	mg/kg	0.80	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.029 U	0.030 U	0.027 U	--	0.029 U	--
SVOC	2,4,5-Trichlorophenol	mg/kg	90	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	2,4,6-Trichlorophenol	mg/kg	0.60	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	2,4-Dichlorophenol	mg/kg	0.45	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	2,4-Dimethylphenol	mg/kg	4.0	0.55 U	26 U	0.52 U	0.53 U	0.57 U	0.57 U	--	--	0.55 U	0.55 U	0.63 U	0.56 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	28 U
SVOC	2,4-Dinitrophenol	mg/kg	0.20	2.2 U	100 U	2.1 U	2.1 U	2.3 U	2.3 U	--	--	2.2 U	2.2 U	2.5 U	--	2.2 U	0.29 U	0.30 U	0.27 U	--	0.29 U	110 U
SVOC	2,4-Dinitrotoluene	mg/kg	0.0050	--	17 U	0.35 U	--	--	--	--	--	--	--	--	--	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	2,6-Dinitrotoluene	mg/kg	0.0044	--	17 U	0.35 U	--	--	--	--	--	--	--	--	--	--	0.058 U	0.060 U	**0.017 J**	--	0.057 U	18 U
SVOC	2-Chloronaphthalene	mg/kg	70	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	2-Chlorophenol	mg/kg	1.4	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	2-Methyl-4,6-dinitrophenol	mg/kg	--	2.2 U	100 U	2.1 U	2.1 U	2.3 U	2.3 U	--	--	2.2 U	2.2 U	2.5 U	--	2.2 U	0.29 U	0.30 U	0.27 U	--	0.29 U	110 U
SVOC	2-Methylnaphthalene	mg/kg	61	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	2-Methylphenol (o-Cresol)	mg/kg	7.0	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	2-Nitroaniline	mg/kg	--	1.8 U	84 U	1.7 U	1.7 U	1.8 U	1.8 U	--	--	1.8 U	1.8 U	2.0 U	1.8 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	88 U
SVOC	2-Nitrophenol	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	3,3'-Dichlorobenzidine	mg/kg	0.020	1.8 U	84 U	1.7 U	1.7 U	1.8 U	1.8 U	--	--	1.8 U	1.8 U	2.0 U	1.8 U	--	0.12 U	0.12 U	0.11 U	--	0.11 U	88 U
SVOC	3-Nitroaniline	mg/kg	--	1.8 U	84 U	1.7 U	1.7 U	1.8 U	1.8 U	--	--	1.8 U	1.8 U	2.0 U	1.8 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	88 U
SVOC	4-Bromophenyl phenyl ether	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	4-Chloro-3-methylphenol	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	4-Chloroaniline	mg/kg	0.50	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	4-Chlorophenyl phenyl ether	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	4-Nitroaniline	mg/kg	--	1.8 U	84 U	1.7 U	1.7 U	1.8 U	1.8 U	--	--	1.8 U	1.8 U	2.0 U	1.8 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	88 U
SVOC	4-Nitrophenol	mg/kg	--	--	100 U	2.1 U	2.1 U	--	--	--	--	--	--	2.5 U	--	2.2 U	0.29 U	0.30 U	0.27 U	--	0.29 U	110 U
SVOC	Acenaphthene	mg/kg	210	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	--	0.022 J	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Acenaphthylene	mg/kg	210	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Anthracene	mg/kg	4,300	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	--	0.047 J	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Azobenzene	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	Benzo(a)anthracene	mg/kg	6.0	0.36 U	17 U	0.35 U	0.057 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.073 J	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Benzo(a)pyrene	mg/kg	3.0	0.36 U	17 U	0.35 U	0.065 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.070 J	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Benzo(b)fluoranthene	mg/kg	20	0.36 U	17 U	0.027 J	0.11 UJ	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Benzo(g,h,i)perylene	mg/kg	1,500	0.12 J	3.9 J	0.079 J	0.095 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Benzo(k)fluoranthene	mg/kg	200	0.36 U	17 U	0.35 U	0.053 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.066 J	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Benzoic acid	mg/kg	390	1.8 U	84 U	1.7 U	1.7 U	1.8 U	1.8 U	--	--	1.8 U	1.8 U	2.0 U	1.8 U	--	0.33 J	0.32 J	0.28 J	0.31 J	--	88 U
SVOC	Benzyl alcohol	mg/kg	--	0.56 U	27 U	0.53 U	0.54 U	0.58 U	0.58 U	--	--	0.56 U	0.56 U	0.64 U	0.57 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	28 U
SVOC	Benzyl butyl phthalate	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.12 U	0.013 J	0.012 J	--	0.020 J	18 U
SVOC	bis-(2-Chloroethoxy)methane	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	bis-(2-Chloroethyl)ether	mg/kg	0.0020	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	bis(2-Chloroisopropyl)ether	mg/kg	--	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.14 U	0.15 U	0.13 U	--	0.14 U	18 U
SVOC	bis-(2-Ethylhexyl)phthalate	mg/kg	1,200	0.36 U	17 U	0.025 J	0.034 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.084 UJ	0.23 U	0.041 U	0.036 U	--	18 U
SVOC	Carbazole	mg/kg	2.0	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	Chrysene	mg/kg	620	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Dibenzo(a,h)anthracene	mg/kg	6.0	0.36 U	3.5 J	0.061 J	0.069 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Dibenzofuran	mg/kg	7.8	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	Diethyl phthalate	mg/kg	190	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.12 U	0.12 U	0.11 U	--	0.11 U	18 U
SVOC	Dimethyl phthalate	mg/kg	1,400	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	Di-n-butyl phthalate	mg/kg	1,700	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.046 U	0.045 U	0.039 U	0.039 U	--	18 U
SVOC	Di-n-octyl phthalate	mg/kg	810,000	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.12 U	0.12 U	0.11 U	--	0.11 U	18 U
SVOC	Fluoranthene	mg/kg	2,100	0.36 U	17 U	0.35 U	0.095 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.15 J	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Fluorene	mg/kg	270	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Hexachlorobenzene	mg/kg	0.73	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
SVOC	Hexachlorobutadiene	mg/kg	8.0	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.029 U	0.030 U	0.027 U	--	0.029 U	--
SVOC	Hexachloroethane	mg/kg	1.6	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	Indeno(1,2,3-cd)pyrene	mg/kg	54	0.11 J	2.9 J	0.063 J	0.14 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.012 U	0.012 U	0.011 U	--	0.011 U	1.3 J
SVOC	Isophorone	mg/kg	3.0	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	m,p-Cresol	mg/kg	--	1.1 U	100 U	2.1 U	1.1 U	1.1 U	1.1 U	--	--	1.1 U	2.2 U	1.3 U	1.1 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	110 U
SVOC	Naphthalene	mg/kg	21	--	--	--	--	--	--	--	--	--	0.36 U	--	--	--	0.012 U	0.012 U	0.011 U	--	0.011 U	--
SVOC	Nitrobenzene	mg/kg	0.060	--	17 U	0.35 U	--	--	--	--	--	--	--	--	--	--	0.058 U	0.060 U	0.053 U	--	0.057 U	18 U
SVOC	n-Nitrosodimethylamine	mg/kg	3.4	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.29 U	0.30 U	0.27 U	--	0.29 U	18 U
SVOC	n-Nitrosodi-n-propylamine	mg/kg	3.60E-04	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.39 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	n-Nitrosodiphenylamine	mg/kg	3.4	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	Pentachlorophenol	mg/kg	0.010	--	100 U	2.1 U	2.1 U	--	--	--	--	--	--	2.5 U	--	2.2 U	0.12 U	**0.038 J**	0.11 U	**0.034 J**	--	110 U
SVOC	Phenanthrene	mg/kg	4,300	0.36 U	17 U	0.024 J	0.018 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	--	0.13 J	0.0014 J	0.012 U	0.011 U	--	0.0017 J	18 U
SVOC	Phenol	mg/kg	67	0.36 U	17 U	0.35 U	0.35 U	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	0.37 U	--	0.029 U	0.030 U	0.027 U	--	0.029 U	18 U
SVOC	Pyrene	mg/kg	1,500	0.36 U	17 U	0.025 J	0.079 J	0.37 U	0.38 U	--	--	0.36 U	0.36 U	0.41 U	--	0.13 J	0.012 U	0.012 U	0.011 U	--	0.011 U	18 U
PEST	4,4'-DDD	mg/kg	47	0.043	--	--	--	0.011 J	0.014 J	--	--	5.00E-04 J	0.011 J	4.20E-04 J	0.0025 J	--	0.10 J	0.014 J	0.013 J	0.071 J	--	--
PEST	4,4'-DDE	mg/kg	150	0.022 J	--	--	--	0.073	0.061	--	--	0.0028 J	0.23	3.60E-04 J	--	0.0065	0.0032 J	2.90E-04 J	8.10E-04 J	0.0024 J	--	--
PEST	4,4'-DDT	mg/kg	88	0.40	--	--	--	0.33	0.34	--	--	0.010	0.98	0.0013 J	--	0.023 J	0.19	0.021 J	0.022 J	0.13	--	--

TABLE 2-2
Soil Pile Analytical Results Compared to Landfill Criteria
Taku Gardens, Fort Wainwright, Alaska

Sample ID				**06SP01S01**	**06SP03S01**	**06SP03S02**	**06SP10S01**	**06SP11S01**	**06SP11S02**	**06SP11S03**	**06SP11S04**	**06SP14S01**	**06SP15S01**	**06SP16S01**	**06SP16S02**	**06SP16S03**	**06SP17S01**	**06SP17S02**	**06SP18S01**	**06SP18S02**	**06SP18S03**	**06SP40S01**
Location ID				06SP01	06SP03	06SP03	06SP10	06SP11	06SP11	06SP11	06SP11	06SP14	06SP15	06SP16	06SP16	06SP16	06SP17	06SP17	06SP18	06SP18	06SP18	06SP40
Sample Date				6/23/2006	6/27/2006	6/27/2006	6/22/2006	6/19/2006	6/19/2006	6/21/2006	6/21/2006	6/26/2006	6/27/2006	7/25/2006	7/25/2006	7/25/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	6/27/2006
Chemical Group	**Chemical Name**	**Units**	**Landfill Criteria**																			
PEST	Aldrin	mg/kg	1.6	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	2.70E-04 J	5.80E-04 U	--	--
PEST	alpha-BHC	mg/kg	0.0026	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	5.30E-04 UJ	5.80E-04 U	--	--
PEST	alpha-Chlordane	mg/kg	--	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0028	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	5.30E-04 UJ	5.80E-04 U	--	--
PEST	beta-BHC	mg/kg	0.0090	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	4.40E-04 J	5.80E-04 U	--	--
PEST	delta-BHC	mg/kg	--	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	5.30E-04 UJ	5.80E-04 U	--	--
PEST	Dieldrin	mg/kg	0.015	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.0054 J	7.80E-04 J	7.00E-04 J	0.0039 J	--	--
PEST	Endosulfan I	mg/kg	7.0	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	4.80E-04 J	5.90E-04 UJ	2.70E-04 J	3.50E-04 J	--	--
PEST	Endosulfan II	mg/kg	7.0	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.045 J	0.0069 J	0.0054 J	0.013 J	--	--
PEST	Endosulfan sulfate	mg/kg	--	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.047 J	0.0061 J	0.0058 J	0.032 J	--	--
PEST	Endrin	mg/kg	0.30	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.019 J	0.0025 J	0.0023 J	0.013 J	--	--
PEST	Endrin aldehyde	mg/kg	--	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.16 J	0.019 J	0.017 J	0.094 J	--	--
PEST	Endrin ketone	mg/kg	--	0.037 U	--	--	--	0.019 U	0.019 U	--	--	0.0037 U	0.019 U	0.0043 U	0.0038 U	--	0.019 J	0.0024 J	0.0018 J	0.013 J	--	--
PEST	gamma-BHC (Lindane)	mg/kg	0.0030	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	5.30E-04 UJ	5.80E-04 U	--	--
PEST	gamma-Chlordane	mg/kg	--	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0063	0.0094 U	0.0021 U	0.0019 U	--	0.0095 J	0.0014 J	0.0011 J	0.0069 J	--	--
PEST	Heptachlor	mg/kg	8.0	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	7.30E-04 J	0.0094 U	0.0021 U	0.0019 U	--	6.00E-04 UJ	5.90E-04 UJ	0.0015 J	5.80E-04 U	--	--
PEST	Heptachlor epoxide	mg/kg	0.20	0.019 U	--	--	--	0.0096 U	0.0097 U	--	--	0.0019 U	0.0094 U	0.0021 U	0.0019 U	--	1.20E-04 J	5.90E-04 UJ	5.30E-04 UJ	5.80E-04 U	--	--
PEST	Methoxychlor	mg/kg	52	0.19 U	--	--	--	0.096 U	0.097 U	--	--	0.019 U	0.094 U	0.021 U	0.019 U	--	0.069 J	0.0093 J	0.0076 J	0.047 J	--	--
PEST	Toxaphene	mg/kg	10	0.74 U	--	--	--	0.38 U	0.38 U	--	--	0.073 U	0.37 U	0.084 U	0.075 U	--	0.060 UJ	0.059 UJ	0.053 UJ	0.058 U	--	--
PCB	PCB-1016 (Aroclor 1016)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1221 (Aroclor 1221)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1232 (Aroclor 1232)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1242 (Aroclor 1242)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1248 (Aroclor 1248)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1254 (Aroclor 1254)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.060 U	0.30 U	0.059 U	0.058 U	--	0.055 U
PCB	PCB-1260 (Aroclor 1260)	mg/kg	10	0.055 U	0.053 U	0.053 U	0.055 U	0.055 U	0.052 U	0.052 U	--	0.055 U	0.061 U	0.056 U	0.058 U	--	0.51	1.2	0.18 J	--	0.50 J	0.11
NNC	1,3,5-Trinitrobenzene	mg/kg	--	0.027 J	--	--	0.032 J	0.28 U	0.28 U	--	0.068 J	0.27 U	0.041 J	0.25 U	0.25 U	--	0.045 J	0.25 U	0.024 J	0.035 J	--	--
NNC	1,3-Dinitrobenzene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	2,4,6-Trinitrotoluene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	2,4-Dinitrotoluene	mg/kg	0.0050	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	--	--	--	--	--	--
NNC	2,6-Dinitrotoluene	mg/kg	0.0044	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	--	--	--	--	--	--
NNC	2-Amino-4,6-dinitrotoluene	mg/kg	--	0.33 U	--	--	0.32 U	0.34 U	0.34 U	--	0.30 U	0.33 U	0.33 U	0.30 U	0.30 U	--	0.30 U	0.30 U	0.30 U	0.30 U	--	--
NNC	2-Nitrotoluene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	3-Nitrotoluene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	4-Amino-2,6-dinitrotoluene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	4-Nitrotoluene	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	Hexahydro-1,3,5-trinitro-1,3,5-triazine	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	Methyl-2,4,6-trinitrophenylnitramine	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 UJ	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	Nitrobenzene	mg/kg	0.060	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	--	--	--	--	--	--
NNC	Nitroglycerin	mg/kg	--	0.55 U	--	--	0.53 U	0.57 U	0.57 U	--	0.50 U	0.55 U	0.55 U	0.50 U	0.50 U	--	0.50 U	0.50 U	0.50 U	--	0.26 J	--
NNC	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	mg/kg	--	0.27 U	--	--	0.26 U	0.28 U	0.28 U	--	0.25 U	0.27 U	0.28 U	0.25 U	0.25 U	--	0.25 U	0.25 U	0.25 U	0.25 U	--	--
NNC	Pentaerythritol tetranitrate	mg/kg	--	0.37 J	--	--	0.23 J	0.57 U	0.57 U	--	0.28 J	0.55 U	0.55 U	0.50 U	0.50 U	--	0.50 U	0.50 U	0.50 U	0.50 U	--	--
METAL	Aluminum	mg/kg	--	10,000	7,180	7,360	--	10,800	10,700	18,100	4,000	10,200	10,300	8,610	--	8,870	11,400	10,800	12,100	--	10,800	7,800
METAL	Antimony	mg/kg	3.6	0.25 J	0.25 J	0.28 J	--	0.51 J	3.0 J	0.33 J	**118 J**	0.66 UJ	0.30 J	0.75 U	--	0.22 J	0.40 J	0.40 J	0.34 J	--	0.33 J	0.25 J
METAL	Arsenic	mg/kg	8.0	**9.0**	4.9	5.5	--	**10 J**	**9.3 J**	**9.4 J**	**31 J**	**9.9**	**8.9**	6.9	--	**8.6**	**11**	**10**	**8.9**	**11**	--	6.4
METAL	Barium	mg/kg	1,100	119	78 J	78 J	--	131	128	111	170	104	166 J	90	--	112	116	115	102	--	107	91 J
METAL	Beryllium	mg/kg	42	0.18	0.12	0.13	--	0.19	0.19	0.16	0.11	0.18	0.21	0.17	--	0.19	0.21	0.21	0.21	--	0.21	0.15
METAL	Bismuth	mg/kg	--	0.11 J	0.52 U	0.52 U	--	0.12 J	0.14 J	0.12 J	1.0	0.11 J	0.15 J	0.63 U	0.56 U	--	0.17 J	0.16 J	0.18 J	0.15 J	--	0.55 U
METAL	Boron	mg/kg	--	5.5 U	5.2 U	5.2 U	--	1.8 J	2.2 J	6.0 U	3.8 J	5.5 U	2.9 J	6.3 U	5.6 U	--	6.3 UJ	6.0 UJ	6.1 UJ	5.8 UJ	--	1.7 J
METAL	Cadmium	mg/kg	5.0	0.39	0.19	0.26	--	0.80	0.67	0.96	**23**	0.31	0.45	0.29	0.31	--	0.33	0.33	0.36	0.32	--	0.24
METAL	Calcium	mg/kg	--	6,820	4,250	4,420	--	7,310	7,370	6,750	2,630	7,080	8,450	4,500	--	5,200	5,820	6,080	4,150	--	5,410	5,090
METAL	Chromium	mg/kg	26	20 J	12	14	--	21 J	21 J	21 J	**94 J**	20 J	20	17	--	18	22	21	23	--	21	15
METAL	Cobalt	mg/kg	--	8.7	5.8	6.3	--	9.9	8.9	8.6	20	9.7	9.3	7.6	--	8.1	10 J	10 J	9.9 J	10 J	--	6.5
METAL	Copper	mg/kg	7,000	25	15	16	--	30 J	28 J	425 J	323 J	27	24	20	--	23	28	30	33	28	--	18
METAL	Iron	mg/kg	--	21,100	13,500	14,400	--	23,400	22,200	21,000	226,000	23,200	20,100	18,200	--	18,300	22,200	21,200	21,200	21,600	--	15,300
METAL	Lead	mg/kg	--	15 J	14 J	20 J	--	22 J	18 J	37 J	1,540	7.1 J	16 J	5.4	--	6.4	12	11	11	--	11	12 J
METAL	Magnesium	mg/kg	--	5,690	3,730	3,970	--	6,110	5,870	5,710	2,070	6,200	5,130	4,740	--	4,640	5,850	5,700	5,980	--	5,610	3,990
METAL	Manganese	mg/kg	--	367	227	276	--	416	372	421	546	407	486	336	--	424	305	299	261	--	289	261
METAL	Mercury	mg/kg	1.4	0.021 J	0.018 J	0.019 J	--	0.025 J	0.026 J	0.024 J	--	0.028 J	0.031 J	0.021 J	0.024 J	--	0.040 J	0.038 J	0.036 J	--	0.031 J	0.021 J
METAL	Molybdenum	mg/kg	--	0.54	0.34	0.38	--	0.68	0.61	0.66	14	0.60	0.77	0.50	--	0.67	0.98	0.85	0.64	--	0.71	0.49
METAL	Nickel	mg/kg	87	22	15	16	--	25 J	23 J	23 J	79 J	24	22	20	--	21	23	24	24	23	--	18
METAL	Phosphorus, Total (as P)	mg/kg	--	540	371 J	390 J	--	570	535	528	242	697	526 J	497	443	--	579	510	576	--	575	418 J
METAL	Potassium	mg/kg	--	943	1,090	788	--	1,060	1,020	1,000	402	893	1,160	700	--	824	1,000	953	976	--	1,030	963
METAL	Selenium	mg/kg	3.5	0.48	0.24 J	0.25 J	--	0.51	0.48	0.46	1.2 J	0.49	0.49	0.37 J	--	0.54	0.63	0.76	0.66	0.59	--	0.29 J
METAL	Silver	mg/kg	21	0.050 J	0.049 J	0.069 J	--	0.068 J	0.068 J	0.078 J	0.96	0.050 J	0.087 J	0.059 J	--	0.096 J	0.075 J	0.082 J	0.089 J	0.074 J	--	0.069 J
METAL	Sodium	mg/kg	--	401 J	275 J	294 J	--	395 J	406 J	368 J	157 J	468 J	340 J	348	--	317	447 J	431 J	401 J	--	458 J	285 J
METAL	Strontium	mg/kg	--	34 J	23 J	23 J	--	35 J	36 J	36 J	19 J	36 J	46 J	29	--	31	40 J	42 J	30 J	--	38 J	25 J
METAL	Thallium	mg/kg	--	0.064 J	0.16 U	0.16 U	--	0.079 J	0.072 J	0.069 J	0.22	0.056 J	0.055 J	0.19 U	0.17 U	--	0.11 J	0.18 U	0.18 U	0.18 U	--	0.17 U
METAL	Vanadium	mg/kg	3,400	37 J	28 J	28 J	--	41	40	37	14	44 J	37 J	35	--	34	38	38	38	--	36	31 J
METAL	Zinc	mg/kg	9,100	68 J	34 J	37 J	--	70	66	68	**12,200**	49 J	60 J	42	--	44	55	51	59	53	--	42 J

TABLE 2-2
Soil Pile Analytical Results Compared to Landfill Criteria
Taku Gardens, Fort Wainwright, Alaska

Sample ID				**06SP01S01**	**06SP03S01**	**06SP03S02**	**06SP10S01**	**06SP11S01**	**06SP11S02**	**06SP11S03**	**06SP11S04**	**06SP14S01**	**06SP15S01**	**06SP16S01**	**06SP16S02**	**06SP16S03**	**06SP17S01**	**06SP17S02**	**06SP18S01**	**06SP18S02**	**06SP18S03**	**06SP40S01**
Location ID				06SP01	06SP03	06SP03	06SP10	06SP11	06SP11	06SP11	06SP11	06SP14	06SP15	06SP16	06SP16	06SP16	06SP17	06SP17	06SP18	06SP18	06SP18	06SP40
Sample Date				6/23/2006	6/27/2006	6/27/2006	6/22/2006	6/19/2006	6/19/2006	6/21/2006	6/21/2006	6/26/2006	6/27/2006	7/25/2006	7/25/2006	7/25/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	8/19/2006	6/27/2006
Chemical Group	**Chemical Name**	**Units**	**Landfill Criteria**																			
HERB	2,4,5-T	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	2,4,5-TP (Silvex)	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	2,4-D	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	2,4-DB	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	4-Nitrophenol	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	Dalapon	mg/kg	--	0.018 U	--	--	--	0.019 U	0.019 U	--	--	0.018 U	0.020 U	--	--	--	--	--	--	--	--	--
HERB	Dicamba	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	Dichlorprop	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	Dinoseb	mg/kg	--	0.018 U	--	--	--	0.019 U	0.019 U	--	--	0.018 U	0.020 U	--	--	--	--	--	--	--	--	--
HERB	MCPA	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	MCPP	mg/kg	--	0.0073 U	--	--	--	0.0074 U	0.0074 U	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
HERB	Pentachlorophenol	mg/kg	0.010	**0.020**	--	--	--	0.0074 U	**0.024**	--	--	0.0073 U	0.0078 U	--	--	--	--	--	--	--	--	--
CONV	Bromide	mg/kg	--	2.7 U	--	--	2.6 U	2.8 U	2.8 U	3.0 U	--	2.7 U	2.8 U	--	--	--	--	--	--	--	--	--
CONV	Chloride	mg/kg	--	6.4	--	--	6.0	4.6 J	4.7 J	4.6 J	--	2.7 J	6.0	--	--	--	--	--	--	--	--	--
CONV	Fluoride	mg/kg	--	1.6 J	--	--	1.8 J	1.9 J	1.6 J	3.0 UJ	--	1.6 J	2.0 J	--	--	--	--	--	--	--	--	--
CONV	Nitrogen, Nitrate (as N)	mg/kg	--	3.6	--	--	8.1	--	--	--	--	1.2	43	--	--	--	--	--	--	--	--	--
CONV	Nitrogen, Nitrate-Nitrite	mg/kg	--	--	--	--	--	10	10	--	--	--	--	--	--	--	--	--	--	--	--	--
CONV	Nitrogen, Nitrite	mg/kg	--	0.27 U	--	--	0.26 U	--	--	--	--	0.27 U	0.28 U	--	--	--	--	--	--	--	--	--
CONV	Percent Moisture	percent	--	9.0	4.4	4.4	5.3	12	12	16	0.10 U	8.6	9.4	20	11	--	21	20	18	--	17	9.4
CONV	pH	units	--	8.1	8.6	8.2	8.2	8.0	8.0	7.8	--	8.2	7.4	--	--	--	--	--	--	--	--	7.6
CONV	Phosphorus, Total Orthophosphate (as P)	mg/kg	--	1.1 U	--	--	1.1 U	1.1 U	1.1 U	1.2 U	--	1.1 U	1.1 U	--	--	--	--	--	--	--	--	--
CONV	Solids, Percent	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	82	80	86	84	--	--
CONV	Sulfate	mg/kg	--	62	--	--	42	69	55	36	--	24	33	--	--	--	--	--	--	--	--	--
CONV	Total Solids	percent	--	90	93	94	91	91	95	95	--	91	81	89	84	--	83	84	85	86	--	89

TABLE 2-3
MI Triplicate Sample Locations

Triplicate Sample Location	Geographic Area of Site	Piles that this Triplicate Result is Applied To
SP06	Northwest	SP04, SP05, SP06, SP07, SP08, SP09
SP03	Northeast	SP01, SP02, SP03, SP40, SP41, SPB, SPG
SP13	Southeast	SP13
SP27	Southwest	SP14, SP115, SP17-SP19, SPD, SPF, SPE

TABLE 2-4
Analytical Methods

Analysis	Method Number	Maximum Holding Time
PCBs	EPA SW8082	None
Metals	EPA SW6010/6020	TCLP Leaching 28 days for mercury, (180 days for other metals)
DRO/RRO	AK 102/103	14 days to extraction, 40 days to analysis
Pesticides	EPA 8081A	14 days to extraction, 40 days to analysis
VOCs	EPA SW8260	14 days to analysis
SVOCs	EPA SW8270	14 days to extraction, 40 days to analysis

TABLE 2-5
TCLP Limits for Metals

Method	Analyte	TCLP Limit (mg/L)[1]
SW6010B	Arsenic	5
SW6010B	Barium	100
SW6010B	Cadmium	1
SW6010B	Chromium	5
SW6010B	Lead	5
SW6010B	Mercury	0.2
SW6010B	Selenium	1
SW6010B	Silver	5

[1]Code of Federal Regulations 261.24

Responses to Comments

REVIEW COMMENTS

PROJECT: Former Communications Site
DOCUMENT: Draft WP Addenda 1-4
LOCATION: Fort Wainwright, Alaska

U.S. ARMY CORPS OF ENGINEERS CEPOA-PM-C	DATE: 3 Aug 07 REVIEWER: ADEC, Sharon and Earl, received by email PHONE:	Action taken on comment by:_____

Page No., Spec. Paragraph	Item No.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn		Back check by: (Initials)
	1	Combining Stockpiles: Earl called Chuck Ramsey to discuss combining small stockpiles into one decision unit. Chuck said it was acceptable with a couple of conditions: 1)That all the stockpiles came from the same source and are (or can be assumed to be) similar in nature. This would need to be documented and agreed upon by the group. Sharon: Suggest discussing this and finalizing in a meeting minutes or similar to be included in the final overall work plan instead of holding up work further. I told Rielle today that I would be able to do a site visit next Tuesday and we can discuss this during the site visit if you think it would expedite things. 2)That the number of increments collected from each stockpile must be based on the cubic yards of each stockpile. So, if one stockpile was twice as big as another, twice as many correctly located increments need to be taken from the larger stockpile than the smaller one. Sharon: Agree. This makes sense.	1) During an 8/6 conference call it was agreed that piles within the same general area are similar in nature and therefore soil piles can be combined into the same decision unit. 2) The text will be amended to state large piles will be divided into multiple decisions units (one decision unit per 500 cubic yards). For small piles combined to one decision unit the number of incremental samples per pile will be based on the ratio of pile volume to total volume of group of piles. Large piles with multiple decisions units will have 30 increments per decisions unit.		
	2	Sharon: Page 2-1. Area of Investigation. States there are 44 stock piles. Background information section states there are 25 in the PCB EZ and 15 outside the EZ. Target Analytes states there are 25 soil piles in the EZ and 19 outside of the EZ. Figure 2-1 shows 06SP01-06SP41 (06SP16 is missing) plus the 7 soil piles represented by SPA-SPG. This should be reconciled in the final document. Also, were the SPA-SPG soil piles not accounted for in the PSEII or were they created during site investigtion?	Text will be reconciled. 06SP16 was clean fill and this will be noted in the addendum.		

REVIEW COMMENTS

PROJECT: Former Communications Site
DOCUMENT: Draft WP Addenda 1-4
LOCATION: Fort Wainwright, Alaska

U.S. ARMY CORPS OF ENGINEERS CEPOA-PM-C	DATE: 3 Aug 07 REVIEWER: ADEC, Sharon and Earl, received by email PHONE:	Action taken on comment by:_____

Page No., Spec. Paragraph	Item No.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn		Back check by: (Initials)
	3	Earl: Page 2-3, Target Analytes. States that PCBs are not expected in soil piles outside of the exclusion zone. Do you agree, especially for the stockpiles located adjacent to the exclusion zone? If there is any question, I would recommend PCBs be analyzed for all stockpiles. Sharon: I don't think it's prudent to use sampling data from the nine piles that were tested last year to determine what might be in other soil piles because different areas were used for different purposes and Watterson mixed a lot of dirt around. Also, PCBs were detected outside of the Exclusion Zone (soil pile 17--I realize this soil came from the EZ, just need to correct text) and in the sound berm near the former transformer service area. Low levels (<1 mg/kg) of PCBs were detected at numerous locations across the site. The problem with using last year's data to eliminate COCs is that there weren't enough samples collected to adequately characterize all of the stock piles. Also, why are no soil piles being sampled for dioxin/furans?	PCBs are not expected in the soil piles outside of the exclusion zone, based on results of extensive surface soil sampling conducted in 2005. Soil pile 17 will be analyzed for PCBs. Piles outside of the exclusion zone will be tested for DRO/RRO, SVOCs and TCLP metals. VOCs will be analyzed for soil piles in the northwest corner near the known POL plume. Pesticides will be run for Group 6 piles to confirm earlier hits.		
	4	Earl: Page 2-3, Target Analytes. It is unclear from the text and the second bullet whether/where the full list SVOCs by 8270 will be reported and/or just PCP. Again, as a safeguard, I would recommend that the full list be reported. Since DRO is being analyzed, I recommend that RRO be run also. It is the same extraction/analyses and the additional cost minimal. Also, please be sure you agree with them dropping VOCs from the COC list. Sharon: Agreed. There's a VOC soil plume around the POL area that hasn't been fully delineated. Why is this being dropped?	Test will be corrected to clarify that the full list of SW8270 compounds will be analyzed. RRO will be run every where DRO is being run and VOC will be analyzed in piles 4-9 in the vicinity of the known POL plume.		
	5	Sharon: Page 2-4. Detection Limits. I think it's premature to state that all soil is expected to go to the landfill.	Comment noted. Soil piles 11 and 12 will be sent to DRMO. The text will be amended to annotate this.		
	6	Earl: Page 2-4, Sampling Approach. Grouping the smaller piles into single, ~100 cy decision units, seems appropriate, although some of them are pretty widely spaced. However, splitting the larger stockpiles into (arbitrary) 500 cy decision units, seems a bit large (?). Since it is all going off-site, I guess as long as solid waste accepts it we are OK. Just confirm that you are comfortable with their decision unit determination. Sharon: I spoke with Ken Spiers in Solid Waste and he said MI sampling was OK. Not sure if he's provided you with approval yet. He said he was expecting a written request. 500 CY does seem large but if Solid Waste is OK with it, then I'm not going to disagree.	It was agreed that decision units up to 500 cy were OK. To be conservative, SP06 in the northwest corner was broken up into 4 decision units (~ 275 cy/decision unit) since this pile is near a known contaminant plume.		

REVIEW COMMENTS

PROJECT: Former Communications Site
DOCUMENT: Draft WP Addenda 1-4
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U.S. ARMY CORPS OF ENGINEERS CEPOA-PM-C	DATE: 3 Aug 07 REVIEWER: ADEC, Sharon and Earl, received by email PHONE:	Action taken on comment by:_____

Page No., Spec. Paragraph	Item No.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn		Back check by: (Initials)
	7	Recommend that for metals any visual evidence of metal pieces during sample collection and sieving, be documented. Sieving and analysis of the <2mm fraction may bias the metals results low. Is this a concern for solid waste disposal? Sharon: Agreed. One of the samples last year had 197,000 mg/kg lead. I expect this was due to a metal fragment	It was agreed that we would analyze metals for TCLP. Soil will not be sieved before being sent to the laboratory.		
	8	Earl: Page 2-4, Sampling Approach. Third Bullet. Insufficient details are provided for the MI sampling. Additional information is needed in the addendum and/or FSP section. What is the basis for the 1/3 surface – 2/3 subsurface split? How will the systematic MI locations be determined – for combined stockpiles and for single stockpiles with multiple decision units? How will depths be determined? Etc. Sufficient details and/or examples, as provided for the sound berm MI sampling, are required for review and field implementation. Sharon: Also, wouldn't the larger decision units require more samples?	It was agreed that we would document that professional judgement was used for the surface/subsurface split. For smaller piles combined into one decision unit, the number of incremental samples per pile is based on the ratio of the pile volume to the total volume of the group of piles. Each pile is divided into the appropriate number of increments and samples are collected from a random quadrant, A, B, C, or D, by rolling dice. Larger piles are divided into multiple decision units. A grid of 30 increments is overlaid on each decision unit. Samples are collected from a random quadrant within each increment by rolling dice. The text will be amended to include more details on the MI sampling.		

	9	Page 2-4, Sampling Approach. Fourth Bullet. If the Sound Berm MI protocol will be followed, e.g. 3" core sieved to <6mm and submitted to the lab, please document. If not provide details on how the increment will be collected and how the minimum mass per increment will be determined.	See response to comment #8. For non-metal, non-volatile samples, a minimum of 60 gram of sample will be collected at each of 30 increments, as specified in the FSP (identical to the Sound Berm sampling). For VOC analysis, samples at each increment will be added to methanol-preserved sample containers. For metals analysis, unsieved MI samples will be collected and analyzed for TCLP. Unsieved samples will be collected from each of the 30 incremental sample locations. the entire volume (approximately 1 liter) will be homogenized and sent to the laboratory. The laboratory will subsample and obtain the required 100 g for analysis.		
	10	Specify the decision units that triplicate samples will be collected at, 4 total, and which decision units the triplicates will be applied to for 95% UCL determination.	Agreed. This will be clarified in the text. A table was added to show locations for the triplicate sampling and associated piles applied to each triplicate sample.		
	11	Sharon: Table 2-1. Earlier in the document, it states that pesticides can be detected using 8270 but this table distinguishes between SVOCs and pesticides and gives the impression different methods will be used.	Pesticides will be analyzed by 8081, but 8270 can be used for chromatographic confirmation.		
	12	Table 2-3 DRO/RRO are listed as an analytical method. Recommend stating that RRO will be included as an analyte earlier in the document. (See comment 3)	RRO will be added. Text will be modified accordingly.		