CEPOA-EN-ES-M (200-1d)

1 April 2010

MEMORANDUM FOR CEPOA-PM-M (Chouinard)

SUBJECT: Chemical Data Report, Foundation Study HTRW Soil Sampling and Analysis, ELM300 F-22 Weapons Release Shop, Elmendorf AFB, Alaska (10-012)

1. Reference email CEPOA-PM-M (Jill Chouinard) dated 14 December 2009, SUBJECT: ELM300 Charette

2. Attached is the Chemical Data Report for this project.

3. Please direct any questions to Amanda Heath, ext. 5582

Encl

JAMES W. PEKAR Chief, Geotechnical Services

set. Heath/x5582 CONCUR: 0

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United States Army Corps of Engineers Alaska District P.O. Box 6868 Elmendorf AFB, AK 99506-6898

Chemical Data Report

Foundation Study HTRW Survey

F-22 Weapons Release Shop ELM300 (10-012) Elmendorf AFB, Alaska



Materials Section Engineering Services Branch

April 2010

Executive Summary

The U.S. Army Corps of Engineers (USACE), Alaska District, Materials Section (CEPOA-EN-ES-M), prepared this report at the request of the USACE Project Management Branch (CEPOA-PM-M). This report presents the chemical analytical results of soil samples collected during the limited geotechnical investigation for the F-22 Weapons Release Shop (ELM300) project at Elmendorf AFB, Alaska. The soil samples were collected from 22 February through 24 February 2010. The results were compared against the most conservative Alaska Department of Environmental Conservation (ADEC) soil cleanup levels.

Seven borings (AP-4723 through AP-4729) were advanced to collect geotechnical and chemical samples at the ELM300 F-22 Weapons Release Shop site. In all, sixteen soil samples including two duplicates were collected from the borings for chemical analysis.

Based on the results of this sampling, the soil samples revealed the presence of the following contaminants:

- Arsenic was detected at levels above ADEC cleanup levels in most samples. These levels are around the ingestion contact limit of 5.5 mg/kg specified in 18 AAC 75.341, Table B-1 and are slightly below the background range determined for Fort Richardson soils.
- 2. DRO was detected in one sample at a concentration greater than the ADEC cleanup levels.
- 3. Methylene chloride was detected in eleven samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341. The presence of this compound is ascribed to laboratory contamination.
- 4. Tetrachloroethene (PCE) was detected in three samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341.
- 5. Trichloroethene (TCE) was detected in six samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341.
- 6. Benzo(a)pyrene was detected in one sample at a concentration greater than the ADEC ingestion level established in Table B-1 of 18 AAC 75.341.

The construction contractor shall evaluate the hazards and recommend hazard control measures in accordance with EM 385-1-1 and other applicable federal, state, and local regulations. The Accident Prevention Plan with appropriate appendices shall be submitted before initiating work at the job site. The contractor must be prepared to accomplish control measures to mitigate the site workers potential exposure to the contaminants reported herein (e.g. from fugitive dust, etc.).

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Chemical Data Report

1. Introduction

This report presents the analytical results of soil samples collected during the foundation study for the F-22 Weapons Release Shop site (ELM300) at Elmendorf AFB, Alaska. The Materials Section of the U.S. Army Corps of Engineers, Alaska District (CEPOA-EN-ES-M), prepared this report at the request of the Alaska District Project Management Branch (CEPOA-PM-M).

2. Site Background Information

2.1 Location

The proposed ELM300 site is directly to the south of the existing weapons release shop (Building 17720) on the east side of Talley Avenue, on Elmendorf AFB, AK (see Figures 1 and 2). The site is bounded on the west by Building 17726 and Taxiway "G", on the south by Hangar 15, and on the north by a temporary storage building.

2.2 Site History and Known Contamination

The existing building (Building 17720) has been in use since the early fifties and has been used for the maintenance of equipment for its entire history. There is currently a small building in the footprint of the new construction that is slated for demolition. This building is marked as the "Solvent Storage Building" on a 1957 as built drawing of the original building. According to the current user of the building, solvents are no longer stored in this area. The presences of this solvent storage building along with the historical uses of the site suggest that solvent contamination may be possible at the project site. As a result, additional VOC samples were taken.

An adjacent building (Hangar 15, Building 16716, see Figure 1) has known soil contamination associated with it. This building is located to the southwest of the project site. Hangar 15 has been used for aircraft maintenance, and chemicals and solvents were thought to have been disposed of in floor drains that led to dry wells. This site is currently part of Operable Unit 4 (OU4) and has a status of no further action required. In addition, a 20,000 heating oil UST was removed directly to the east of Hangar 15. This tank was found to have leaked and 225 tons of POL contaminated soil was removed from the site. Additional fuel contaminated soils were left in place under the building. Groundwater monitoring is currently ongoing in the area under OU5, which comprises all of Elmendorf groundwater monitoring activities.

Contamination from both Building 16716 and from maintenance activities at the weapons release shop have the possibility to impact the construction site.

A list of aerial photographs reviewed is provided as Table 2-1.

Table	Table 2-1 Historical Aerial Photographs								
Date	Location	Observations							
1950	ELM300	The 1950 aerial photograph of the site shows the area to be							
	Project Site	completely covered in vegetation.							
	(Figure 3)								
1972	ELM300	The 1972 aerial photograph of the site shows the area to be							
	Project Site	developed. Buildings 16718 and 17724 are present.							
	(Figure 4)								
1977	ELM300	The blue 1977 aerial photograph of the site shows no change from							
	Project Site	the 1972 photograph.							
	(Figure 5)								
1984	ELM300	The blue 1984 aerial photograph of the site shows no change from							
	Project Site	the 1972 photograph.							
	(Figure 6)								
2006	ELM300	The clear 2006 aerial photograph of the site shows the area to be							
	Project Site	developed. Building 17720 is present.							
	(Figure 7)								

2.3 Limitations

This project was not intended to be a comprehensive environmental investigation of the site, and changes in the condition of the site may occur with time due to natural processes or human activities. The findings presented in this report are based on the soil boring data gathered at the time of the investigation.

3. Field Activities and Observations

3.1 Summary of Field Activities

A total of seven borings (AP-4723 through AP-4729) were drilled at the ELM300 site, beginning 22 February and continuing through 24 February 2010. See Figure 2 for specific boring locations.

The field crew over the course of the foundation study consisted of Shannon & Wilson Consultants geotechnical engineer Oscar Lane, Discovery Drilling driller Scott Clinkenbeard and driller helpers Adam Saunders and Jeremy Cromwell, and USACE chemist Amanda Heath (CEPOA-EN-ES-M).

3.2 Sampling Activities

Chemical sampling was performed in a manner consistent with the project Sampling and Analysis Plan (SAP, ref. 7.7). The soil samples collected from the borings (generally, from the surface, 2.5-4.5 ft bgs, 4.5-6.5 ft bgs, and at 5-foot intervals thereafter) were field-screened with a photo-ionization detector (PID). Sixteen (16) soil samples (including two duplicates) were submitted to the laboratory for chemical analysis. See Table 3-1 below.

Table 3-1 Scope of Sampling								
Parameter	Analytical Method	Target Contaminant	Number of Samples Submitted ¹					
Diesel Range Organics (DRO)	AK102	Diesel and other medium-weight fuels	16					
Gasoline Range Organics (GRO)	AK101	Gasoline and other light fuels, some solvents	8					
Residual Range Organics (RRO)	AK103	Lubricant oils, asphalts, tars	16					
Volatile Organic Compounds (VOCs)	SW846 8260B	Fuel constituent and solvent compounds	16					
Polychlorinated Biphenyls (PCBs)	SW846 8082	PCBs from electrical equipment or waste oil	8					
Chlorinated Pesticides	SW846 8081A	Pesticides (e.g., DDT) residues from previous pest control activities	8					
RCRA Metals: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.	SW846 6020 & 7471A	Regulated metals from fuels, paints, batteries, etc.	8					
Polycyclic Aromatic Hydrocarbons (PAHs)	SW846 8270C SIM	Fuel constituent compounds and various additional non-volatile chemicals	8					
Hexavalent Chromium	SW846 6010B	Chromium VI from industrial processes	8					
1. Numbers include duplicate samp	les.							

3.3 Observations

The ELM300 site was the lawn and driving area of Building 17720. The driving area was plowed of snow. Seasonal frost was encountered in all borings to a depth of approximately 2.5 feet bgs. No visual evidence of chemical contamination was observed, and all but one PID readings were below the 20 ppm that requires the segregation of soil. For AP-4726, the PID reading for five feet was 98 ppm. The project manager, Jill Chouinard, was notified and the soil was segregated for proper disposal. A VOC, DRO and RRO sample (10ELM300-04SL) was taken at that depth.

3.4 Investigation Derived Waste

One soil sample exceeded the field-screening criterion for containerization. Those soil cuttings were segregated into a 55-gallon drum. A VOC, DRO and RRO sample (10ELM300-04SL) was taken. All other soil samples did not exceed the field-screening criterion. These soil cuttings were backfilled into the borings from which they were extracted, as described in the SAP. Excess soil was spread on the ground nearby. Decontamination or potable water was used to hydrate the bentonite chips used to seal the borings or discarded on the ground near the borings. Solid waste (i.e., disposable sampling equipment and other trash) was disposed of in facility trash receptacles.

4. Results of Chemical Analyses

4.1 Overview

The samples collected from the project sites were analyzed by APPL, Inc. of Clovis, California. The laboratory work is compliant with the Department of Defense Quality System Manual (QSM, ref. 7.4). The results of the chemical analyses are summarized in the sections below. Comprehensive data tables are presented in Appendix B.

4.2 Chemicals Detected

The results of the chemical analyses were screened against State of Alaska soil cleanup levels under 18 AAC 75, Oil and Hazardous Substances Pollution Control (ref 7.2). The most stringent Method Two cleanup levels for the Under 40 Inch Zone were used as evaluation criteria. These cleanup levels are those that would be applied by default to excavated soils in accordance with the Alaska Department of Environmental Conservation (ADEC) guidance (ref. 7.1). In addition to the chemicals on the following table, numerous compounds were detected in trace amounts well below the cleanup level.

Table 4-1: Summary of Detected Chemicals Above ADEC Cleanup Limits									
		ADEC	Samples with Concs.						
	Highest	Soil	Exceeding						
	Concentration	Cleanup	Cleanup						
Chemical Parameter	Reported	Level ¹	Level						
	(mg/kg)	(mg/kg)							
Arsenic	6.9	3.9	8						
Benzo(a)pyrene	1.8	0.49	2						
DRO	3800	250	1						
Methylene Chloride	0.029	0.016	2						
Tetrachloroethene (PCE)	0.4	0.024	3						
Trichloroethene (TCE)	0.54	0.02	6						
1. Soil cleanup levels are the most stringent Method	2 levels for the "Unde	r 40 Inch Zone",	from 18AAC 75.						

Table 4-1 summarizes those chemicals that were detected at concentrations above ADEC cleanup levels.

4.2.1 Fuels: GRO, DRO and RRO were found at low concentrations in most of the samples. DRO was detected in one sample (10ELM300-04SL, AP-4726, 4.5-6.5') well above ADEC cleanup levels.

4.2.2 Volatile Organic Compounds (VOCs): Low concentrations of a few VOCs were detected in several samples. Methylene chloride (10ELM300-14SL, AP-4724, 9.5-11.5' and 10ELM300-04SL, AP-4726, 4.5-6.5') and tetrachloroethene (PCE) (10ELM300-14SL, AP-4724, 9.5-11.5'; 10ELM300-03SL, AP-4726, 2.5-4.5' and 10ELM300-04SL, AP-4726, 4.5-6.5') were detected above ADEC cleanup levels in a few samples. Trichloroethene (TCE) was detected above ADEC cleanup levels in several samples (10ELM300-08SL, AP-4723, 4.5-6.5'; 10ELM300-14SL, AP-4724,

9.5-11.5'; 10ELM300-12SL, AP-4725, 0-2'; 10ELM300-12SL, AP-4725, 4.5-6.5'; 10ELM300-03SL, AP-4726, 2.5-4.5' and 10ELM300-04SL, AP-4726, 4.5-6.5').

- **4.2.3 Polynuclear Aromatic Hydrocarbons (PAHs):** Most of the PAH compounds were detected at low concentrations in all samples. Benzo(a)pyrene was detected above the ADEC cleanup level in two samples (10ELM300-01SL, AP-4729, 0-2' and 10ELM30017SL, AP-4729, 2.5-4.5').
- **4.2.4 Pesticides:** One pesticide compound was detected in a couple samples at concentrations well below ADEC cleanup levels.
- **4.2.5 PCBs:** One PCB compound was detected in one of the samples, well below ADEC cleanup levels.
- **4.2.6 Metals:** In most of the soil samples analyzed for metals, the arsenic concentrations exceeded the ADEC soil cleanup level (Table 4-2). In addition, four of the eight sample results are above the ingestion contact limit of 5.5 mg/kg specified in 18 AAC 75.341, Table B-1.

Table 4-2 Statistical Summary of Arsenic Data						
	Arsenic					
ADEC cleanup	3.9					
level (mg/kg)						
# site samples (n)	8					
Ratio of site samples	8/8					
exceeding cleanup level						
Site Range (mg/kg)	4.4 -6.9					
Background Range	0.25-13					
$(recommended) (mg/kg)^2$						
Site 95% UCL (mg/kg) ¹	5.6					
Background 95% UCL $(mg/kg)^2$	5.88					

Calculated using U.S. EPA ProUCL v.4.0 software, and recommended UCL statistic.
 Ref. 7.6

The site arsenic 95% Upper Confidence Limit (UCL) is slightly below the UCL from the cited background study. The range of arsenic concentrations is comparable to the known background concentration.

Results for total chromium exceeded the applicable cleanup level of 25 mg/kg in seven samples. However, this cleanup level is based on the assumption of the presence of the more toxic hexavalent chromium species. Therefore, a more specific analysis for hexavalent chromium was also performed; this analysis showed that levels of hexavalent chromium are well below the ADEC cleanup limit.

All other metals were reported at concentrations below ADEC soil cleanup levels.

5. Data Quality Review and Usability Assessment

After analysis at the project laboratories, the project data was reviewed for deviations to the requirements presented in the Sampling and Analysis Plan (ref 7.7), the ADEC Technical Memo 06-002 (ref 7.3), and the Department of Defense (DoD) Quality Systems Manual (QSM, ref 7.4) in the following areas – precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). Elements reviewed include sample handling, holding times, method and trip blanks, laboratory control sample (LCS) recoveries and relative percent differences (RPDs), matrix spikes and matrix spike duplicates (MS/MSD) recoveries and RPDs, surrogate recovery, and field duplicate comparability. Reporting limits were screened against the most stringent 18AAC75 Method 2 Under 40 Inch criteria for soils. Calibration curves and continuing calibration standard recoveries were not reviewed. Quality control deviations which do not impact data quality (e.g., a high LCS recovery associated with a nondetect result) are not discussed.

The following qualifiers, listed below in order of increasing severity, are used in the data tables to indicate quality control deficiencies:

Qualifier	Definition
J	Analyte result is considered an estimated value because the level is below the
	laboratory PQL but above the MDL
MH, ML	Analyte result is considered an estimated value biased (high, low) due to
	matrix effects
В	Analyte result is considered a high estimated value due to contamination
	present in the method blank.
QH, QL	Analyte result is considered an estimated value biased (high, low) due to a
	quality control failure
R	Analyte result is rejected - result is not usable.

All samples were sent to APPL, Inc. in two Sample Delivery Groups (SDGs). This lab is validated by the State of Alaska through the Contaminated Sites Program and is approved through the Department of Defense Environmental Laboratory Accreditation Program for all material, methods and analytes reported herein. A laboratory certificate is available upon request – certification expires 23 October 2011. Details of the data review are presented below:

5.1 SDG 61012

- **5.1.1 Sample Handling:** Sixteen soil samples (including two duplicates) were received in sample delivery group 61012 by the laboratory. All sample receiving criteria were met.
- **5.1.2Holding Times:** All samples were analyzed within the method specified holding times.
- **5.1.3Blanks:** Method blanks and trip blanks were analyzed at the proper frequency. Target analytes were not detected in any method or trip blank except for the following:

- 1,2,4-Trichlorobenzene was detected in a method blank at a concentration greater than the MDL, but less than the PQL. The affected results are flagged "B"; however, all results are well below the ADEC cleanup level and data usability is not impacted.
- **5.1.4Laboratory Control Samples:** Laboratory Control Samples (LCS) were analyzed at the required frequency. Recoveries were within the QSM acceptance limits or any deviations do not impact data quality.
- **5.1.5Laboratory Control Sample Precision:** The LCS precision as measured by relative percent difference (RPD) was within QSM or method acceptance limits or any deviations do not impact data quality except as follows:
 - Alaska series methods require the analysis of an LCSD. The laboratory did not prepare or analyze an LCSD for any of the reported batches in this SDG. A MSD was analyzed for one of the reported batches and results for the associated samples are not qualified.
 - Batch 141496 for SW8260B did not contain either an LCSD or MSD. Precision cannot be evaluated for the impacted samples (10ELM300-13SL, -14SL, 17SL, -18SL and -90SL). Non detected results are not impacted. Positive results are considered estimates and are qualified "QN." Sample -14SL results for methylene chloride, tetrachloroethene (PCE) and trichloroethene (TCE) are above ADEC clean-up limits by more than one and half times, three times and fourteen times, respectively. They are considered present in the sample.
- **5.1.6Surrogates:** Surrogate recoveries for all samples were within the QSM acceptance limits or deviations do not impact data quality except as follows:
 - The PAH surrogate, nitrobenzene-d5, for samples 10ELM300-03SL and -11SL was above laboratory control limits. PAH data for these samples has been flagged "QH" and are qualified to be biased high. Data usability is not impacted as all results are well below ADEC cleanup levels, except for methylene chloride, tetrachloroethene (PCE) and trichloroethene (TCE). These results are above ADEC clean-up limits by more than one and half times, sixteen times and eighteen times, respectively.
 - The VOC surrogate, 4-bromofluorobenzene, for sample 10ELM300-04SL was above laboratory control limits. Positive VOC results for this sample have been flagged "QH" and are qualified to be biased high. Data usability is not impacted as all results are well below ADEC cleanup levels.
 - The DRO surrogate, o-terphenyl, for samples 10ELM300-01SL, -04SL and -17SL was below laboratory control limits. DRO data for these samples has been flagged "QL" and are qualified to be biased low. Data usability is not impacted as all results are well below ADEC cleanup levels.
 - The RRO surrogate, octacosane, for samples 10ELM300-01SL and -17SL was below laboratory control limits. RRO data for these samples has been flagged "QL" and are qualified to be biased low. Data usability is not impacted as all results are well below ADEC cleanup levels.

- **5.1.7 Matrix spikes:** Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples were analyzed at the required frequency and recoveries were within QSM acceptance limits or deviations do not impact data quality except as follows:
 - The matrix spike and/or matrix spike duplicate recoveries for acenaphthene, fluorene, DRO, barium and dieldrin in the MS/MSD associated with sample 10ELM300-01SL were above QSM acceptance limits. Results for these analytes in the primary sample are flagged "MH". Data usability is not impacted since all results are well below ADEC cleanup criteria.
 - The matrix spike and/or matrix spike duplicate recoveries for anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, phenanthrene, arsenic, selenium and PCB-1260 in the MS/MSD associated with sample 10ELM300-01SL were below QSM acceptance limits. Results for these analytes in the primary sample are flagged "ML". Data usability is not impacted since all results are well below ADEC cleanup criteria.
- **5.1.8 Matrix Spike precision:** The reported MS/MSD precision was within QSM acceptance limits or deviations do not impact data quality except as follows:
 - The MS/MSD RPD for benzo(k)fluoranthene exceeded the QSM criteria in the spikes of sample 10ELM300-01SL. If the results were previously qualified due to Section 5.1.7 above, the flag was changed from "ML" or "MH" to "MN" to account for the increased variability indicated by the RPD failure.

5.2 Field Duplicates

Two field duplicates were collected and submitted to the laboratory during this field effort. A total of fourteen primary samples were submitted, thus the required 10% duplicate frequency was met. All results are compliant with the criteria specified in ADEC Tech Memo 06-002 except as noted below:

- For duplicate pair 10ELM300-01SL/-17SL, the RPDs for DRO, silver, 4,4'-DDT, PCB-1260, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene and 2butanone were high (greater than 50%) because low concentrations were detected in one-half of the duplicate pair, but not the other. The RPDs for RRO, fluoranthene, anthracene, benzo(a)anthracene, phenanthrene, acenaphthene, fluorene pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, chrysene, dibenzo(a,h)anthracene, barium, selenium, trichloroethene (TCE), mercury and chromium were high (greater than 50%), likely due to heterogeneity of the sample. Data usability is not impacted as all results are well below ADEC cleanup levels except for benzo(a)pyrene.
- For duplicate pair 10ELM300-02SL/-18SL, all RPDs were within laboratory control limits.

5.3 Reporting Limit Assessment

The laboratory reporting limits are defined as practical quantification limits (PQLs) and are based on the lowest level calibration standard corrected for sample preparation, dilution, and moisture (if applicable). The method detection limit (MDL) is defined as the limit at

which an analyte has a 99% chance of being greater than zero (i.e. "detected"). This limit must be less than the PQL and represents the very least that the laboratory can detect. Consequently, any nondetect result with an MDL greater than the ADEC cleanup level cannot be used to prove the absence of that analyte. The following analytes have MDLs greater than the applicable ADEC cleanup levels in one or more samples: 1,1,2,2-tetrachloroethane, 1,2,3-trichloropropane 1,2-dibromoethane, methylene chloride and vinyl chloride.

5.4 Overall Assessment

All results for this SDG are usable as reported and flagged.

6. Summary and Recommendations

6.1 Summary

Arsenic was detected at levels above ADEC cleanup levels in most samples. These levels are around the ingestion contact limit of 5.5 mg/kg specified in 18 AAC 75.341, Table B-1 and are slightly below the background range determined for Fort Richardson soils.

DRO was detected in one sample at a concentration greater than the ADEC cleanup levels.

Methylene chloride was detected in eleven samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341. The presence of this compound is ascribed to laboratory contamination.

Tetrachloroethene (PCE) was detected in three samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341.

Trichloroethene (TCE) was detected in six samples at concentrations greater than the ADEC migration to groundwater cleanup level, but well below the inhalation and dermal contact levels established in Table B-1 of 18 AAC 75.341.

Benzo(a)pyrene was detected in one sample at a concentration greater than the ADEC ingestion level established in Table B-1 of 18 AAC 75.341.

6.2 Recommendations

The contractor must be prepared to accomplish control measures to mitigate the site workers potential exposure to the reported contaminates and relevant exposure pathways (e.g. from fugitive dust, etc.).

7. References

7.1. Alaska Department of Environmental Conservation, <u>Guidance No. SPAR 2002-1</u>, <u>Off-Site Disposal of Soil Not Requiring Institutional Controls</u>, 11 January 2003.

7.2. Alaska Department of Environmental Conservation, <u>18 AAC 75</u>, <u>Oil and Hazardous</u> <u>Substances Pollution Control</u>, October 2008.

7.3. Alaska Department of Environmental Conservation, Technical Memorandum 06-002, <u>Environmental Laboratory Data and Quality Assurance Requirements</u>, March 2009

7.4. Department of Defense, <u>Quality Systems Manual for Environmental Laboratories</u>, <u>Final Version 4.1</u>, April 2009.

7.5. APPL, Inc., <u>Laboratory Analytical Report 61012 ELM300 F-22 Weapons Release</u> <u>Shop</u>. March 2010.

7.6. U.S. Army Corps of Engineers, <u>Background Data Analysis Report, Fort Richardson,</u> <u>Alaska</u>, April 1996.

7.7. U.S. Army Corps of Engineers, <u>Sample and Analysis Plan, Foundation Study HTRW</u> <u>Survey, ELM300, F-22 Weapons Release Shop, Elmendorf AFB, Alaska (10-012)</u>, January 2010 Appendix A

Maps, Historical Photographs and Site Photographs







ALAS

ALASKA DISTRICT CORPS OF ENGINEERS MATERIALS SECTION

1950 HISTORICAL PHOTOGRAPH OVERLAY WEAPONS RELEASE SYSTEMS SHOP & AME (ELM300) ELMENDORF AIR FORCE BASE, ALASKA SCALE: NTS DATE: MARCH 2010 DRAWN/RVW: TTN/ALH FIGURE 3





ALASKA DISTRICT CORPS OF ENGINEERS MATERIALS SECTION 1972 HISTORICAL PHOTOGRAPH OVERLAY WEAPONS RELEASE SYSTEMS SHOP & AME (ELM300) ELMENDORF AIR FORCE BASE, ALASKA





CORPS OF ENGINEERS MATERIALS SECTION 1977 HISTORICAL PHOTOGRAPH OVERLAY WEAPONS RELEASE SYSTEMS SHOP & AME (ELM300) ELMENDORF AIR FORCE BASE, ALASKA SCALE: NTS DATE: MARCH 2010 DRAWN/RVW: TTN/ALH FIGURE 5





ALASKA DISTRICT CORPS OF ENGINEERS MATERIALS SECTION 1984 HISTORICAL PHOTOGRAPH OVERLAY WEAPONS RELEASE SYSTEMS SHOP & AME (ELM300) ELMENDORF AIR FORCE BASE, ALASKA SCALE: NTS DATE: MARCH 2010 DRAWN/RVW: TTN/ALH FIGURE 6





ALASKA DISTRICT CORPS OF ENGINEERS MATERIALS SECTION 2006 HISTORICAL PHOTOGRAPH OVERLAY WEAPONS RELEASE SYSTEMS SHOP & AME (ELM300) ELMENDORF AIR FORCE BASE, ALASKA





Figure 8: AP-4729, Sampling at this hole, looking S.



Figure 9: AP-4725, Building 17722 – Solvent Shed, looking N.



Figure 10: AP-4726, Building 17722 – Solvent Shed, looking SW.



Figure 11: AP-4726, Drilling preparation at this hole, looking W.



Figure 12: AP-4726, Drilling operations at this hole, looking NW.



Figure 13: AP-4728, Drilling operations at this hole, looking S.

Appendix B

Chemical Data Tables

		AF	P Number	AP-4723	AP-4723	AP-4724	AP-4724	AP-4725
		S	ample ID	10EL M300-07SI	10FLM300-08SI	10FL M300-13SI	10FL M300-14SI	10FL M300-11SI
		Location	ID Donth	TR-1.0-2	TB-1: 4 5-6 5'	TB-2: 2 5-4 5'	TB-2: 0 5-11 5'	TB-3: 0-2'
		Commis D	id, Depti	10-1, 0-2	18-1, 4.5-0.5	18-2, 2.5-4.5	18-2, 9.5-11.5	18-3, 0-2
		Sample D	el Group	61012	61012	61012	61012	61012
		Collec	tion Date	2/23/2010	2/23/2010	2/24/2010	2/24/2010	2/24/2010
Method	ANALYTE	UNITS	ADEC		1		1	
8270SIM	2-Methylnaphthalene	mg/kg	6.1	0.0043 [0.005] J		ND [0.005]		ND [0.005]
8270SIM	Acenaphthene	mg/kg	180	0.014 [0.005]		0.0017 [0.005] J		0.0016 [0.005] J, QH
8270SIM	Acenaphthylene	mg/kg	180	0.01 [0.005]		0.0053 [0.005]		0.0059 [0.005]
8270SIM	Anthracene	mg/kg	3000	0.029 [0.005]		0.0034 [0.005] J		0.0018 [0.005] J, QH
8270SIM	Benzo(a)anthracene	mg/kg	3.6	0.071 [0.005]		0.019 [0.005]		0.0061 [0.005]
8270SIM	Benzo(a)pyrene	mg/kg	0.49	0.05 [0.005]		0.02 [0.005]		0.0073 [0.005]
8270SIM	Benzo(b)fluoranthene	mg/kg	4.9	0.085 [0.005]		0.025 [0.005]		0.0093 [0.005]
8270SIM	Benzo(g,h,i)perylene	mg/kg	1400	0.03 [0.005]		0.012 [0.005]		0.0063 [0.005]
8270SIM	Benzo(k)fluoranthene	mg/kg	49	0.065 [0.005]		0.0058 [0.005]		0.0027 [0.005] J, QH
8270SIM	Chrysene	mg/kg	360	0.045 [0.005]		0.013 [0.005]		0.0043 [0.005] J, QH
8270SIM	Dibenzo(a,h)anthracene	mg/kg	0.49	0.0084 [0.005]		0.0032 [0.005] J		0.0015 [0.005] J, QH
8270SIM	Fluoranthene	mg/kg	1400	0.12 [0.005]		0.021 [0.005]		0.0065 [0.005]
8270SIM	Fluorene	mg/kg	220	0.014 [0.005]		0.0019 [0.005] J		0.0016 [0.005] J, QH
8270SIM	Indeno(1,2,3-cd)pyrene	mg/kg	4.9	ND [0.005]		0.012 [0.005]		0.0048 [0.005] J, QH
8270SIM	Naphthalene	mg/kg	20	0.013 [0.005]		0.0012 [0.005] J		ND [0.005]
8270SIM	Phenanthrene	mg/kg	3000	0.089 [0.005]		0.0058 [0.005]		0.0024 [0.005] J, QH
8270SIM	Pyrene	mg/kg	1000	0.089 [0.005]		0.019 [0.005]		0.0058 [0.005]
AK101	Gasoline	mg/kg		ND [1]		ND [1]		ND [1]
				••				
AK102	Diesel Range Organics (C10-C25)	mg/kg	250	4 [10] J	ND [10]	3.4 [10] J	ND [10]	5.1 [10] J
AK103	Residual Range Organics	mg/kg	10000	23 [10] QL	11 [10]	13 [10]	7.2 [10] J	15 [10]
D2216	Percent Moisture	PERCENT	NA	3.7 [2]	3.9 [2]	2.5 [2]	3.3 [2]	4.1 [2]
				••				
SW6020	Arsenic	mg/kg	3.9	4.6 [0.5]		4.8 [0.5]		4.5 [0.5]
SW6020	Barium	ma/ka	1100	56.8 [0.5]		35.7 [0.5]		38.8 [0.5]
SW6020	Cadmium	ma/ka	5	0.11 [0.5] J		0.11 [0.5] J		0.16 [0.5] J
SW6020	Chromium	ma/ka	25	20.5 [0.5]		26.6 [2.6]		19 [0.5]
SW6020	Lead	ma/ka	400	6.6 [0.5]		4.9 [0.5]		7.6 [0.5]
SW6020	Selenium	ma/ka	3.4	0.082 [0.5] J		0.083 [0.5] J		0.084 [0.5] J
SW6020	Silver	ma/ka	11.2	0.028 [0.1] J		0.038 [0.1] J		0.03[0.1] J
0.110020				0.020 [0.1] 0		0.000 [0.1] 0		
SW7196A	Chromium Hexavalent	ma/ka	25	ND [1]		ND [1]		ND [1]
0111100/1		iiig/iig	20					
SW7471A	Mercury	ma/ka	14	0.062.[0.1]		0.068.[0.1]		0.048 [0.1]
0111111	Merodry	iiig/itg	1.7	0.002 [0.1] 0		0.000 [0.1] 0		0.040 [0.1] 0
SW/8081A	4 <i>4</i> '-DDD	ma/ka	72	ND [0 052]		ND [0.051]		ND [0.052]
SW/8081A	4 4'-DDF	ma/ka	5.1	ND [0.052]		ND [0.051]		ND [0.052]
SW0001A		mg/kg	72	ND [0.052]		ND [0.051]		
SW0001A		mg/kg	0.07	ND [0.052]		ND [0.051]		ND [0.052] J
SW0001A		mg/kg	0.07			ND [0.051]		ND [0.052]
SW0001A	alpha Chlordono	mg/kg	0.0004					
SVV0081A		mg/kg	2.3					
SVV0081A		mg/kg	0.022					
SVV0081A		mg/kg						
SVV8081A		mg/kg	0.0076	ND [0.052]				
1300001A	Endosulian I	Ing/kg	04	ND [0.052]		U.U51		ND [0.052]

AP Number				AP-4723	AP-4723	AP-4724	AP-4724	AP-4725
Sample ID			10ELM300-07SL	10ELM300-08SL	10ELM300-13SL	10ELM300-14SL	10ELM300-11SL	
Location ID Denth			TB-1: 0-2'	TB-1: 4.5-6.5'	TB-2: 2.5-4.5'	TB-2: 9.5-11.5'	TB-3: 0-2'	
		Sample F	el Groun	61012	61012	61012	61012	61012
		Collec	tion Date	2/23/2010	2/23/2010	2/24/2010	2/24/2010	2/24/2010
Method	ΔΝΔΙ ΥΤΕ			2/20/2010	2/20/2010	2/24/2010	212-472010	2,24,2010
SW8081A	Endosulfan II	ma/ka	64	ND [0 052]		ND [0.051]		ND [0 052]
SW8081A	Endosulfan sulfate	mg/kg	64	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	Endrin	mg/kg	0.29	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	Endrin aldebyde	mg/kg	NA	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	Endrin ketone	mg/kg	NA	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	gamma-BHC (Lindane)	mg/kg	0.0095	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	gamma-Chlordane	mg/kg	23	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	Hentachlor	mg/kg	0.28	ND [0.052]		ND [0.051]		ND [0.052]
SW/8081A	Hentachlor enovide	mg/kg	0.20	ND [0.052]		ND [0.051]		ND [0.052]
SW8081A	Methoxychlor	mg/kg	23	ND [0.052]		ND [0.051]		ND [0.052]
SW/8081A	Toyaphene	mg/kg	30	ND [1]		ND [1]		ND [1]
OWOODIA	Тохарнене	iiig/kg	0.0					
SW8082	PCB-1016 (Aroclor 1016)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1221 (Aroclor 1221)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1232 (Aroclor 1232)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1242 (Aroclor 1242)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1248 (Aroclor 1248)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1254 (Aroclor 1254)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
SW8082	PCB-1260 (Aroclor 1260)	mg/kg	1	ND [0.05]		ND [0.05]		ND [0.05]
				· ·				
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1,1-Trichloroethane	mg/kg	0.82	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg	0.017	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1,2-Trichloroethane	mg/kg	0.018	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1-Dichloroethane	mg/kg	25	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1-Dichloroethene	mg/kg	0.03	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,1-Dichloropropene	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1.2.3-Trichlorobenzene	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1.2.3-Trichloropropane	ma/ka	0.00053	ND [0,1]	ND [0.1]	ND [0.1]	ND [0.1]	ND [0.1]
SW8260B	1,2,4-Trichlorobenzene	mg/kg	0.85	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,2,4-Trimethylbenzene	mg/kg	23	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg	NA	ND [0.1]	ND [0.1]	ND [0.1]	ND [0.1]	ND [0.1]
SW8260B	1,2-Dibromoethane	mg/kg	0.00016	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,2-Dichlorobenzene	mg/kg	5.1	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,2-Dichloroethane	mg/kg	0.016	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,2-Dichloropropane	mg/kg	0.018	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,3,5-Trimethylbenzene	mg/kg	23	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1.3-Dichlorobenzene	ma/ka	28	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1.3-Dichloropropane	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	1,4-Dichlorobenzene	mg/kg	0.64	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	2.2-Dichloropropane	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	2-Butanone	mg/ka	59	ND [0.52]	ND [0.52]	0.19 [0.51] J. QN	ND [0.52]	ND [0.52]
SW8260B	2-Chlorotoluene	mg/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	2-Hexanone	mg/ka	NA	ND [0.52]	ND [0.52]	ND [0.51]	ND [0.52]	ND [0.52]
SW8260B	4-Chlorotoluene	mg/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	4-Isopropyltoluene	mg/ka	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	4-Methyl-2-pentanone	mg/ka	8.1	ND [0.52]	ND [0.52]	ND [0.51]	ND [0.52]	ND [0.52]
SW8260B	Acetone	ma/ka	88	ND [0.52]	ND [0.52]	ND [0.51]	ND [0.52]	ND [0.52]

		A	P Number	AP-4723	AP-4723	AP-4724	AP-4724	AP-4725
		S	Sample ID	10ELM300-07SL	10ELM300-08SL	10ELM300-13SL	10ELM300-14SL	10ELM300-11SL
		Location	ID, Depth	TB-1; 0-2'	TB-1; 4.5-6.5'	TB-2; 2.5-4.5'	TB-2; 9.5-11.5'	TB-3; 0-2'
		Sample D	Del Group	61012	61012	61012	61012	61012
		Collec	tion Date	2/23/2010	2/23/2010	2/24/2010	2/24/2010	2/24/2010
Method	ANALYTE	UNITS	ADEC			•		
SW8260B	Benzene	mg/kg	0.025	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Bromobenzene	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Bromochloromethane	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Bromodichloromethane	mg/kg	0.044	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Bromoform	mg/kg	0.34	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Bromomethane	mg/kg	0.16	ND [0.1]	ND [0.1]	ND [0.1]	ND [0.1]	ND [0.1]
SW8260B	Carbon disulfide	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Carbon tetrachloride	mg/kg	0.023	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Chlorobenzene	mg/kg	0.63	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Chloroethane	mg/kg	23	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Chloroform	mg/kg	0.46	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Chloromethane	mg/kg	0.21	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.24	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Dibromochloromethane	mg/kg	0.032	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Dibromomethane	mg/kg	1.1	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Dichlorodifluoromethane	mg/kg	140	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Ethylbenzene	mg/kg	6.9	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Hexachlorobutadiene	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Isopropylbenzene	mg/kg	51	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Methylene chloride	mg/kg	0.016	ND [0.26]	ND [0.26]	ND [0.26]	0.029 [0.26] J, QN	ND [0.26]
SW8260B	Methyl-tert-butyl ether (MTBE)	mg/kg	1.3	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Naphthalene	mg/kg	20	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	n-Butylbenzene	mg/kg	15	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	n-Propylbenzene	mg/kg	15	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	o-Xylene	mg/kg	63	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	sec-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Styrene	mg/kg	0.96	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	tert-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.024	ND [0.052]	ND [0.052]	ND [0.051]	0.082 [0.052] QN	ND [0.052]
SW8260B	Toluene	mg/kg	6.5	ND [0.052]	0.014 [0.052] J	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	trans-1,2-Dichloroethene	mg/kg	0.37	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Trichloroethene (TCE)	mg/kg	0.02	0.0093 [0.052] J	0.026 [0.052] J	ND [0.051]	0.29 [0.052] QN	0.05 [0.052] J
SW8260B	Trichlorofluoromethane	mg/kg	86	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Vinyl chloride	mg/kg	0.0085	ND [0.052]	ND [0.052]	ND [0.051]	ND [0.052]	ND [0.052]
SW8260B	Xylene, Isomers m & p	mg/kg	63	ND [0.1]	0.023 [0.1] J	ND [0.1]	ND [0.1]	ND [0.1]

		AF	Number	AP-4725	AP-4726	AP-4726	AP-4727	AP-4727
		, S	ample ID	10EL M300-12SI	10EL M300-03SI	10EL M300-04SI	10EL M300-00SI	10EL M300-10SI
		Location	ID, Depth	IB-3; 4.5-6.5 [°]	IB-4; 2.5-4.5 [°]	IB-4; 4.5-6.5 [°]	IB-5; 2.5-4.5 [°]	IB-5; 9.5-11.5 [°]
		Sample D	el Group	61012	61012	61012	61012	61012
		Collec	tion Date	2/24/2010	2/22/2010	2/22/2010	2/23/2010	2/23/2010
Method	ANALYTE	UNITS	ADEC					
8270SIM	2-Methylnaphthalene	mg/kg	6.1		ND [0.005]		ND [0.006]	
8270SIM	Acenaphthene	mg/kg	180		0.0035 [0.005] J, QH		0.0019 [0.006] J	
8270SIM	Acenaphthylene	mg/kg	180		0.016 [0.005]		0.0078 [0.006]	
8270SIM	Anthracene	mg/kg	3000		0.0031 [0.005] J, QH		0.0031 [0.006] J	
8270SIM	Benzo(a)anthracene	mg/kg	3.6		0.0032 [0.005] J, QH		0.0054 [0.006] J	
8270SIM	Benzo(a)pyrene	mg/kg	0.49		0.0034 [0.005] J, QH		0.0045 [0.006] J	
8270SIM	Benzo(b)fluoranthene	mg/kg	4.9		0.0039 [0.005] J, QH		0.0047 [0.006] J	
8270SIM	Benzo(g,h,i)perylene	mg/kg	1400		0.009 [0.005] QH		0.0034 [0.006] J	
8270SIM	Benzo(k)fluoranthene	mg/kg	49		ND [0.005]		ND [0.006]	
8270SIM	Chrysene	mg/kg	360		ND [0.005]		0.0031 [0.006] J	
8270SIM	Dibenzo(a,h)anthracene	mg/kg	0.49		ND [0.005]		ND [0.006]	
8270SIM	Fluoranthene	mg/kg	1400		ND [0.005]		0.0077 [0.006]	
8270SIM	Fluorene	mg/kg	220		0.0048 [0.005] J, QH		0.0026 [0.006] J	
8270SIM	Indeno(1,2,3-cd)pyrene	mg/kg	4.9		ND [0.005]		0.0027 [0.006] J	
8270SIM	Naphthalene	mg/kg	20		ND [0.005]		ND [0.006]	
8270SIM	Phenanthrene	mg/kg	3000		ND [0.005]		0.0056 [0.006] J	
8270SIM	Pyrene	mg/kg	1000		0.0026 [0.005] J, QH		0.0065 [0.006]	
		00						
AK101	Gasoline	ma/ka			13 [1.1]		ND [1.2]	
AK102	Diesel Range Organics (C10-C25)	mg/kg	250	ND [10]	120 [53]	3800 [1100]	ND [12]	ND [10]
AK103	Residual Range Organics	mg/kg	10000	13 [10]	22 [11]	86 [11]	10 [12] J	8 [10] J
	<u></u>	00			· · ·			<u> </u>
D2216	Percent Moisture	PERCENT	NA	4.5 [2]	5.2 [2]	5.3 [2]	16.3 [2]	4.4 [2]
SW6020	Arsenic	ma/ka	3.9		5.5 [0.5]		5 [0.6]	
SW6020	Barium	ma/ka	1100		36.2 [0.5]		53.6 [0.6]	
SW6020	Cadmium	ma/ka	5		0.24 [0.5] J		0.12 [0.6] J	
SW6020	Chromium	ma/ka	25		26.1 [0.5]		23.5 [0.6]	
SW6020	Lead	ma/ka	400		9.8 [0.5]		5.9 [0.6]	
SW6020	Selenium	ma/ka	3.4		0.12 [0.5] J		0.13[0.6] J	
SW6020	Silver	mg/kg	11.2		0.25 [0.1]		ND [0,1]	
0110020		iiig/iig			0.20 [0.1]			
SW7196A	Chromium Hexavalent	ma/ka	25		ND [1 1]		ND [1 2]	
SW/7471A	Mercury	ma/ka	14		0.042 [0.1] .1		0.038 [0.1]	
00014117	Wereary	iiig/itg	1.7		0.042 [0.1] 0		0.000 [0.1] 0	
SW/8081A	4 4'-DDD	ma/ka	72		ND [0.053]		ND [0.06]	
SW8081A	4 4'-DDF	mg/kg	5.1		ND [0.053]		ND [0.06]	
SW/8081A	4 4'-DDT	mg/kg	73		ND [0.053]		ND [0.06]	
SW80814	Aldrin	ma/ka	0.07		ND [0.053]		ND [0.06]	
SW/80814	alpha-BHC	ma/ka	0.0064		ND [0.053]		ND [0.06]	
SW/8081A	alpha-Chlordane	ma/ka	22		ND [0.053]		ND [0.06]	
SW/80814	beta-BHC	mg/kg	0.022		ND [0.053]		ND [0.00]	
SW/80814	delta-BHC	ma/ka	NΔ		ND [0.053]		ND [0.06]	
SW/80814	Dieldrin	ma/ka	0.0076		ND [0.053]		ND [0.06]	
SW/80814	Endosulfan I	ma/ka	64		ND [0.053]		ND [0.06]	
2110001A	Endoodiluit i		07					

AP Number		AP-4725	AP-4726	AP-4726	AP-4727	AP-4727		
Sample ID		10ELM300-12SL	10ELM300-03SL	10ELM300-04SL	10ELM300-09SL	10ELM300-10SL		
Location ID, Depth			TB-3: 4 5-6 5'	TB-4: 2 5-4 5'	TB-4: 4 5-6 5'	TB-5: 2 5-4 5'	TB-5: 9 5-11 5'	
		Sampla	Del Group	61012	61012	61012	61012	61012
		Sample	Del Group	01012	01012	01012	01012	01012
Mathaal		Colle	ction Date	2/24/2010	2/22/2010	2/22/2010	2/23/2010	2/23/2010
Niethod		UNITS	ADEC					
SV/8081A		mg/kg	64		ND [0.053]			
SVV8081A	Endosultan sultate	mg/kg	64		ND [0.053]		ND [0.06]	
SW8081A		mg/kg	0.29		ND [0.053]		ND [0.06]	
SW8081A	Endrin aldehyde	mg/kg	NA		ND [0.053]		ND [0.06]	
SW8081A	Endrin ketone	mg/kg	NA		ND [0.053]		ND [0.06]	
SW8081A	gamma-BHC (Lindane)	mg/kg	0.0095		ND [0.053]		ND [0.06]	
SW8081A	gamma-Chlordane	mg/kg	2.3		ND [0.053]		ND [0.06]	
SW8081A	Heptachlor	mg/kg	0.28		ND [0.053]		ND [0.06]	
SW8081A	Heptachlor epoxide	mg/kg	0.014		ND [0.053]		ND [0.06]	
SW8081A	Methoxychlor	mg/kg	23		ND [0.053]		ND [0.06]	
SW8081A	Toxaphene	mg/kg	3.9		ND [1.1]		ND [1.2]	
SW8082	PCB-1016 (Aroclor 1016)	ma/ka	1		ND [0.05]		ND [0.06]	
SW8082	PCB-1221 (Aroclor 1221)	ma/ka	1		ND [0.05]		ND [0.06]	
SW8082	PCB-1232 (Aroclor 1232)	ma/ka	1		ND [0.05]		ND [0.06]	
SW8082	PCB-1242 (Aroclor 1242)	ma/ka	1		ND [0.05]		ND [0.06]	
SW8082	PCB-1248 (Aroclor 1248)	ma/ka	1		ND [0.05]		ND [0.06]	
SW8082	PCB-1254 (Aroclor 1254)	mg/kg	1		ND [0.05]		ND [0.06]	
SW/8082	PCB-1260 (Aroclor 1260)	mg/kg	1		ND [0.05]		ND [0.06]	
300002	FCB-1200 (Alociol 1200)	шу/ку			ND [0.05]		ND [0.00]	
SW8260B	1 1 1 2-Tetrachloroethane	ma/ka	NA	ND [0 052]	ND [0 053]	ND [0 053]	ND [0.06]	ND [0 052]
SW8260B	1 1 1-Trichloroethane	mg/kg	0.82	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW/8260B	1 1 2 2-Tetrachloroethane	mg/kg	0.02	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW/8260B	1 1 2-Trichloroethane	mg/kg	0.017	ND [0.052]	ND [0.053]	ND [0.053]		ND [0.052]
SW8260B	1 1-Dichloroethane	mg/kg	25	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B		mg/kg	0.03	ND [0.052]	ND [0.053]	ND [0.053]		ND [0.052]
SW0200D		mg/kg	0.03 NA	ND [0.052]	ND [0.053]	ND [0.053]		ND [0.052]
SW0200B		mg/kg	NA NA	ND [0.052]	ND [0.053]	ND [0.053]		ND [0.052]
SW0200B		mg/kg			ND [0.053]	ND [0.055]	ND [0.00]	ND [0.052]
SVV8260B	1,2,3-Trichlerchenzene	mg/kg	0.00053		ND [0.11]		ND [0.12]	
SW8260B	1,2,4-Trichlorobenzene	mg/kg	0.85	ND [0.052]	ND [0.053]	ND [0.053]		ND [0.052]
SVV8260B	1,2,4-1 nmethylbenzene	mg/kg	23	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SVV8260B	1,2-Dibromo-3-chioropropane	mg/kg	NA	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.12]	ND [0.1]
SW8260B	1,2-Dibromoethane	mg/kg	0.00016	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,2-Dichlorobenzene	mg/kg	5.1	0.066 [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,2-Dichloroethane	mg/kg	0.016	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,2-Dichloropropane	mg/kg	0.018	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,3,5-Trimethylbenzene	mg/kg	23	ND [0.052]	ND [0.053]	0.041 [0.053] J, QH	ND [0.06]	ND [0.052]
SW8260B	1,3-Dichlorobenzene	mg/kg	28	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,3-Dichloropropane	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	1,4-Dichlorobenzene	mg/kg	0.64	0.022 [0.052] J	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	2,2-Dichloropropane	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	2-Butanone	mg/kg	59	0.057 [0.52] J	ND [0.53]	ND [0.53]	ND [0.6]	ND [0.52]
SW8260B	2-Chlorotoluene	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	2-Hexanone	mg/kg	NA	ND [0.52]	ND [0.53]	ND [0.53]	ND [0.6]	ND [0.52]
SW8260B	4-Chlorotoluene	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	4-Isopropyltoluene	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	4-Methyl-2-pentanone	mg/kg	8.1	ND [0.52]	ND [0.53]	ND [0.53]	ND [0.6]	ND [0.52]
SW8260B	Acetone	ma/ka	88	ND [0.52]	ND [0.53]	ND [0.53]	ND [0.6]	ND [0.52]

AP Number			AP-4725	AP-4726	AP-4726	AP-4727	AP-4727	
Sample ID			10ELM300-12SL	10ELM300-03SL	10ELM300-04SL	10ELM300-09SL	10ELM300-10SL	
	Location ID. Depth			TB-3; 4.5-6.5'	TB-4; 2.5-4.5'	TB-4; 4.5-6.5'	TB-5; 2.5-4.5'	TB-5; 9.5-11.5'
		Sample D	el Group	61012	61012	61012	61012	61012
		Collec	tion Date	2/24/2010	2/22/2010	2/22/2010	2/23/2010	2/23/2010
Method	ANALYTE	UNITS	ADEC					
SW8260B	Benzene	mg/kg	0.025	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Bromobenzene	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Bromochloromethane	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Bromodichloromethane	mg/kg	0.044	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Bromoform	mg/kg	0.34	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Bromomethane	mg/kg	0.16	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.12]	ND [0.1]
SW8260B	Carbon disulfide	mg/kg	12	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Carbon tetrachloride	mg/kg	0.023	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Chlorobenzene	mg/kg	0.63	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Chloroethane	mg/kg	23	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Chloroform	mg/kg	0.46	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Chloromethane	mg/kg	0.21	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.24	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Dibromochloromethane	mg/kg	0.032	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Dibromomethane	mg/kg	1.1	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Dichlorodifluoromethane	mg/kg	140	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Ethylbenzene	mg/kg	6.9	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Hexachlorobutadiene	mg/kg	NA	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Isopropylbenzene	mg/kg	51	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Methylene chloride	mg/kg	0.016	ND [0.26]	ND [0.26]	0.027 [0.26] J, QH	ND [0.3]	ND [0.26]
SW8260B	Methyl-tert-butyl ether (MTBE)	mg/kg	1.3	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Naphthalene	mg/kg	20	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	n-Butylbenzene	mg/kg	15	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	n-Propylbenzene	mg/kg	15	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	o-Xylene	mg/kg	63	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	sec-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Styrene	mg/kg	0.96	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	tert-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.024	ND [0.052]	0.057 [0.053]	0.4 [0.053] QH	ND [0.06]	ND [0.052]
SW8260B	Toluene	mg/kg	6.5	ND [0.052]	0.036 [0.053] J	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	trans-1,2-Dichloroethene	mg/kg	0.37	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Trichloroethene (TCE)	mg/kg	0.02	0.54 [0.052]	0.095 [0.053]	0.37 [0.053] QH	ND [0.06]	ND [0.052]
SW8260B	Trichlorofluoromethane	mg/kg	86	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Vinyl chloride	mg/kg	0.0085	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.06]	ND [0.052]
SW8260B	Xylene, Isomers m & p	mg/kg	63	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.12]	ND [0.1]

		AF	Number	AP-4728	AP-4728	AP-4729	AP-4729	AP-4729
		S	ample ID	10EL M300-05SI	10ELM300-06SI	10FL M300-01SI	10EL M300-17SI	10FI M300-02SI
		Location	D Donth	TR-6: 2 5-4 5'	TB-6: 0 5-11 5'	TB-7: 0-2'	TB-0: 2 5-4 5'	TB-7: 4 5-6 5'
		Sample D	ol Group	61012	61012	61012	61012	61012
			tion Data	2/22/2010	2/22/2010	2/22/2010	2/22/2010	2/22/2010
Mathad		Collec	tion Date	2/23/2010	2/23/2010	2/22/2010		2/22/2010
Method	ANALYIE	UNITS	ADEC	0.0004 [0.005]				
82705111		mg/kg	0.1	0.0021 [0.005] J		0.016 [0.005]	0.022 [0.026] J	
82705IM	Acenaphthedana	mg/kg	180	0.018 [0.005]		0.055 [0.005] MH	0.012 [0.026] J	
8270SIM	Acenaphtnylene	mg/kg	180	0.015 [0.005]		0.042 [0.005]	0.034 [0.026]	
8270SIM	Anthracene	mg/kg	3000	0.088 [0.005]		0.33 [0.005] ML	0.056 [0.026]	
8270SIM	Benzo(a)anthracene	mg/kg	3.6	0.42 [0.005]		1.9 [0.005]	0.34 [0.026]	
8270SIM	Benzo(a)pyrene	mg/kg	0.49	0.45 [0.005]		1.8 [0.005]	0.5 [0.026]	
8270SIM	Benzo(b)fluoranthene	mg/kg	4.9	0.58 [0.005]		2.9 [0.005]	0.76 [0.026]	
8270SIM	Benzo(g,h,i)perylene	mg/kg	1400	0.24 [0.005]		1.1 [0.005] ML	0.32 [0.026]	
8270SIM	Benzo(k)fluoranthene	mg/kg	49	0.12 [0.005]		0.58 [0.11] MN	0.58 [0.026]	
8270SIM	Chrysene	mg/kg	360	0.3 [0.005]		1.5 [0.11] ML	0.52 [0.026]	
8270SIM	Dibenzo(a,h)anthracene	mg/kg	0.49	0.074 [0.005]		0.33 [0.005]	0.13 [0.026]	
8270SIM	Fluoranthene	mg/kg	1400	0.57 [0.005]		2.1 [0.005]	0.35 [0.026]	
8270SIM	Fluorene	mg/kg	220	0.022 [0.005]		0.073 [0.005] MH	0.016 [0.026] J	
8270SIM	Indeno(1,2,3-cd)pyrene	mg/kg	4.9	0.013 [0.005]		0.069 [0.005] ML	0.21 [0.026]	
8270SIM	Naphthalene	mg/kg	20	0.0028 [0.005] J		0.014 [0.005]	0.0089 [0.026] J	
8270SIM	Phenanthrene	mg/kg	3000	0.17 [0.005]		0.54 [0.005] ML	0.097 [0.026]	
8270SIM	Pyrene	mg/kg	1000	0.52 [0.005]		1.8 [0.005]	0.41 [0.026]	
AK101	Gasoline	mg/kg		ND [1]		4 [1.1]	5.9 [1.1]	
AK102	Diesel Range Organics (C10-C25)	mg/kg	250	6.4 [10] J	ND [10]	69 [110] J, QL, MH	ND [530] QL	21 [80] J
AK103	Residual Range Organics	mg/kg	10000	37 [10]	10 [10]	350 [110] QL	2700 [530]	170 [80]
D2216	Percent Moisture	PERCENT	NA	4.5 [2]	3.6 [2]	5.6 [2]	5.1 [2]	37.4 [2]
							L _	
SW6020	Arsenic	ma/ka	3.9	4.8 [0.5]		6.9 [0.5] ML	4.4 [0.5]	
SW6020	Barium	ma/ka	1100	64.4 [0.5]		24.3 [0.5] MH	54.6 [0.5]	
SW6020	Cadmium	ma/ka	5	0.098 [0.5] J		0.1 [0.5] J	0.16[0.5] J	
SW6020	Chromium	ma/ka	25	20.1 [0.5]		13.2 [0.5]	25 9 [2 6]	
SW6020	Lead	ma/ka	400	5.3 [0.5]		5.5 [0.5]	8 [0.5]	
SW6020	Selenium	ma/ka	34	0.099.[0.5] .1		0.054 [0.5] J MI	0 12 [0 5] .1	
SW6020	Silver	ma/ka	11.2	0.000 [0.0] 0		ND [0 1]	0.028 [0.1]	
0110020		iiig/itg	11.2	0.4 [0.1]			0.020 [0.1] 0	
SW/71964	Chromium Hexavalent	ma/ka	25	ND [1]		ND [1 1]	ND [1 1]	
0111100/1		iiig/itg	20	ne [i]				
SW/7/71A	Mercury	ma/ka	1.4	0.038 [0.1]		0.077.[0.1]	0.035 [0.1]	
00014717	Weredry	iiig/kg	1.4	0.000 [0.1] 0		0.077 [0.1] 3	0.000 [0.1] 0	
S\N/8081A		ma/ka	72	ND [0 052]		ND [0.053]	ND [0.053]	
SW0001A	4,4 -DDD	mg/kg	7.Z	ND [0.052]		ND [0.053]	ND [0.053]	
S10001A		mg/kg	7.0	ND [0.052]		ND [0.053]		
SW0001A		mg/kg	0.07	ND [0.052]		ND [0.053]	ND [0.052]	
SW0001A		mg/kg	0.07				ND [0.053]	
SVV8081A	alpha-DHU	mg/kg	0.0064	ND [0.052]		ND [0.053]	ND [0.053]	
SVV8081A		mg/kg	2.3	ND [0.052]		ND [0.053]	ND [0.053]	
SVV8081A		ing/kg	0.022	ND [0.052]		ND [0.053]	ND [0.053]	
SVV8081A		mg/kg	INA 0.0070	ND [0.052]		ND [0.053]	ND [0.053]	
SVV8081A		ing/kg	0.0076	ND [0.052]		ND [0.053]	ND [0.053]	
SVV8081A	Endosultan I	mg/kg	64	ND [0.052]		ND [0.053]	ND [0.053]	

AP Number		AP-4728	AP-4728	AP-4729	AP-4729	AP-4729		
		Sample ID		10ELM300-05SL	10ELM300-06SL	10ELM300-01SL	10ELM300-17SL	10ELM300-02SL
	Location ID Denth		TB-6' 2 5-4 5'	TB-6: 9 5-11 5'	TB-7: 0-2'	TB-9: 2 5-4 5'	TB-7: 4 5-6 5'	
		Sample F	el Groun	61012	61012	61012	61012	61012
		Collec	tion Date	2/23/2010	2/23/2010	2/22/2010	2/22/2010	2/22/2010
Method				2/23/2010	2/23/2010	MS/MSD	Duplicate of -01SI	2/22/2010
SW/8081A		ma/ka	ADEC 64	ND [0.052]				
SW0001A	Endosulfan sulfato	mg/kg	64	ND [0.052]		ND [0.053]	ND [0.053]	
SW0001A	Endrin	mg/kg	0.20	ND [0.052]		ND [0.053]	ND [0.053]	
SW0001A	Endrin oldobudo	mg/kg	0.29	ND [0.052]		ND [0.053]	ND [0.053]	
SW0001A	Endrin kotono	mg/kg	NA NA	ND [0.052]		ND [0.053]	ND [0.053]	
SW0001A		mg/kg	NA 0.0005	ND [0.052]		ND [0.053]	ND [0.053]	
SW0001A		mg/kg	0.0095	ND [0.052]		ND [0.053]	ND [0.053]	
SW8081A	gamma-Chiordane	mg/kg	2.3	ND [0.052]		ND [0.053]	ND [0.053]	
SW8081A	Heptachior	mg/kg	0.28	ND [0.052]	1	ND [0.053]	ND [0.053]	
SW8081A	Heptachior epoxide	mg/kg	0.014	ND [0.052]	1	ND [0.053]	ND [0.053]	
SW8081A	Methoxychlor	mg/kg	23	ND [0.052]		ND [0.053]	ND [0.053]	
SW8081A	loxaphene	mg/kg	3.9	ND [1]		ND [1.1]	ND [1.1]	
SW8082	PCB-1016 (Aroclor 1016)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1221 (Aroclor 1221)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1232 (Aroclor 1232)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1242 (Aroclor 1242)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1248 (Aroclor 1248)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1254 (Aroclor 1254)	mg/kg	1	ND [0.05]		ND [0.05]	ND [0.05]	
SW8082	PCB-1260 (Aroclor 1260)	ma/ka	1	ND [0.05]		0.89 [0.05] ML	ND [0.05]	
						<u> </u>		
SW8260B	1,1,1,2-Tetrachloroethane	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1,1,1-Trichloroethane	mg/kg	0.82	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1,1,2,2-Tetrachloroethane	mg/kg	0.017	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.1.2-Trichloroethane	ma/ka	0.018	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.1-Dichloroethane	ma/ka	25	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.1-Dichloroethene	ma/ka	0.03	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.1-Dichloropropene	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.2.3-Trichlorobenzene	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.2.3-Trichloropropane	ma/ka	0.00053	ND [0.1]	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.16]
SW8260B	1.2.4-Trichlorobenzene	ma/ka	0.85	ND [0.052]	ND [0.052]	0.013 [0.053] J. B	ND [0.053]	ND [0.08]
SW8260B	1.2.4-Trimethylbenzene	ma/ka	23	ND [0.052]	ND [0.052]	0.01 [0.053] J	ND [0.053]	ND [0.08]
SW8260B	1.2-Dibromo-3-chloropropane	ma/ka	NA	ND [0,1]	ND [0,1]	ND [0.11]	ND [0.11]	ND [0.16]
SW8260B	1 2-Dibromoethane	ma/ka	0.00016	ND [0 052]	ND [0.052]	ND [0.053]	ND [0 053]	ND [0.08]
SW8260B	1.2-Dichlorobenzene	mg/kg	5 1	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.2-Dichloroethane	mg/kg	0.016	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1.2-Dichloropropage	mg/kg	0.018	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1 3 5-Trimethylbenzene	mg/kg	23	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	1 3-Dichlorobenzene	mg/kg	28	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW/8260B	1.3-Dichloropropage	mg/kg	ΝΔ	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW/8260B	1.4-Dichlorobenzene	mg/kg	0.64	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	
SW8260B	2 2-Dichloropropane	ma/ka	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	2-Butanone	mg/kg	50	ND [0.002]	ND [0.002]	ND [0.53]		
SW/8260P	2-Chlorotoluene	ma/ka	NA	ND [0.52]	ND [0.02]	ND [0.053]		
SW0200D		mg/kg	N/A		ND [0.002]		ND [0.000]	
SW0200B		mg/kg	NA NA	ND [0.32]	ND [0.52]	ND [0.053]	ND [0.053]	נס.טן שאו גער נוס.סא
SW0200D		mg/kg	NA NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	
SW0200D	4-Methyl-2-pentanone	mg/kg	R 1	ND [0.032]	ND [0.032]	ND [0.033]	ND [0.000]	
SW0200D		mg/kg	0.1	ND [0.52]	ND [0.52]	ND [0.00]	ND [0.53]	
		IIIU/KU	00			10.00	10.00	10.01

AP Number		AP-4728	AP-4728	AP-4729	AP-4729	AP-4729		
		S	Sample ID	10ELM300-05SL	10ELM300-06SL	10ELM300-01SL	10ELM300-17SL	10ELM300-02SL
		Location	ID, Depth	TB-6; 2.5-4.5'	TB-6; 9.5-11.5'	TB-7; 0-2'	TB-9; 2.5-4.5'	TB-7; 4.5-6.5'
		Sample D	Del Group	61012	61012	61012	61012	61012
		Collec	tion Date	2/23/2010	2/23/2010	2/22/2010	2/22/2010	2/22/2010
Method	ANALYTE	UNITS	ADEC			MS/MSD	Duplicate of -01SL	
SW8260B	Benzene	mg/kg	0.025	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Bromobenzene	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Bromochloromethane	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Bromodichloromethane	mg/kg	0.044	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Bromoform	mg/kg	0.34	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Bromomethane	mg/kg	0.16	ND [0.1]	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.16]
SW8260B	Carbon disulfide	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Carbon tetrachloride	mg/kg	0.023	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Chlorobenzene	mg/kg	0.63	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Chloroethane	mg/kg	23	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Chloroform	mg/kg	0.46	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Chloromethane	mg/kg	0.21	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.24	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Dibromochloromethane	mg/kg	0.032	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Dibromomethane	mg/kg	1.1	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Dichlorodifluoromethane	mg/kg	140	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Ethylbenzene	mg/kg	6.9	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Hexachlorobutadiene	mg/kg	NA	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Isopropylbenzene	mg/kg	51	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Methylene chloride	mg/kg	0.016	ND [0.26]	ND [0.26]	ND [0.26]	ND [0.26]	ND [0.4]
SW8260B	Methyl-tert-butyl ether (MTBE)	mg/kg	1.3	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Naphthalene	mg/kg	20	ND [0.052]	ND [0.052]	0.041 [0.053] J	0.04 [0.053] J, QN	ND [0.08]
SW8260B	n-Butylbenzene	mg/kg	15	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	n-Propylbenzene	mg/kg	15	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	o-Xylene	mg/kg	63	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	sec-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Styrene	mg/kg	0.96	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	tert-Butylbenzene	mg/kg	12	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.024	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Toluene	mg/kg	6.5	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	0.015 [0.08] J
SW8260B	trans-1,2-Dichloroethene	mg/kg	0.37	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.033	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Trichloroethene (TCE)	mg/kg	0.02	ND [0.052]	ND [0.052]	0.019 [0.053] J	0.0086 [0.053] J, QN	ND [0.08]
SW8260B	Trichlorofluoromethane	mg/kg	86	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Vinyl chloride	mg/kg	0.0085	ND [0.052]	ND [0.052]	ND [0.053]	ND [0.053]	ND [0.08]
SW8260B	Xylene, Isomers m & p	mg/kg	63	ND [0.1]	ND [0.1]	ND [0.11]	ND [0.11]	ND [0.16]

	AP Number			AP-4729			
		S	ample ID	10ELM300-18SL	10ELM300-90SL		
		Location	D, Depth	TB-9; 9.5-11.5'	TRIP BLANK		
		Sample D	el Group	61012	61012		
		Collec	tion Date	2/22/2010	2/22/2010		
Method	ANALYTE	UNITS	ADEC	Duplicate of -02SL			
8270SIM	2-Methylnaphthalene	mg/kg	6.1				
8270SIM	Acenaphthene	mg/kg	180				
8270SIM	Acenaphthylene	mg/kg	180				
8270SIM	Anthracene	mg/kg	3000				
8270SIM	Benzo(a)anthracene	mg/kg	3.6				
8270SIM	Benzo(a)pyrene	mg/kg	0.49				
8270SIM	Benzo(b)fluoranthene	mg/kg	4.9				
8270SIM	Benzo(g,h,i)perylene	mg/kg	1400				
8270SIM	Benzo(k)fluoranthene	mg/kg	49				
8270SIM	Chrysene	mg/kg	360				
8270SIM	Dibenzo(a,h)anthracene	mg/kg	0.49				
8270SIM	Fluoranthene	mg/kg	1400				
8270SIM	Fluorene	mg/kg	220				
8270SIM	Indeno(1,2,3-cd)pyrene	mg/kg	4.9				
8270SIM	Naphthalene	mg/kg	20				
8270SIM	Phenanthrene	mg/kg	3000				
8270SIM	Pyrene	mg/kg	1000				
AK101	Gasoline	mg/kg			ND [1]		
AK102	Diesel Range Organics (C10-C25)	mg/kg	250	27 [68] J			
AK103	Residual Range Organics	mg/kg	10000	180 [68]			
D2216	Percent Moisture	PERCENT	NA	26.8 [2]			
SW6020	Arsenic	mg/kg	3.9				
SW6020	Barium	mg/kg	1100				
SW6020	Cadmium	mg/kg	5				
SW6020	Chromium	mg/kg	25				
SW6020	Lead	mg/kg	400				
SW6020	Selenium	mg/kg	3.4				
SW6020	Silver	mg/kg	11.2				
SW7196A	Chromium, Hexavalent	mg/kg	25				
SW7471A	Mercury	mg/kg	1.4				
SW8081A	4,4'-DDD	mg/kg	7.2				
SW8081A	4,4'-DDE	mg/kg	5.1				
SW8081A	4,4'-DDT	mg/kg	7.3				
SW8081A	Aldrin	mg/kg	0.07				
SW8081A	alpha-BHC	mg/kg	0.0064				
SW8081A	alpha-Chlordane	mg/kg	2.3				
SW8081A	beta-BHC	mg/kg	0.022				
SW8081A	delta-BHC	mg/kg	NA				
SW8081A	Dieldrin	mg/kg	0.0076				
SW8081A	Endosulfan I	mg/kg	64				

	AP Number			AP-4729		
		S	Sample ID	10ELM300-18SL	10ELM300-90SL	
		Location	ID, Depth	TB-9; 9.5-11.5'	TRIP BLANK	
		Sample E	Del Group	61012	61012	
		Collec	tion Date	2/22/2010	2/22/2010	
Method	ANALYTE	UNITS	ADEC	Duplicate of -02SL		
SW8081A	Endosulfan II	mg/kg	64			
SW8081A	Endosulfan sulfate	mg/kg	64			
SW8081A	Endrin	mg/kg	0.29			
SW8081A	Endrin aldehvde	ma/ka	NA			
SW8081A	Endrin ketone	ma/ka	NA			
SW8081A	gamma-BHC (Lindane)	ma/ka	0.0095			
SW8081A	gamma-Chlordane	ma/ka	2.3			
SW8081A	Heptachlor	mg/kg	0.28			
SW8081A	Heptachlor epoxide	mg/kg	0.014			
SW8081A	Methoxychlor	mg/kg	23			
SW8081A	Toxaphene	mg/kg	3.9			
			0.0			
SW8082	PCB-1016 (Aroclor 1016)	ma/ka	1			
SW8082	PCB-1221 (Aroclor 1221)	ma/ka	1			
SW8082	PCB-1232 (Aroclor 1232)	mg/kg	1			
SW/8082	PCB-1242 (Aroclor 1242)	mg/kg	1			
SW0002	PCB-1248 (Aroclor 1248)	mg/kg	1			
SW0002	PCB_{1254} (Aroclor 1254)	mg/kg	1			
SW0002 SW0002	PCB-1260 (Aroclor 1260)	mg/kg	1			
300002	FCB-1200 (AIOCIOI 1200)	iiig/kg	1			
S/1/8260B	1 1 1 2-Tetrachloroethane	ma/ka	ΝΛ	ND [0 068]	ND [0.05]	
S110200D		mg/kg	0.92			
SW0200D		mg/kg	0.82	ND [0.068]		
SW0200B		mg/kg	0.017	ND [0.066]	ND [0.05]	
SW020UD		mg/kg	0.016	ND [0.068]	ND [0.05]	
SW0200B	1,1-Dichloroethana	mg/kg	20	ND [0.068]	ND [0.05]	
500200D		mg/kg	0.03	ND [0.066]	ND [0.05]	
5008260B	1, 1-Dichloropropene	mg/kg	INA NIA	ND [0.068]	ND [0.05]	
5008260B	1,2,3-Trichlangenzene	mg/kg	INA 0.00050	ND [0.068]	ND [0.05]	
SW8260B	1,2,3-Trichlandhan ann	mg/kg	0.00053	ND [0.14]	ND [0.1]	
SVV8260B	1,2,4-Tricniorobenzene	mg/kg	0.85	ND [0.068]	ND [0.05]	
SVV8260B	1,2,4-1 rimetnyibenzene	mg/kg	23	ND [0.068]	ND [0.05]	
SW8260B	1,2-Dibromo-3-chloropropane	mg/kg	NA	ND [0.14]	ND [0.1]	
SW8260B	1,2-Dibromoethane	mg/kg	0.00016	ND [0.068]	ND [0.05]	
SW8260B	1,2-Dichlorobenzene	mg/kg	5.1	ND [0.068]	ND [0.05]	
SW8260B	1,2-Dichloroethane	mg/kg	0.016	ND [0.068]	ND [0.05]	
SW8260B	1,2-Dichloropropane	mg/kg	0.018	ND [0.068]	ND [0.05]	
SVV8260B	1,3,5- I rimethylbenzene	mg/kg	23	ND [0.068]	ND [0.05]	
SW8260B	1,3-Dichlorobenzene	mg/kg	28	ND [0.068]	ND [0.05]	
SW8260B	1,3-Dichloropropane	mg/kg	NA	ND [0.068]	ND [0.05]	
SW8260B	1,4-Dichlorobenzene	mg/kg	0.64	ND [0.068]	ND [0.05]	
SW8260B	2,2-Dichloropropane	mg/kg	NA	ND [0.068]	ND [0.05]	
SW8260B	2-Butanone	mg/kg	59	ND [0.68]	ND [0.5]	
SW8260B	2-Chlorotoluene	mg/kg	NA	ND [0.068]	ND [0.05]	
SW8260B	2-Hexanone	mg/kg	NA	ND [0.68]	ND [0.5]	
SW8260B	4-Chlorotoluene	mg/kg	NA	ND [0.068]	ND [0.05]	
SW8260B	4-Isopropyltoluene	mg/kg	NA	ND [0.068]	ND [0.05]	
SW8260B	4-Methyl-2-pentanone	mg/kg	8.1	ND [0.68]	ND [0.5]	
SW8260B	Acetone	mg/kg	88	ND [0.68]	ND [0.5]	

		AP-4729			
		S	ample ID	10ELM300-18SL	10ELM300-90SL
		Location	ID, Depth	TB-9; 9.5-11.5'	TRIP BLANK
		Sample D	el Group	61012	61012
		Collec	tion Date	2/22/2010	2/22/2010
Method	ANALYTE	UNITS	ADEC	Duplicate of -02SL	
SW8260B	Benzene	mg/kg	0.025	ND [0.068]	ND [0.05]
SW8260B	Bromobenzene	mg/kg	NA	ND [0.068]	ND [0.05]
SW8260B	Bromochloromethane	mg/kg	NA	ND [0.068]	ND [0.05]
SW8260B	Bromodichloromethane	mg/kg	0.044	ND [0.068]	ND [0.05]
SW8260B	Bromoform	mg/kg	0.34	ND [0.068]	ND [0.05]
SW8260B	Bromomethane	mg/kg	0.16	ND [0.14]	ND [0.1]
SW8260B	Carbon disulfide	mg/kg	12	ND [0.068]	ND [0.05]
SW8260B	Carbon tetrachloride	mg/kg	0.023	ND [0.068]	ND [0.05]
SW8260B	Chlorobenzene	mg/kg	0.63	ND [0.068]	ND [0.05]
SW8260B	Chloroethane	mg/kg	23	ND [0.068]	ND [0.05]
SW8260B	Chloroform	mg/kg	0.46	ND [0.068]	ND [0.05]
SW8260B	Chloromethane	mg/kg	0.21	ND [0.068]	ND [0.05]
SW8260B	cis-1,2-Dichloroethene	mg/kg	0.24	ND [0.068]	ND [0.05]
SW8260B	cis-1,3-Dichloropropene	mg/kg	0.033	ND [0.068]	ND [0.05]
SW8260B	Dibromochloromethane	mg/kg	0.032	ND [0.068]	ND [0.05]
SW8260B	Dibromomethane	mg/kg	1.1	ND [0.068]	ND [0.05]
SW8260B	Dichlorodifluoromethane	mg/kg	140	ND [0.068]	ND [0.05]
SW8260B	Ethylbenzene	mg/kg	6.9	ND [0.068]	ND [0.05]
SW8260B	Hexachlorobutadiene	mg/kg	NA	ND [0.068]	ND [0.05]
SW8260B	Isopropylbenzene	mg/kg	51	ND [0.068]	ND [0.05]
SW8260B	Methylene chloride	mg/kg	0.016	ND [0.34]	ND [0.25]
SW8260B	Methyl-tert-butyl ether (MTBE)	mg/kg	1.3	ND [0.068]	ND [0.05]
SW8260B	Naphthalene	mg/kg	20	ND [0.068]	ND [0.05]
SW8260B	n-Butylbenzene	mg/kg	15	ND [0.068]	ND [0.05]
SW8260B	n-Propylbenzene	mg/kg	15	ND [0.068]	ND [0.05]
SW8260B	o-Xylene	mg/kg	63	ND [0.068]	ND [0.05]
SW8260B	sec-Butylbenzene	mg/kg	12	ND [0.068]	ND [0.05]
SW8260B	Styrene	mg/kg	0.96	ND [0.068]	ND [0.05]
SW8260B	tert-Butylbenzene	mg/kg	12	ND [0.068]	ND [0.05]
SW8260B	Tetrachloroethene (PCE)	mg/kg	0.024	ND [0.068]	ND [0.05]
SW8260B	Toluene	mg/kg	6.5	0.013 [0.068] J, QN	ND [0.05]
SW8260B	trans-1,2-Dichloroethene	mg/kg	0.37	ND [0.068]	ND [0.05]
SW8260B	trans-1,3-Dichloropropene	mg/kg	0.033	ND [0.068]	ND [0.05]
SW8260B	Trichloroethene (TCE)	mg/kg	0.02	ND [0.068]	ND [0.05]
SW8260B	Trichlorofluoromethane	mg/kg	86	ND [0.068]	ND [0.05]
SW8260B	Vinyl chloride	mg/kg	0.0085	ND [0.068]	ND [0.05]
SW8260B	Xylene, Isomers m & p	mg/kg	63	ND [0.14]	ND [0.1]

Appendix C

ADEC Laboratory Data Review Checklist

Laboratory Data Review Checklist

Completed by:	Amanda Heath	Amanda Heath							
Title:	Chemist			Date:	Mar 31, 2010				
CS Report Name:	ELM300 F-22	Weapons Releas	e System Shop	Report Date:					
Consultant Firm:	U.S. Army Cor	J.S. Army Corps of Engineers							
Laboratory Name:	APPL, Inc. Clo	ovis	Laboratory Report Number: 61012						
ADEC File Numbe	r:		ADEC RecKey	Number:					
1. Laboratory									
a. Did a	in ADEC CS appro	oved laboratory r	eceive and perform	all of the submitted	sample analyses?				
• Y	es \bigcirc No	\bigcirc No \bigcirc NA (Please explain.)		Comments:	Comments:				
APPL, Inc. (Clovis, California	completed all of	the submitted analy	ses.					
b. If the labora	b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?								
• Ye	s 🔿 No	○NA (Pleas	e explain) Comments						
Not applicab	le.								
2. Chain of Custo	<u>dy (COC)</u>								
a. COC in	formation complet	ed, signed, and d	lated (including rele	eased/received by)?					
• Ye	s 🔿 No	○NA (Pleas	se explain)	Comments:	Comments:				
b. Correct	analyses requeste	d?							
• Ye	s 🔿 No	○NA (Plea	ase explain)	Comments:					
3. Laboratory San	nple Receipt Docu	mentation							
a. Sample/	cooler temperature	e documented an	d within range at re	ceipt $(4^\circ \pm 2^\circ C)$?					
• Ye	es 🔿 No	○NA (Ple	○NA (Please explain)						
Temp blank	Temp blank was 2.5 degrees C. Cooler temp was 5.0 degrees C.								

b. S	Sample preservation	acceptable - acidified	waters, Methanol	preserved VO	C soil (GRO,	BTEX,
I	/olatile Chlorinated	Solvents, etc.)?				

• Yes	\bigcirc No	○NA (Please explain)	Comments:						
c. Sample con	c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?								
• Yes	⊖ No	○NA (Please explain)	Comments:						
No discrepancies	noted.								
d. If there wer preservation, s	e any discrepa sample temper	ncies, were they documented? - Fo ature outside of acceptance range, i	r example, incorrect sample containers/ insufficient or missing samples, etc.?						
• Yes	\bigcirc No	ONA (Please explain)	Comments:						
e. Data quality	v or usability a	ffected? (Please explain)							
			Comments:						
Data quality/usab	oility not affect	ted.							
Case Narrative									
a. Present and	understandabl	e?							
• Yes	⊖ No	○NA (Please explain)	Comments:						
b. Discrepanci	ies, errors or Q	C failures identified by the lab?							
• Yes	⊖ No	○NA (Please explain)	Comments:						
c. Were all co	rrective action	s documented?							
• Yes	⊖ No	○NA (Please explain)	Comments:						

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative only describes qualifications made to the data based on problems encountered during the sample analysis.

4.

5. Samples Results

• Yes	⊖ No	○NA (Please explain)	Comments:
b. All applica	ble holding ti	mes met?	
• Yes	⊖ No	○NA (Please explain)	Comments:
c. All soils rej	ported on a dr	y weight basis?	
• Yes	() No	○NA (Please explain)	Comments:
d. Are the rep project?	orted PQLs le	ess than the Cleanup Level or the min	imum required detection level for the
• Yes	\bigcirc No	○NA (Please explain)	Comments:
Data quality/usal	bility not affe	cted.	
<u>C Samples</u>			
a. Method Blan i. One me	1k ethod blank re	eported per matrix, analysis and 20 sa	imples?
⊖ Yes	⊖ No	○ NA (Please explain)	Comments:
Yes.			
ii A 11 mat	had blank rea	which have than $\mathbf{D} \mathbf{O} \mathbf{I}^{2}$	
\bigcirc Yes	• No	\bigcirc NA (Please explain)	Comments:
iii. If abov	ve PQL, what	samples are affected?	Comments:
Sample 10ELM3	300-01SL.		

6.

iv. Do the affected sample(s) have data fla	gs? If so, are the da	ta flags clearly defined?
		8	

• Yes	\bigcirc No	○NA (Please explain)	Comments:
-------	---------------	----------------------	-----------

v. Data qu	ality or usabil	ity affected? (Please explain)	Comments:
Data quality/usa	bility not affe	cted.	
b. Laboratory	Control Samp	ole/Duplicate (LCS/LCSD)	
i. Organics per AK me	s - One LCS/I ethods, LCS r	CSD reported per matrix, analysis equired per SW846)	and 20 samples? (LCS/LCSD required
• Yes	○ No	∩NA (Please explain)	Comments:
ii. Metals/ samples?	Inorganics - C	One LCS and one sample duplicate	reported per matrix, analysis and 20
• Yes	\bigcirc No	○NA (Please explain)	Comments:
iii. Accura project spe 75%-125%	cy - All perce ccified DQOs 6, AK103 60%	ent recoveries (%R) reported and ways, if applicable. (AK Petroleum meth %-120%; all other analyses see the l	ithin method or laboratory limits? And nods: AK101 60%-120%, AK102 laboratory QC pages)
• Yes	⊖ No	○NA (Please explain)	Comments:
iv. Precisio limits? An or sample/ pages) • Yes	on - All relativ d project spec sample duplic O No	ve percent differences (RPD) report eified DQOs, if applicable. RPD rep cate. (AK Petroleum methods 20%; ONA (Please explain)	ted and less than method or laboratory ported from LCS/LCSD, MS/DMSD, and all other analyses see the laboratory QC Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected samples(s) have	e data flags? If so,	are the data flags	clearly defined?
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	⊖ No	○NA (Please explain)	Comments:
vii. Data c	quality or usab	ility affected? (Please explain)	Comments:
c. Surrogates	- Organics On	ly	
i. Are surr	ogate recoveri	es reported for organic analyses - fie	eld, QC and laboratory samples?
• Yes	⊖ No	ONA (Please explain)	Comments:
ii. Accura project sp the labora	cy - All percer ecified DQOs, tory report pag	nt recoveries (%R) reported and with , if applicable. (AK Petroleum metho ges)	nin method or laboratory limits? And ods 50-150 %R; all other analyses see
\bigcirc Yes	• No	○NA (Please explain)	Comments:
clearly de	fined?		a.
• Yes Samples 10ELM limits. Samples	O No [300-03SL and 10ELM300-01 vality or usabi	ONA (Please explain) 1-11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below
• Yes Samples 10ELM limits. Samples laborationyDatiants	○ No [300-03SL and 10ELM300-01 µality or usabi	ONA (Please explain) I -11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below to explain.). Comments:
 Yes Samples 10ELM limits. Samples laborativity Data quality/usa 	○ No [300-03SL and 10ELM300-01 µality or usabi bility not affect	ONA (Please explain) I -11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below to explain.). Comments:
 Yes Samples 10ELM limits. Samples laboratory Data quality/usa d. Trip Blank <u>Soil</u> One trip (If not, en 	 No I300-03SL and I0ELM300-01 uality or usabi bility not affect Volatile ana blank reported ter explanation 	ONA (Please explain) 1-11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box cted. lyses only (GRO, BTEX, Volatile C od per matrix, analysis and for each c n below.)	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below a to explain.). Comments: Comments: Comments: Containing volatile samples?
 Yes Samples 10ELM limits. Samples laborativryDintaits Data quality/usa d. Trip Blank Soil i. One trip (If not, en Yes 	 ○ No I300-03SL and I0ELM300-01 µality or usabi bility not affect o blank reporte ter explanation ○ No 	 NA (Please explain) 1-11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box cted. lyses only (GRO, BTEX, Volatile C d per matrix, analysis and for each c n below.) NA (Please explain.) 	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below a to explain.). Comments: Comments: Cooler containing volatile samples? Comments:
 Yes Samples 10ELM limits. Samples laborationy Data quality/usa d. Trip Blank Soil i. One trip (If not, en Yes Yes 	 ○ No I300-03SL and I0ELM300-01 uality or usabi bility not affect - Volatile ana blank reporte ter explanation ○ No ooler used to t a comment ex 	 NA (Please explain) 1-11SL for PAHs and -04SL for VO SL, -04SL and -17SL for DRO and lity affected? (Use the comment box cted. lyses only (GRO, BTEX, Volatile C d per matrix, analysis and for each c n below.) NA (Please explain.) 	Comments: OCs were above laboratory control -01SL and -07SL for RRO were below a to explain.). Comments: Comments: Coller containing volatile samples? Comments: mples clearly indicated on the COC?

iii. All resu	ults less than	PQL?				
• Yes	⊖ No	○ NA (Please explain.)	Comments:			
iv. If abov	ve PQL, what	samples are affected?				
			Comments:			
v. Data qu	ality or usabi	ility affected? (Please explain.)				
			Comments:			
Data quality/usa	bility not affe	ected.				
e. Field Duplic	ate					
i. One field	l duplicate su	bmitted per matrix, analysis and 10	project samples?			
• Yes	⊖ No	○NA (Please explain)	Comments:			
ii. Submit	ii. Submitted blind to lab?					
• Yes	⊖ No	○ NA (Please explain.)	Comments:			

iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

> RPD (%) = Absolute Value of: $(\underline{R_{1-} R_{2}})_{X \ 100}$ (($R_{1+} R_{2}$)/2)

Where $R_1 =$ Sample Concentration

 R_2 = Field Duplicate Concentration

○ Yes ● No ○ NA (Please explain) Comments:

For duplicate pair 10ELM300-01SL/-17SL, the RPDs for DRO, silver, 4,4'-DDT, PCB-1260, 1,2,4trichlorobenzene, 1,2,4-trimethylbenzene and 2-butanone were high (greater than 50%) because low concentrations were detected in one-half of the duplicate pair, but not the other. The RPDs for RRO, fluoranthene, anthracene, benzo(a)anthracene, phenanthrene, acenaphthene, fluorene pyrene, benzo(b) fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, chrysene, dibenzo(a,h)anthracene, barium, selenium, trichloroethene (TCE), mercury and chromium were high (greater than 50%), likely due to heterogeneity of the sample. Data usability is not impacted as all results are well below ADEC cleanup levels except for benzo(a)pyrene.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

⊖ Yes	• No	○NA (Please explain)	Comments:	

Data usability is not impacted as all results are well below ADEC cleanup levels except for benzo(a) pyrene.

f. Decontamination or Equipment Blank (if applicable)

Y	es	⊖ No	○ NA (Please explain)	Comments:			
All equipme	All equipment was disposable.						
i. All	i. All results less than PQL?						
ΟY	fes	⊖ No	• NA (Please explain)	Comments:			
All equipment was disposable.							
ii. If a	above I	PQL, what sampl	es are affected?	Comments:			

iii. Data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

• Yes	⊖ No	○NA (Please explain)	Comments:

Reset Form

Appendix D

Field Notebook

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*2x2 Not 89] S *1) 2×402 w/ MDH VOL/GRO +HS/HSD + 20 min 10ECH300-1856 TB-9:9-11 + HS/HSD *2) | × 407 w/HLOH VOC & NUCH Sampling Sendy 1 20 18-9: * (10 ELM300-025L) 1 × 402 m/ MOH VOC/680 × 402 w/ HeoH VOC 10ELM300-015L 4 × 802 DIRIP/P/P/M (eta) $\langle \rangle$ (IDELM300 - 1 2 × 802 D/R/P/P 0 0 IX 802 D/R X POZ D/R (mod) a 35 Ř 0 S. Ŕ 3 0 11.33 1207 È 1153 è 1030 050 100 1115 inc. \$1/22/12 mozt Wester: Sunny 945 - 54 - up, boing loadten I PTIN truthed druck 1210 - packing up hole. Date: 22 Feb 2010 Observations Tenp: 260F Time: 945 78-7

Stal soll-Repon 78-51 Suldans X K *1) 1 × 402 U/HLDH VOC/GRO 2 × 802 D/R/P/P/M (10ELM300-035L) *2) 1 × 402 W/HLOH VOC 1 × 802 DIR (10ELM300-045L) 0 0 (ppm) (ppm) 0 ato 15 0 Ŕ Ĝ, 32 1318 1336 1400 1414 1428 1428 1428 T.me 1410 - Slugg Oren 10' - cold 35 ppp -collecting cuttings in 55-sollon drum. 1340 - ~5' staln so!1 ~4" 98 pm PID Took 402 h Muoff X1/per 802 Smoy 1305 - dt bon'ng /prep. 1500 - pick yof pack hole leave contaminat 22 Feb 2010 Observations 1305 20.1 6-81

တ 6 Sampling * 4 х *1) 1 × 402 w/HrOH VOC/6RO 2 × 80E D/R1P/P/H (10 ELH300 - 053L) *2) 1 × 402 ~/ MEDH VOC 1 × 802 D/R (10ELM300-06SL) Het Rebusa \mathcal{O} OD 0 (mot) 000 0 0 0 0 R & B & Z & D & M O T 929 929 929 929 929 952 1018 SIVECIE ZWI 1021 - bowng packup /backbill 830 - ndo to 78/54-00 & PTO Bundred 1. 78-6 23 Feb 2010 Observations 830 18°F ω

78-1 Sampling 0 ¥ ***** # × +* * 1) 1 × 40= ~/MLOH VOC/GRO 2 × 80= D/R/P/P/H (10E2H300-075L) *2) | × 402 w/ H. OH VOC | × 802 D/R (10ELM300-085L) the to 000 0 Ø (mad) Leld 00 0 0 O О 1201 20' 1214 25' 1226 35' óB ń j S ù ò 1118 1138 1150 1055 1107 1 1235 - Dende/Hab to rext bortug backSilling TB-1 Swny Observations 1044-Male to TB / Set-40. 23 Feb 2010 Harm-1044 1044 1-8-1 10

 $\tilde{\omega}$ TB-5 arilours *2) | × 40= w/HLDH VOC/GRO | × 80= D/R (10ELM300-105L) X N *1) 1 × 4 = ~ ~ MLOH VOC/GRO 2 × 80= DIRIPIPIM (10ELM300 - 095L) * (nd H 0 0 (ndy) 000 00 00 0 Dep ìs m 0 Ŕ 5,5 20 3 1335 1400 1412 1412 1425 1436 1449 1507 -N N 1512 - booms pick-up/backall hole Observations 1322 - Hob to TB/Set-up. Suny For Lay 23 February 2010 Dore 1322 78-5 12

No Recovery Speen Sher Irde 15 78-3 Sending ¥2) | × 402 W/MEOH VOC | × 802 D/R (1052M300-1252) Dark of in In Boil Dark of in In Boil *1) 1 × 40= w/MLOH VOC/GRO 2 × 80= D/R/P/P/P/M (10E1M300 - 1152) (mad) Hot 0 00 00 0 6 2 m 0 0 0000 Risis i e d'm' O'B 11 me 850 916 916 924 924 1010 1023 1037 * PID bunked ducked 705an 2/24/10 920 - -1256 - 501 shin? 5' - PID Oppm(Hob 1040 - Meb/Dunde/Back 2:11 ho/c. 815 - on - site / maine Shokovahors 24 Febr 815 26F 18-3

17 78-2 ومالصحك * ж *\) | × 402 w/460H VOC16RO 2 × 802 D/R/P/P/H (10ELM300 - 135L) XD | X 42 ~/M.DH VOC | X 802 D/R (10ELM 300 - 145L (tob) Q Q 0 Ð 0 \bigcirc 0 Ó 0000 0 00 0 R' & B' Q Q' M' O'B 1109 1109 1116 1130 1151 1200 1212 12212 Observation 1058 - Mob to boning/set-up. Sway 1/17 - Spon shude in ango 120 - bound/Site pic hole backSill 24 February 2010 1058 260F 78-2 16