RECEIVED SEPTEMBER 03, 2010

Shaw
Shaw Environmental & Infrastructure, Inc.

Geotechnical Laboratory
304 Directors Drive
Knoxville, TN 37923
(865) 690-3211

CERTIFICATE OF ANALYSIS

Mr. Michael Neely
CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – B6-06
Richland, WA 99352

September 1, 2010

This is the Certificate of Analysis for the following samples:

Shaw Project ID: Eberline Analytical
Shaw Project Number: 139736
Date Received by Lab: 07/20/2010
Number of Samples: One
Sample Type: Soil

I. Introduction/Case Narrative

One soil sample was received by the Shaw Geotechnical Laboratory on July 20, 2010. The sample was submitted for determination of bulk density, saturated hydraulic conductivity/ permeability, and moisture content. The sample number received was B25X51.

Please see Appendix A, Sample Number Cross Reference List; Appendix B, Analysis Results; Appendix C, Chain-of-Custody/Sample Receipt Records.

"I certify that this data package is in compliance the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee, as verified by the following signature."

Reviewed and Approved:

R. Gregory Bennett
Geotechnical Laboratory Manager, Technology Applications Group

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II. Analytical Results/Methodology

REFERENCES: United Nations, *Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria*, third ed. New York, 1999. United States Army Corps of Engineers (USACE), Engineer Manual 1110-2-1906, *Laboratory Soils Testing*, appendix II, 1970; United States Environmental Protection Agency, SW846, *Test Methods for Examining Solid Waste, Physical/Chemical Methods*, 3rd ed., Nov 1986 (EPA SW-846). Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, *Soil and Rock (I)*, and Volume 04.09, *Soil and Rock (II)*, 2008. Shaw Environmental and infrastructure, Standard Operating Procedures.

Bulk Density ..... **ASTM D 2937**
Moisture Content of Soil and Rock ..... **ASTM D 2216**
Permeability..... **ASTM D 5084**

III. Quality Control

Quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due largely to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and quality control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification of all numerical results - raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.

- Data validation through test reasonableness - summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.

- Quality control procedures are built into most standardized geotechnical procedures. For example, liquid limit and plastic limit analyses call for re-analyses and specify acceptance criteria.

- Routine instrument calibration - instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.

- Maintenance of all past calibration records - calibration records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

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- Certified and trained personnel - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by Shaw.

- Quantitative analyses frequently used in geotechnical/physical testing programs do not use QC tools common to wet chemistry or radiochemistry laboratories. Measures not employed in the analysis of samples reported in this report include: laboratory control samples (LCS), blanks, matrix spikes (MS), duplicate analyses, dilutions, digestions, correction factors, surrogate sample analyses, detection limit determinations, control charts, and/or tentatively identified compounds (TICs).

IV. Data Qualification

None.

Appendix A
Sample Cross-Reference List

Report No.: EBER0910019
Mr. Michael Neely
Client: CH2M Hill Plateau Remediation Company
Shaw Project Name: Eberline Analytical
Shaw Project No.: 139736

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SAMPLE NUMBER CROSS-REFERENCE LIST

Lab Sample ID	Client Sample ID	MATRIX
SEK 4811	**B25X51**	**SOIL**

Appendix B
Data Results

Report No.: EBER0910019
Mr. Michael Neely
Client: CH2M Hill Plateau Remediation Company
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BULK DENSITY/DRY DENSITY
ASTM D 2937

PROJECT NAME: **Eberline Analytical**

PROJECT NUMBER: **139736.02000000**

LAB SAMPLE NUMBER	CLIENT SAMPLE NUMBER	AVERAGE LENGTH, inches	AVERAGE DIAMETER, inches*	WET WEIGHT, grams	MOISTURE CONTENT, %	BULK DENSITY, pcf	DRY DENSITY, pcf
SEK 4811	B25X51	5.9975	3.7130	2101.69	24.3	123.3	99.2

Moisture content calculated by ASTM D 2216 based on sample dry weight.
Bulk density is the weight of wet sample divided by the volume of the wet sample (as-received).
Dry density is the weight of the dry sample solids divided by the volume of the original sample.

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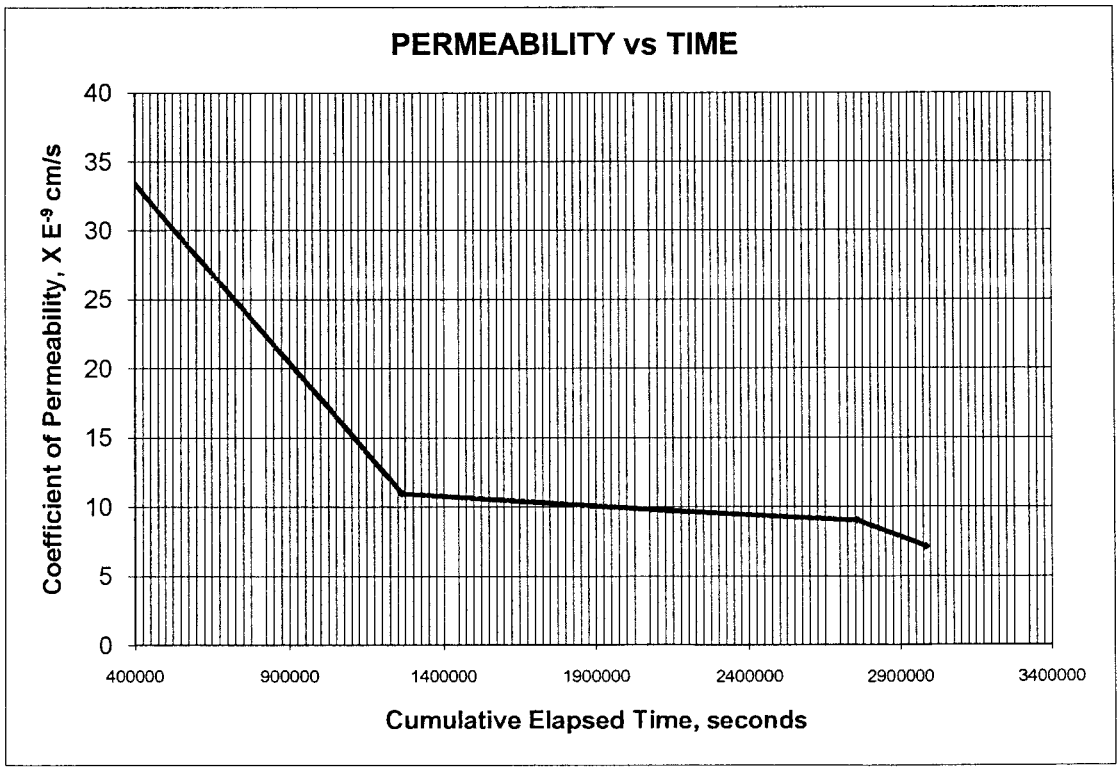
HYDRAULIC CONDUCTIVITY / PERMEABILITY
ASTM D 5084

PROJECT NAME:	Eberline Analytical	CLIENT SAMPLE NO.	B25X51
PROJECT NO.	139736.02000000	LAB SAMPLE NO.	SEK 4811

	INITIAL	FINAL
Specimen diameter, cm	7.24	
Specimen length, cm	12.26	
Wet weight of specimen, g.	1022.92	
Specimen cross-sect. area, cm^2	41.18	
Water content, %	24.3	
Wet unit weight, pcf	126.5	
Dry unit weight, pcf	101.7	
Est. degree of saturation, %	102.9	102.9
Specific gravity of solids, assume	2.65	

Hydraulic gradient	28.7
Min. consolidation stress, psi	2.0
Max. consolidation stress, psi	7.0
Total backpressure, psi	35.0
Permeant Fluid	Deaired DI Water

Coefficient of Permeability, cm/s 9.2E-09



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MOISTURE CONTENT

PROJECT NAME
Eberline Analytical

PROJECT NUMBER
139736.02000000

IT LAB SAMPLE NO.	CLIENT SAMPLE NO.	MOISTURE, % ASTM D 2216	MOISTURE , % SW846	SOLIDS, % SW846
SEK 4811	B25X51	25.6	20.4	79.6

ASTM D 2216 results are based on dry sample weight.
SW846 results are based on wet sample weight.
Solids content is determined by subtracting the SW846 moisture (%) from 100.

Appendix C
Chain of Custody Records

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** — F10-207-020 — PAGE 1 OF 1

COLLECTOR A. Torres	**COMPANY CONTACT** DYEKMAN, DL	**TELEPHONE NO.** 373-2530	**PROJECT COORDINATOR** DYEKMAN, DL
SAMPLING LOCATION C7691; I-036	**PROJECT DESIGNATION** 100 Area Remedial Investigation/Feasibility Analysis - 100-KR-4 Soils		**SAF NO.** F10-207
ICE CHEST NO. GWS - 300 - 002	**FIELD LOGBOOK NO.** HNF-N-385-13 PG 79	**ACTUAL SAMPLE DEPTH** 153.4 - 155.6 FT	**COA** 300082ES10
SHIPPED TO Shaw Group	**OFFSITE PROPERTY NO.** SEE PTR		**BILL OF LADING/AIR BILL NO.** SEE PTR 7937 3947 6240

PRICE CODE 8N — **DATA TURNAROUND** — **AIR QUALITY** ☐ — 45 Days / 45 Days

METHOD OF SHIPMENT FEDERAL EXPRESS

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None	None
HOLDING TIME	None	None
TYPE OF CONTAINER	Liner	Moisture Resistant Cont.
NO. OF CONTAINER(S)	1	1
VOLUME	1000g	200g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Moisture Content - D2216;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B25X51	SOIL	7-15-10	1130	X	X

6 LBS packaged Sample + containers
GKA 7/20/10

SEK 4811

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
A. Torres	7-15-10 1600	MO 413 SSU-R2	7-15-10 1600
MO 413 SSU-R2	7-19-10 0730	Malwhite Malwhite	7-19-10 0730
Malwhite Malwhite	7-19-10 1400	FEDEX	

SPECIAL INSTRUCTIONS
** The laboratory is to report all TICs for Method 8260.☐** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.☐☐** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 243?
(1) Bulk Density - D2937; Saturated Hydraulic Conductivity {Hydraulic Conductivity}; Permeability - D2434 {Hydraulic Conductivity};

2 ORIGINAL

LABORATORY SECTION	**RECEIVED BY**	**TITLE** RSO	**DATE/TIME** 7/20/2010 1000
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

0017899