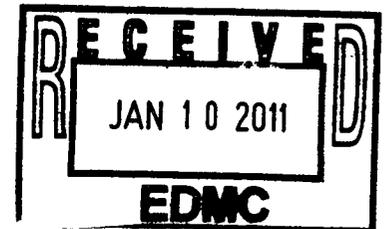


EBER0910020

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: 07/23/2010
Number of Samples: One
Sample Type: Soil

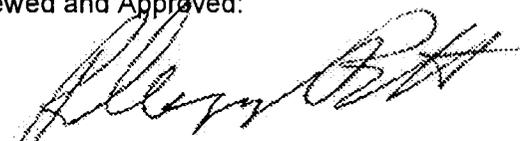
I. Introduction/Case Narrative

One soil samples was received by the Shaw Geotechnical Laboratory on July 23, 2010. The sample was submitted for determination of bulk density, saturated hydraulic conductivity/permeability, and moisture content. The sample number received was B25YX5.

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:



A handwritten signature in black ink, appearing to read "R. Gregory Bennett".

R. Gregory Bennett
Geotechnical Laboratory Manager, Technology Applications Group

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 DensityASTM D 2937
Moisture Content of Soil and RockASTM 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.

- 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

Page 4 of 8
Report No.: EBER0910020
Mr. Michael Neely
Client: CH2M Hill Plateau Remediation Company
Shaw Project Name: Eberline Analytical
Shaw Project No.: 139736

Shaw
Geotechnical Laboratory
Knoxville, TN
(865) 690-3211

SAMPLE NUMBER CROSS-REFERENCE LIST

Lab Sample ID	Client Sample ID	MATRIX
SEK 4816	B25YX5	SOIL

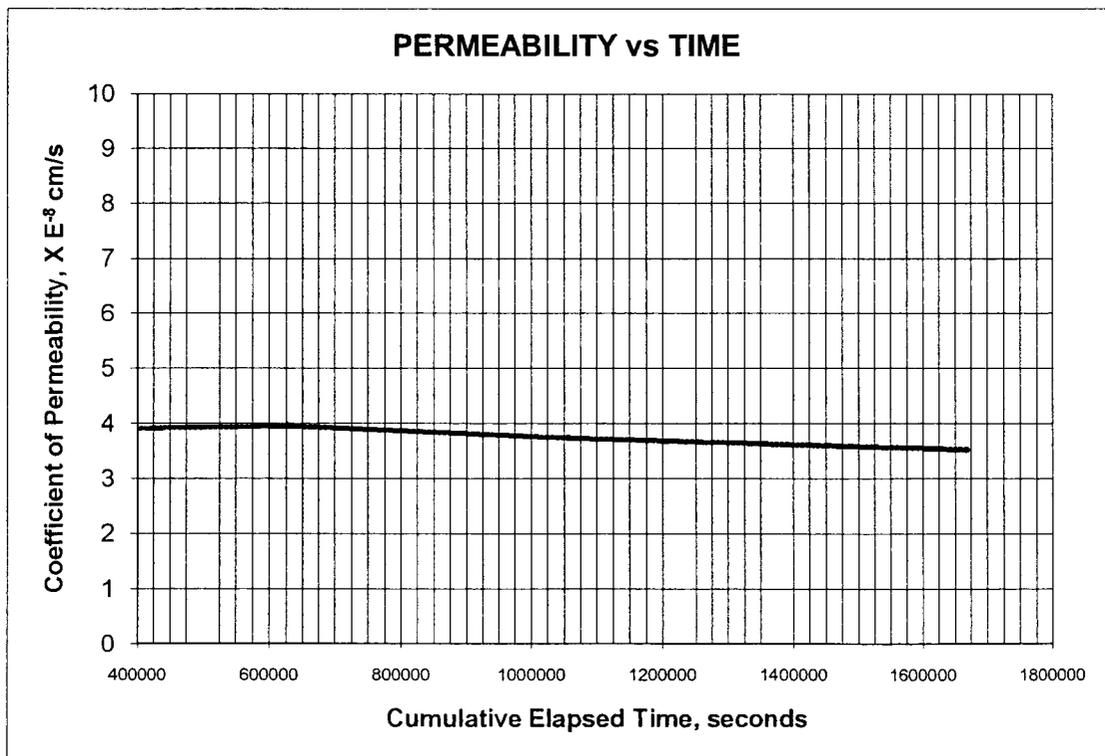
Appendix B
Data Results

**HYDRAULIC CONDUCTIVITY / PERMEABILITY
 ASTM D 5084**

PROJECT NAME:	Eberline Analytical	CLIENT SAMPLE NO.	B25X51
PROJECT NO.	139736.01000000	LAB SAMPLE NO.	SEK 4816

	INITIAL	FINAL		
Specimen diameter, cm	7.11		Hydraulic gradient	25.7
Specimen length, cm	10.94		Min. consolidation stress, psi	2.0
Wet weight of specimen, g.	911.44		Max. consolidation stress, psi	6.0
Specimen cross-sect. area, cm ²	39.74		Total backpressure, psi	36.0
Water content, %	15.8		Permeant Fluid	Deaired DI Water
Wet unit weight, pcf	130.9			
Dry unit weight, pcf	113.0			
Est. degree of saturation, %	90.4	90.4		
Specific gravity of solids, assumed	2.65			

Coefficient of Permeability, cm/s 3.7E-08



Appendix C
Chain of Custody Records

CH2M Hill Plateau Remediation Company

COLLECTOR

Chris Zwickler, Georgia

SAMPLING LOCATION

C7694; 1-026

ICE CHEST NO.

6UX-202

SHIPPED TO

Shaw Group

MATRIX*

- A=Air
- DL=Drum
- L=Liquid
- DS=Drum
- S=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

SAMPLE NO.

B25YX5

MATRIX*

SOIL

SAMPLE DATE

7/20/10

SAMPLE TIME

1045

SEK 4816

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>Georgia</i>	<i>7/20/10 0820</i>	<i>MS-RZ</i>	<i>7/20/10 1045</i>
<i>Georgia</i>	<i>7/22/2010 1100</i>	<i>JR-AS</i>	<i>7/22/2010 0820</i>
<i>Georgia</i>	<i>7/22/2010 1100</i>	<i>JR-AS</i>	<i>7/22/2010 0820</i>
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

ORIGINAL

SPECIAL INSTRUCTIONS

** 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});

LABORATORY SECTION

RECEIVED BY

DISPOSAL METHOD

DISPOSED BY

TITLE

ASD

DATE/TIME

7-22-2010/01100

DATE/TIME

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COMPANY CONTACT: DYEKMAN, DL
TELEPHONE NO.: 373-2530

PROJECT COORDINATOR: DYEKMAN, DL

PROJECT DESIGNATION: 100 Area Remedial Investigation/Feasibility Analysis - 100-KR-4 Soils

FIELD LOGBOOK NO.: *9082*

ACTUAL SAMPLE DEPTH: *133.5 ft.*

COMPANY CONTACT: DYEKMAN, DL

TELEPHONE NO.: 373-2530

PROJECT COORDINATOR: DYEKMAN, DL

PROJECT DESIGNATION: 100 Area Remedial Investigation/Feasibility Analysis - 100-KR-4 Soils

FIELD LOGBOOK NO.: *9082*

ACTUAL SAMPLE DEPTH: *133.5 ft.*

COMPANY CONTACT: DYEKMAN, DL

TELEPHONE NO.: 373-2530

PROJECT COORDINATOR: DYEKMAN, DL

PROJECT DESIGNATION: 100 Area Remedial Investigation/Feasibility Analysis - 100-KR-4 Soils

FIELD LOGBOOK NO.: *9082*

ACTUAL SAMPLE DEPTH: *133.5 ft.*

F10-207-035

PRICE CODE

AIR QUALITY

METHOD OF SHIPMENT

FEDERAL EXPRESS

SAF NO. F 10-207

COA 300082ES10

BILL OF LADING/AIR BILL NO.

SEE PTR *798874177370*

@ 6 lbs. of sample (gross)

PAGE 1 OF 1

DATA TURNAROUND

45 Days / 45 Days

CH2M Hill Plateau Remediation Company

COLLECTOR

Chris Zwickler, Georgia

SAMPLING LOCATION

C7694; 1-026

ICE CHEST NO.

6UX-202

SHIPPED TO

Shaw Group

MATRIX*

A=Air
DL=Drum
L=Liquid
DS=Drum
S=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

SAMPLE NO.

B25YX5

MATRIX*

SOIL

SAMPLE DATE

7/20/10

SAMPLE TIME

1045

SEK 4816

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

LABORATORY SECTION

RECEIVED BY

DISPOSAL METHOD

DISPOSED BY

TITLE

ASD

DATE/TIME

7-22-2010/01100

DATE/TIME

P&D: Data Login

A P&D has been identified during the login process for
SDG EBER0910020.

09/15/10
BDC

The following discrepancies have been found pertaining to:

- | | | |
|---|----------------------------------|--|
| <input type="checkbox"/> Narrative | <input type="checkbox"/> Missing | <input type="checkbox"/> Other* |
| <input checked="" type="checkbox"/> Results | <input type="checkbox"/> Missing | <input checked="" type="checkbox"/> Other* incorrect client ID on page 8 |
| <input type="checkbox"/> Chains of Custody | <input type="checkbox"/> Missing | <input type="checkbox"/> Other* |
| <input type="checkbox"/> Miscellaneous | See comments below. | |

COMMENTS: _____

*Other – please refer to SDT (if checked) for a detailed description.