



Shaw Environmental & Infrastructure, Inc.

Geotechnical Laboratory
1570 Bear Creek Road
Kingston TN 37763
(865) 482-6497

CERTIFICATE OF ANALYSIS

Stephen Trent
Fluor Hanford, Inc.
825 Jadwin Avenue
Richland, Washington 99352

November 14, 2008

This is the Certificate of Analysis for the following samples:

Shaw Project ID:	Eberline - Hanford
Shaw Project Number:	100846.7800000
Client SDG Number:	H3788
Date Received by Lab:	July 11, 2008
Number of Samples:	Two (2)
Sample Type:	Soil

I. Introduction/Case Narrative

Two soil samples were received by the Shaw Geotechnical Laboratory on July 11, 2008. The samples were submitted for determination of moisture content, bulk density, and sieve analysis. The sample numbers received were B1VJ67 and B1VJ68.

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

"I certify that this data package is in compliance with 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:

Ralph Cole
Laboratory Manager, Geotechnical Services

II. Analytical Results/Methodology

REFERENCES: 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.

Moisture Content of Soil and Rock**ASTM D 2216**
Particle-Size Distribution of Soils**ASTM D 422**
Unit Weight **USACE EM 1110-2-1906 app. II**

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

A separate sample container was submitted for moisture determination. The entire contents of the sample container was used to determine the moisture content of the sample. An aliquot of this sample was not used. The moisture content of the sieve analysis sample is given on the sieve results sheet.

Appendix A
Sample Cross-Reference List

SAMPLE NUMBER CROSS-REFERENCE LIST

LAB SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
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BC1412	B1VJ67	Soil
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BC1413	B1VJ68	Soil
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Appendix B

Data Results

Appendix C
Chain of Custody Records

COLLECTOR Kover McArthur	COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION C6552, I-004	PROJECT DESIGNATION 216-A-5 Crib Characterization Sampling and Analysis - Soil		SAF NO. F08-126	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GRP-08-13	FIELD LOGBOOK NO. HNF-N-585-2	ACTUAL SAMPLE DEPTH 37.5 - 40.0	COA 123124ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Shaw Group	OFFSITE PROPERTY NO. SEE PTR	BILL OF LADING/AIR BILL NO. SEE PTR			

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 are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993) H3788	PRESERVATION	None	None											
		TYPE OF CONTAINER	Split Spoon Liner	Moisture Resistant Cont											
		NO. OF CONTAINER(S)	1	1											
		VOLUME	1000g	200g											
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B1VHY1		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Moisture Content - D2216;											

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME											
B1VJ67	SOIL	7/7/08	12:38	✓	✓									

BC 1412

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** Analytical batch QC must be run on a sample associated with this SAF. (1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422;	
<i>Brotherhood</i>	7/7/08 14:00	<i>A-S FRIDGE</i>	7/7/08 14:00		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<i>A-S FRIDGE</i>	7-10-8 0830	<i>DCannidy</i>	7-10-8 0830		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<i>Donny</i>	7-10-8 1400	<i>Fal Ex</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		

LABORATORY SECTION	RECEIVED BY Don Huskey DONHUSKEY SHAW E+I/ETDC	TITLE LAB TECH.	DATE/TIME 7/11/08 0900
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

12155

Fluor Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F08-126-015	PAGE 1 OF 1
COLLECTOR <i>Kauer / McIntyre</i>		COMPANY CONTACT TRENT, SJ	TELEPHONE NO. 373-5869	PROJECT COORDINATOR WIDRIG, DL	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION C6552, I-004-D		PROJECT DESIGNATION 216-A-5 Crib Characterization Sampling and Analysis - Soil		SAF NO. F08-126	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GRP-08-13</i>		FIELD LOGBOOK NO. <i>HNF-N-585-2</i>	ACTUAL SAMPLE DEPTH <i>37.5-40</i>	COA 123124ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Shaw Group		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

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 are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993) <i>H3788</i> SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B1VHY1	PRESERVATION	None	None													
		TYPE OF CONTAINER	Split Spoon 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													
B1VJ68	SOIL	<i>7/7/08</i>	<i>12:35</i>													

BC 1413

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM <i>Brotherhood</i>	DATE/TIME <i>7/7/08 14:00</i>	RECEIVED BY/STORED IN <i>AS Fridge</i>	DATE/TIME <i>7/7/08 14:00</i>	** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** Analytical batch QC must be run on a sample associated with this SAF. (1) Bulk Density - D2937; Particle Size (Dry Sieve) - D422; <i>* UNABLE TO COLLECT DUP DUE TO SLUFF MATERIAL</i> <i>Jim Mehrer 7-7-08</i>
RELINQUISHED BY/REMOVED FROM <i>A.S. Fridge</i>	DATE/TIME <i>7-10-8 0830</i>	RECEIVED BY/STORED IN <i>DCannily</i>	DATE/TIME <i>7-10-8 0830</i>	
RELINQUISHED BY/REMOVED FROM <i>DCannily</i>	DATE/TIME <i>7-10-8 1400</i>	RECEIVED BY/STORED IN <i>Fed Ex</i>	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	

LABORATORY SECTION	RECEIVED BY <i>Don Huskey</i>	TITLE	DATE/TIME <i>7/11/08 / 0900</i>
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD <i>DOU HUSKEY / SHAW E+I / LAB TECH.</i>	DISPOSED BY	DATE/TIME