

RECEIVED JULY 14, 2008



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CERTIFICATE OF ANALYSIS

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

July 12, 2008

This is the Certificate of Analysis for the following samples:

Shaw Project ID:	Eberline - Hanford
Shaw Project Number:	100846.7300000
Client SDG Number:	H3704
Date Received by Lab:	May 1, 2008
Number of Samples:	One (1)
Sample Type:	Soil

I. Introduction/Case Narrative

One soil sample was received by the Shaw Geotechnical Laboratory on June 13, 2008. The sample was submitted for determination of moisture content, bulk density, and sieve analysis. The sample number received was B1vb30. A separate sample container was provided for moisture content determination.

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 Soil **ASTM D 422**
Unit Weight, Bulk Density, Dry Density **USCOE 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

The entire contents of the sample container was used to determine the moisture content of the sample.

Appendix A
Sample Cross-Reference List

SAMPLE NUMBER CROSS-REFERENCE LIST

LAB SAMPLE NO.	CLIENT SAMPLE NO.	MATRIX
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BC1369	B1VB30	Soil
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Appendix B

Data Results

**PARTICLE-SIZE DISTRIBUTION
 ASTM D 422**

Project Name Eberline Hanford

Field Sample No. B1VB30

Project No. 100846.00000000

Lab Sample No. BC1369

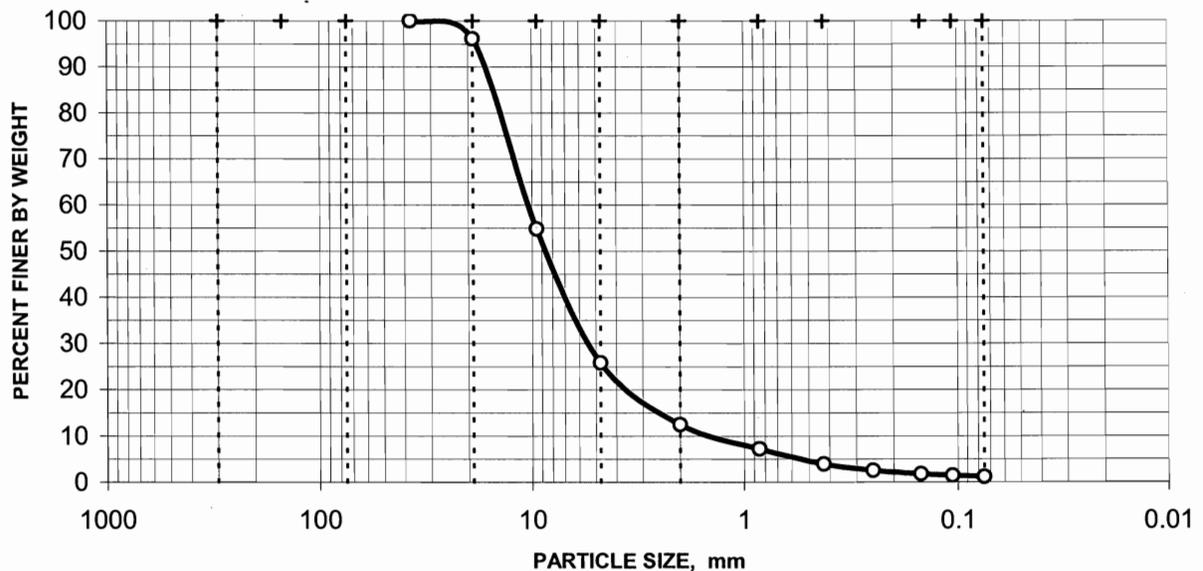
Moisture Content = 9.5%
 based on dry sample weight

SIEVE ANALYSIS

C O A R S E	Sieve No.	Diameter mm	Percent Finer
	3"	75.000	100.0%
	1.5"	37.500	100.0%
	0.75"	19.000	96.1%
	0.375"	9.500	54.8%
	#4	4.750	25.8%
	#10	2.000	12.5%

F I N E	Sieve No.	Diameter mm	Percent Finer
	#20	0.850	7.2%
	#40	0.425	3.9%
	#60	0.250	2.6%
	#100	0.149	1.8%
	#140	0.106	1.5%
	#200	0.075	1.2%

DISTRIBUTION CURVE



74.2% Gravel

24.6% Sand

1.2% Silt/Clay

Appendix C
Chain of Custody Records

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F08-043-188

PAGE 1 OF 1

COLLECTOR *PFISTER/NEELICK*

COMPANY CONTACT
TRENT, SJ

TELEPHONE NO.
373-5869

PROJECT COORDINATOR
WIDRIG, DL

PRICE CODE 8N

DATA
TURNAROUND

SAMPLING LOCATION
C5941, I-ASS-001

PROJECT DESIGNATION
216-A-30 Crib Sampling

SAF NO.
F08-043

AIR QUALITY

45 Days / 45
Days

ICE CHEST NO.

FIELD LOGBOOK NO.

ACTUAL SAMPLE DEPTH

COA
123215ES20

METHOD OF SHIPMENT
FEDERAL EXPRESS

SHIPPED TO

OFFSITE PROPERTY NO.

BILL OF LADING/AIR BILL NO.

Shaw Group

SEE PTR

SEE PTR

7993 1659 2198

MATRIX* POSSIBLE SAMPLE HAZARDS/ REMARKS

- 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

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)

PRESERVATION

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;

SPECIAL HANDLING AND/OR STORAGE

Radioactive tie to B1VB27

SAMPLE NO.

MATRIX*

SAMPLE DATE SAMPLE TIME

B1VB30

SOIL

4/21/08 0930 ✓ ✓

BC 1369

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM
R. Pfister/DM 4/21/08 1040

RECEIVED BY/STORED IN
MO 509 Ref #2 4/21/08 1040

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.
(1) Particle Size (Dry Sieve) - D422; Bulk Density - D2937; 1902.2 grams

RELINQUISHED BY/REMOVED FROM
MO 509 Ref #2 4-22-08 1100

RECEIVED BY/STORED IN
D. Pachen Dey 4-22-08 1100

RELINQUISHED BY/REMOVED FROM
D. Pachen Dey 4-22-08 1040

RECEIVED BY/STORED IN
MO 745 Ref #1 4-22-08

RELINQUISHED BY/REMOVED FROM
MO 745 Ref #1 4-30-08 0940

RECEIVED BY/STORED IN
FLUOR HANFORD 4-30-08 0940

RELINQUISHED BY/REMOVED FROM
Fluor Hanford 4-30-08

RECEIVED BY/STORED IN
DE PACHEN 4-30-08

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

RELINQUISHED BY/REMOVED FROM

RECEIVED BY/STORED IN

LABORATORY SECTION

RECEIVED BY

Don Kelly SHAW ETI/ETDC

TITLE

SR. LAB TECH

DATE/TIME

5/01/08 0930

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD

DISPOSED BY

DATE/TIME