

May 12, 2015



Rev. 0, SDG # W150406

May 12, 2015

CH2M HILL Plateau Remediation Company
2420 Stevens Center Place
P.O. Box 1600
Richland, WA 99352
Attn.: Tracey A. Burch

Subject: Geotechnical Laboratory Testing Services, Data Deliverable for SDG # W150406, Rev. 0

Enclosed is the final report on geotechnical analyses performed by RJ Lee Group in conjunction with PBS Engineering and Environmental, Inc. (PBS) for Sample Delivery Group number (SDG #) W150406.

General Set Comments

RJ Lee Group received from CH2M-Hill Plateau Remediation Company (CHPRC) 1 sample to be tested for geotechnical analysis at the Columbia Basin Analytical Laboratories. There are no SIRs associated with this SDG.

The CHPRC sample, in SDG # W150406, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #
B30JD8	W150406	H-0035

This project deliverable, provided in Attachment 1, contains the reports of the requested analytical results and a copy of the associated chain of custody for the sample listed above.

The analytical results provided in this deliverable relate only to the items tested. The sample was received in acceptable condition unless otherwise noted in the attached report(s).

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

Heinz Huber
Laboratory Manager, Columbia Basin Analytical Laboratories

05/12/2015

Date

If you have any questions, please feel free to contact us at 509-545-4989 or email at hhuber@rjleegroup.com.

Attachment 1

PBS Geotechnical laboratory Testing Results, SDG # W150406,
dated May 11, 2015

May 12, 2015



Engineering +
Environmental

May 11, 2015

RJ Lee Group, Inc.
Attn: Mr. Larry Lockrem
Columbia Basin Analytical Laboratories
2710 North 20th Avenue
Pasco, Washington 93301

Re: Geotechnical Laboratory Testing Results
Sample Delivery Group No. W150406
PBS Project No. 63737.000

Dear Mr. Lockrem:

In accordance with your request, PBS Engineering and Environmental Inc. (PBS) is providing you with the results of our recent geotechnical laboratory testing. Our services were provided in accordance with the request provided with Sample Delivery Group (SDG) number W150406.

We performed the following tests:

- Grain Size Analysis - Hydrometer (ASTM D422)
- Hydraulic Conductivity – Constant Head (ASTM D2434)

The appropriate permeability/hydraulic conductivity test (ASTM D2434 or D5084) was selected based on the texture characteristics of the sample received, per section 3.2.2 of the contract. The tests were performed in general accordance with the above-mentioned ASTM Standards.

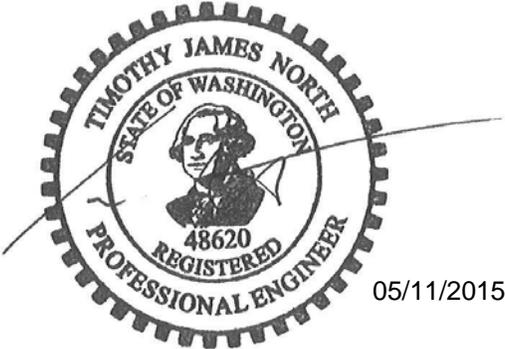
400 Bradley Boulevard, Suite 300, Richland, WA 99352
509.942.1600 Main
866.727.0140 Fax
www.pbsenv.com

May 12, 2015

Mr. Larry Lockrem
Re: Geotechnical Laboratory Testing Results – W150406
May 11, 2015
Page 2 of 2

We trust this letter meets your current needs. If you have any questions, or wish to further discuss our observations, conclusions, and recommendations, please contact us at 509.942.1600.

Sincerely,
PBS Engineering and Environmental, Inc.



Timothy J. North, P.E.
Project Geotechnical Engineer

A handwritten signature in black ink, appearing to read "N.A. Bowles".

Nathan A. Bowles, P.E.
Senior Engineer/Operations Manager

TN/NB

Attachments: Report of Laboratory Testing – Grain-size Analysis - Hydrometer
 Report of Laboratory Testing – Hydraulic Conductivity – Constant Head
 Chain of Custody

REPORT OF LABORATORY TESTING

Report to: CH2M-Hill - Plateau Remediation
 2420 Stevens Center Place
 P.O. Box 1600
 Richland, WA 99352

Date: 5/11/2015
Sample Delivery Group No.: W150406
Sample Authorization No.: F15-016

Project: CHPRC Laboratory

Project No.: 63797.000

Report of: Grain Size Analysis - Hydrometer (ASTM D422)

Lab Technician: B. Russell

Items Received:

One sample was provided to us containing soil material obtained by you, the client.
 We performed the following test:

Particle/Grain Size Analysis - Hydrometer (ASTM D422):

Mechanical Grain Size Analyses (wet sieve) were conducted on each of the soil samples to determine their grain size distribution. In addition, hydrometer tests were conducted on portions of the soil samples passing the No. 200 sieve. The results of the mechanical grain size analyses and hydrometer testing are plotted on the attached Figures (Particle Size Analysis Test Results - Hydrometer - Pages 1 through 4).

LABORATORY TEST RESULTS
Particle Grain Size Analysis - Hydrometer (ASTM D422) - Sieve Portion

Customer Sample Number	Laboratory Sample Number	Date of Analysis	Percent Passing by Sieve Size										
			3-in.	1½-in.	¾-in.	½-in.	No. 4	No. 10	No. 20	No. 40	No. 100	No. 140	No. 200
B30JD8	H-0035	4/27/2015	100	100	100	100	100	100	99.8	84.6	19.9	8.3	4.6

May 12, 2015



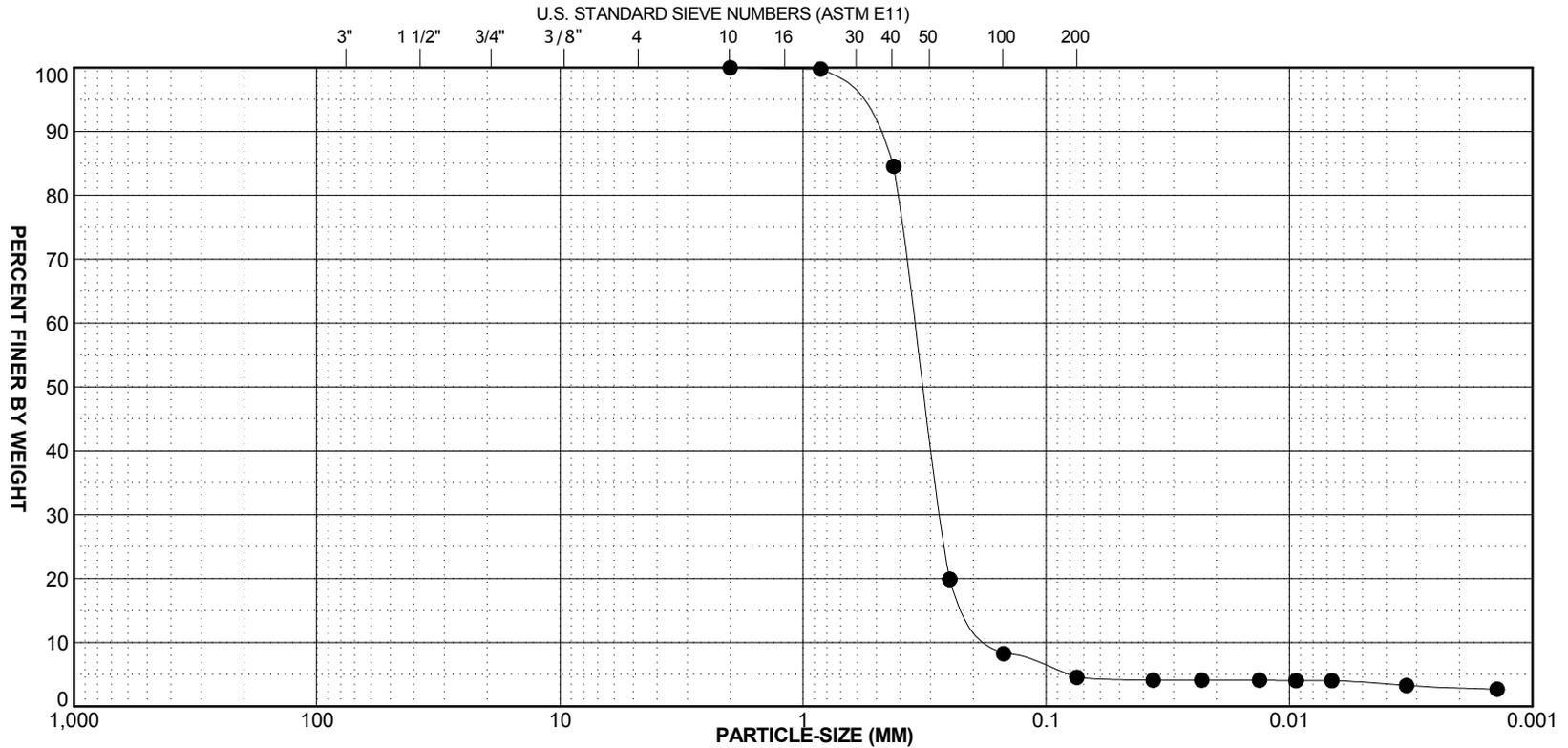
PARTICLE-SIZE ANALYSIS TEST RESULTS

CHPRC - GEOTECHNICAL LABORATORY

PBS PROJECT NUMBER:
63797

TEST METHOD: ASTM C136

BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY



KEY	EXPLORATION NUMBER	SAMPLE NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	D60 (MM)	D50 (MM)	D30 (MM)	D10 (MM)	D5 (MM)	GRAVEL (PERCENT)	SAND (PERCENT)	FINES (PERCENT)
●	H-035	B30JD8	57.1		0.3	0.3	0.3	0.2	0.08		95	5

COLLECTOR <i>J. A. Auler</i>	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C8951, 1-003, 55-57.5 bgs	PROJECT DESIGNATION FY15 100-HR-3 Drilling - Soil	FIELD LOGBOOK NO. HNF-N-645-2/1815	ACTUAL SAMPLE DEPTH 57.1" - 59.6" FT	SAF NO. F15-016	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. GWS-032	OFFSITE PROPERTY NO.	COA 300115	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL	
SHIPPED TO RJ EE - GEOTECHNICAL	BILL OF LADING/AIR BILL NO.				

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 be regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION None	HOLDING TIME 6 Months	TYPE OF CONTAINER Spill Spoon Liner	NO. OF CONTAINER(S) 2	VOLUME 1000g	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
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W15D4DB
H-0035

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B30JD8	SOIL	4-1-15	1044

May 12 2015

CHAIN OF POSSESSION		SIGN / PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J. A. Auler</i>	DATE/TIME 4-1-15 1320	RECEIVED BY/STORED IN SSU #1	DATE/TIME 4-1-15 1320	SPECIAL INSTRUCTIONS ** The 100 Area S8GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. ** All requests for Geotechnical Parameters will be given a unique HEIS sample number and be assigned to a separate COC. In addition, all split spoon sleeves will be properly stored until authorized for shipment. TRVL-15-026 (1) D2434_PERMEABILITY: COMMON {Hydraulic Conductivity}; D422_PARTICLE SIZE (Dry Sieve): COMMON; D5084_HYDRRAULLIC CONDUCTIVITY: COMMON {Hydraulic Conductivity};	
RELINQUISHED BY/REMOVED FROM <i>SSU-1</i>	DATE/TIME APR 02 2015 0830	RECEIVED BY/STORED IN R.A. Shepard/CHPRC	DATE/TIME APR 02 2015 0830		
RELINQUISHED BY/REMOVED FROM <i>R.A. Shepard/CHPRC</i>	DATE/TIME APR 02 2015 0851	RECEIVED BY/STORED IN <i>Mr. Steve J. Groppe</i>	DATE/TIME APR 02 2015 0851		
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	TRVL-15-027	
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	TITLE		DATE/TIME	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	DATE/TIME

May 12, 2015



Geotechnical Laboratory Sample Receipt

Date/Time Received: 4/2/15 8:51

SDG#: W150406

Work Order Number: 300115

SAF# F15-016-009

Shipping Container Identification: GWS-032

1. Custody Seals on shipping container intact? Yes No

2. Custody Seals dated and signed? Yes No

3. Chain-of-Custody record present? Yes No

4. Cooler temperature NA

5. Vermiculite/packing materials is Wet Dry

6. Number of samples in shipping container: 2

7. Samples have:

tape hazard labels

custody seals appropriate sample labels

8. Samples are:

in good condition for the geotechnical tests required leaking/desiccated

broken or disaggregated

9. Were any anomalies identified in sample receipt? Yes No

10. Description of anomalies (include sample numbers):

11. Rad Screen Performed: NA

12. Chain of Custody # F15-016-009

Comments: _____

Sample Custodian/Laboratory: Claper Date: 4/2/15

Telephoned to: _____ On _____ by _____ **10 of 10**