

May 12, 2015



Rev. 0, SDG # W150402

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 # W150402, 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 #) W150402.

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 # W150402, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #
B30JD7	W150402	H-0034

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.


05/12/2015

Heinz Huber Date
Laboratory Manager, Columbia Basin Analytical Laboratories

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 # W150402,
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. W150402
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 W150402.

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.

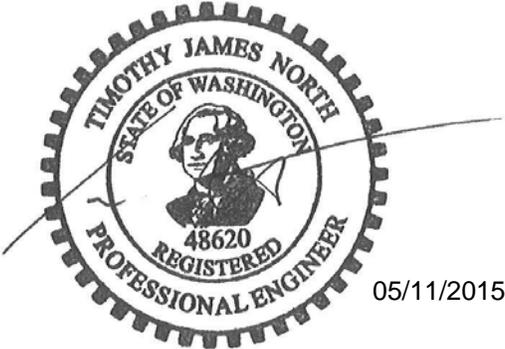
400 Bradley Boulevard, Suite 300, Richland, WA 99352
509.942.1600 Main
866.727.0140 Fax
www.pbsenv.com

May 12, 2015

Mr. Larry Lockrem
Re: Geotechnical Laboratory Testing Results – W150402
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.: W150402
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
B30JD7	H-0034	4/24/2015	100	93.5	78	62.6	57	54.7	53.5	37.5	12.8	7.6	4



May 12, 2015



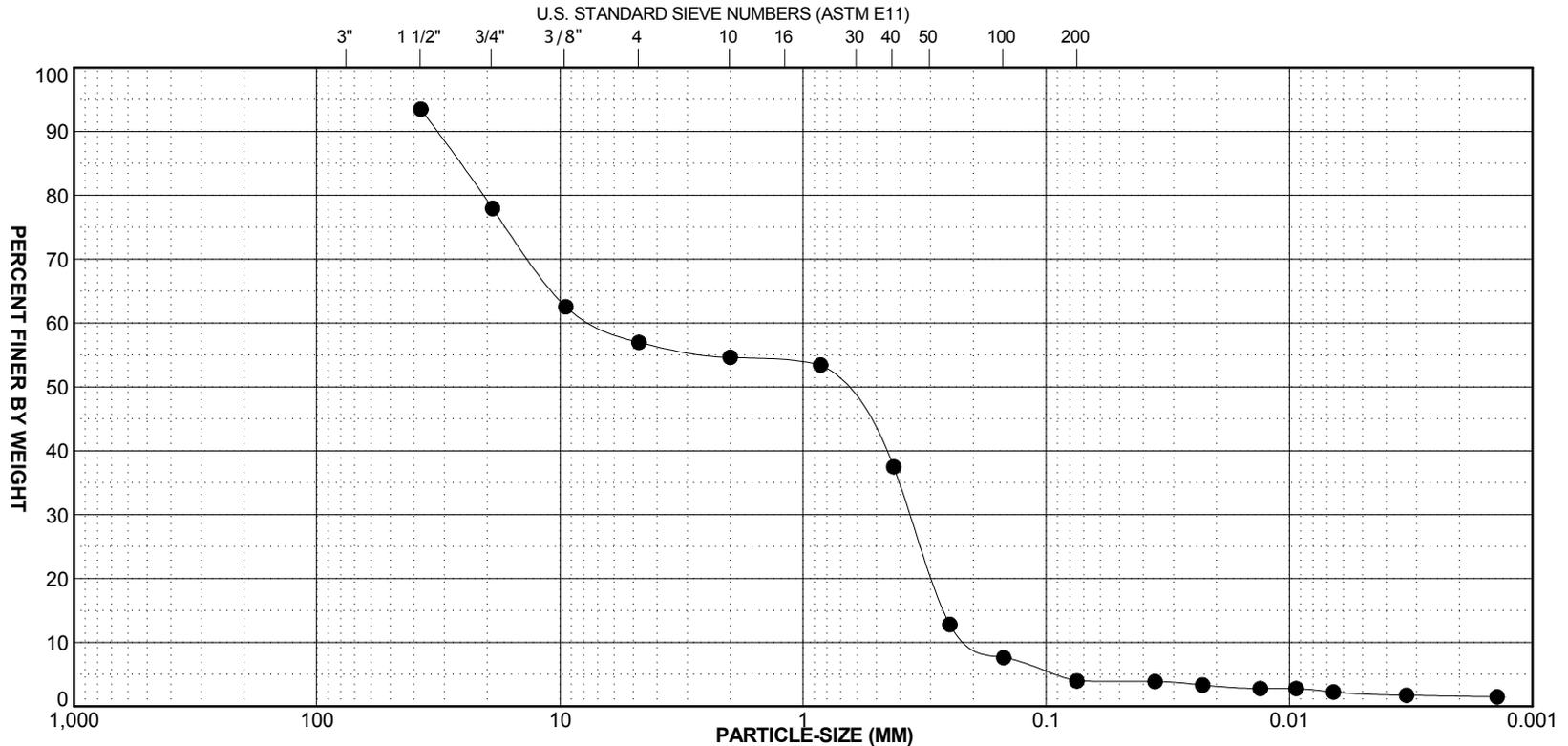
PARTICLE-SIZE ANALYSIS TEST RESULTS

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-034	B30JD7	45.6		6.9	0.7	0.4	0.2	0.09	37	53	4

COLLECTOR *CHPRC*
D. Floyd

COMPANY CONTACT
 TODAY, D

TELEPHONE NO.
 376-6427

PROJECT COORDINATOR
 TODAY, D

PRICE CODE 8H
 AIR QUALITY

DATA TURNAROUND
 30 Days / 30 Days

SAMPLING LOCATION
 C8951, 1-001, 45-47.5 Hgs

PROJECT DESIGNATION
 F15 100-HR-3 Drilling - Soil

FIELD LOGBOOK NO.
 HNF-N. 645-2/4

SAF NO.
 F15-016

METHOD OF SHIPMENT
 GOVERNMENT VEHICLE

ORIGINAL

ICE CHEST NO.
6005-111

OFFSITE PROPERTY NO.
N/A

ACTUAL SAMPLE DEPTH
 45.6 to 48.1 FT

COA
 300115

BILL OF LADING/AIR BILL NO.
N/A

SHIPPED TO
 RJ EE - GEOTECHNICAL

MATRIX*
 A=Air
 DL=Drum
 Liquids
 DS=Drum
 Solids
 L=Liquid
 O=Oil
 S=Soil
 SE=Settlement
 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/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

PRESERVATION
 None

HOLDING TIME
 6 Months

TYPE OF CONTAINER
 Split Spoon Liner

NO. OF CONTAINER(S)
 2

VOLUME
 1000g

SAMPLE ANALYSIS
 SEE ITEM (1) IN SPECIAL INSTRUCTIONS

W150402
W150402
H-0034

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B30JD7	SOIL	3-31-15	1307

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>D. Floyd</i>	3-31-15 15:44	<i>SSU-1</i>	3-31-15 15:44
<i>SSU-1</i>	4-11-15 14:45	<i>RECEIVED BY/STORED IN</i>	4-11-15 13:05
<i>RECEIVED BY/STORED IN</i>	4-11-15 13:05	<i>RECEIVED BY/STORED IN</i>	4-11-15 13:05
<i>RECEIVED BY/STORED IN</i>	4-11-15 13:05	<i>RECEIVED BY/STORED IN</i>	4-11-15 13:05

** The 100 Area S&GRP 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_HYDRRAULIC CONDUCTIVITY: COMMON {Hydraulic Conductivity};

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

TRVL-15-027

LABORATORY SECTION	RECEIVED BY	DISPOSAL METHOD	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION				

May 12 2015

9 of 10

May 12, 2015



Geotechnical Laboratory Sample Receipt

Date/Time Received: 4/1/15

SDG#: W150402

Work Order Number: 300115

SAF# F15-016-008

Shipping Container Identification: GWS-111

- 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 # F15-016-008

Comments: _____

Sample Custodian/Laboratory: CJory Date: 4/1/15

Telephoned to: _____ On _____ by _____ 10 of 10