



September 15, 2016

CH2M HILL Plateau Remediation Company
 2420 Stevens Center Place
 P.O. Box 1600
 Richland, WA 99354
 Attn.: Tracey A. Burch

Subject: Geotechnical Laboratory Testing Services, Data Deliverable for SDG # W607011, 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 #) W607011.

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 is 1 (one) SIR associated with this SDG and it is attached.

The CHPRC sample, in SDG # W607011, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #	Date Processed
B35XC1	W607011	H-0099	08/16/2016

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.

Rich Westberg
 Laboratory Director, Columbia Basin Analytical Laboratories

09/15/2016

Date

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

Attachment 1

PBS Geotechnical Laboratory Testing Results, SDG # W607011,
dated September 15, 2016



Engineering +
Environmental

August 16, 2016

RJ Lee Group, Inc.
Attn: Mr. Larry Lockrem
Columbia Basin Analytical Laboratories
2710 North 20th Avenue
Pasco, Washington 99301

Re: Geotechnical Laboratory Testing Results
Sample Delivery Group No. W607011
PBS Project No. 63797.000

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 W607011.

We performed the following tests:

- Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Grain Size Analysis - Hydrometer (ASTM D422)

A Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937) was requested, but was not performed. The sample was received in a disturbed condition, which may not accurately represent in-situ soil conditions. The remaining tests were performed in general accordance with the above-mentioned ASTM Standards.

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.



8/16/2016

Adam M. Swenson, P.E.
Project Geotechnical Engineer

AS/rg

Attachments: Report of Laboratory Testing – Grain-size Analysis - Hydrometer
Chain of Custody

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

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-578
REV NUM	0
DATE INITIATED	8/22/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F16-043
OPERABLE UNIT(S) 100-NR-2
PROJECT(S) 100-NR-2 GW
SAMPLE EVENT TITLE(S) 100-NR-2 Well Drilling and Installation of Wells
LABORATORY RJ LEE - GEOTECHNICAL

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B35XC1
SAMPLE MATRIX SOIL
COLLECTION DATE 7/5/2016 - 7/5/2016
SDG NUM W607011

ISSUE BACKGROUND

CLASS Field Sampling Issue
TYPE Sample Collection Issue
DESCRIPTION Soil samples were delivered in 1L bottles, and not core liners. This showed that the samples had been previously disturbed. Could not perform an accurate density test.

DISPOSITION

DESCRIPTION Cancel the density test.
JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Antonio Jaimes DATE: 08/22/2016
ACCEPTED BY: Dave Todak DATE: 08/22/2016



REPORT OF LABORATORY TESTING

Report to: CH2M-Hill - Plateau Remediation 2420 Stevens Center Place PO Box 1600 Richland, WA 99354	Date: 8/16/2016
	Sample Delivery Group No.: W607011
	Sample Authorization No.: F16-043

Project: CHPRC Laboratory	Project No.: 63797.000
Report of: Grain Size Analysis - Hydrometer (ASTM D422)	Lab Technician: A. Jaimes

Items Received:

One sample was provided to us containing soil material obtained by you, the client.
PBS 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. 10 sieve. The results of the mechanical grain size analyses and hydrometer testing are plotted on the attached Figure (Particle Size Analysis Test Results - Hydrometer, pages 1 through 3).

LABORATORY TEST RESULTS

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

Customer Sample Number	Laboratory Sample Number	Percent Passing by Sieve Size											
		3-in.	1½-in.	¾-in.	½-in.	No. 4	No. 10	No. 20	No. 40	No. 60	No. 100	No. 140	No. 200
B35XC1	H-0099	100	100	98.8	95.6	92.9	91.6	85.5	70.1	38.3	25.6	21.0	17.8



REPORT OF LABORATORY TESTING

Report to: CH2M-Hill - Plateau Remediation 2420 Stevens Center Place PO Box 1600 Richland, WA 99354	Date: 8/16/2016
	Sample Delivery Group No.: W607011
	Sample Authorization No.: F16-043

Project: CHPRC Laboratory	Project No.: 63797.000
Report of: Grain Size Analysis - Hydrometer (ASTM D422)	Lab Technician: A. Jaimes

Particle/Grain Size Analysis - Hydrometer (ASTM D422):
See page 1 of 3

LABORATORY TEST RESULTS

Particle Grain Size Analysis - Hydrometer (ASTM D422) - Hydrometer Portion

Laboratory Sample Number	Hydrometer Readings													
	2 min		5min		15 min		30 min		60 min		250 min		1440 min	
	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)	Dia. (mm)	Finer (%)
H-0099	0.035	10.9	0.023	9.1	0.013	7.3	0.009	6.3	0.007	5.4	0.003	4.4	0.001	1.5



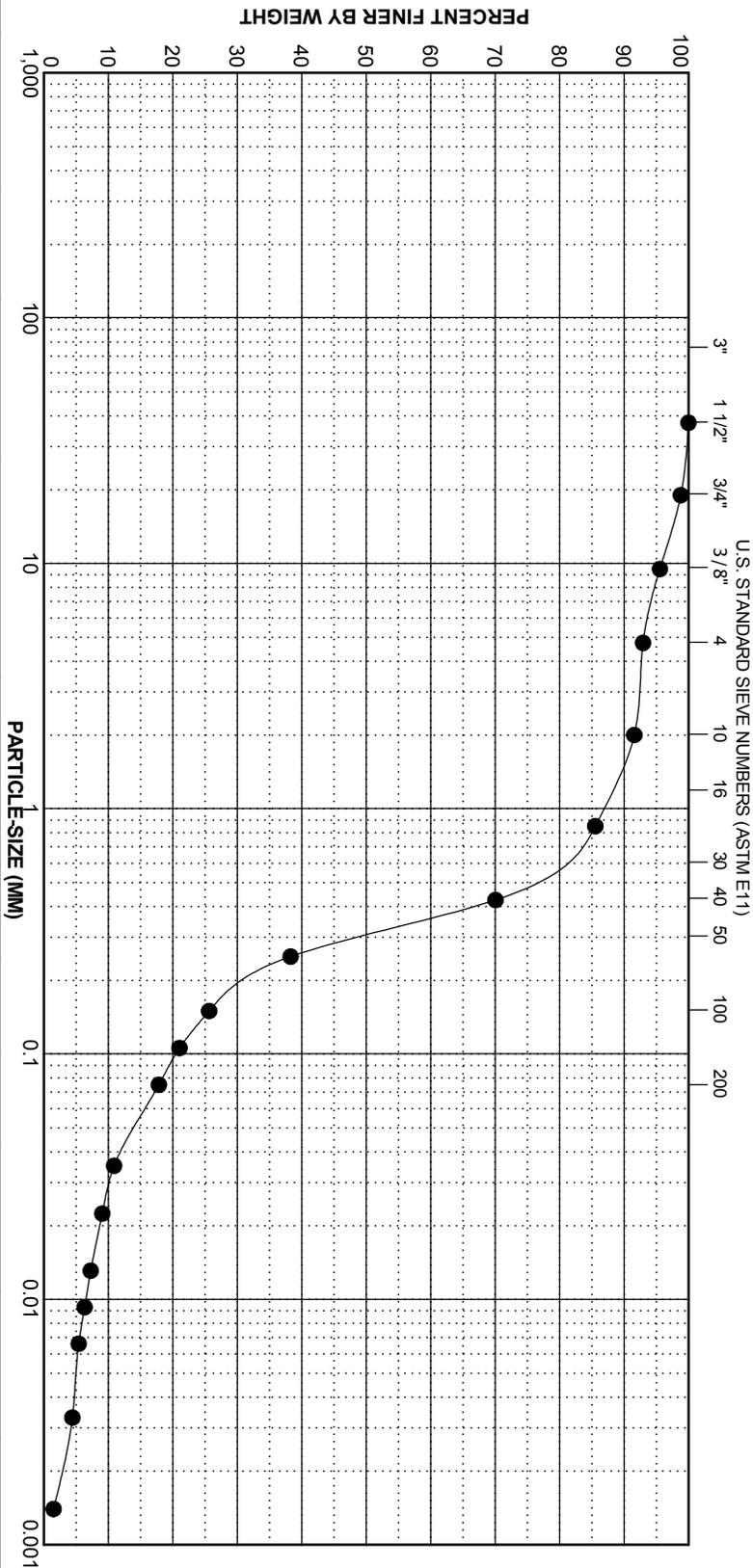
PARTICLE-SIZE ANALYSIS TEST RESULTS

CHPRC - GEOTECHNICAL LABORATORY

PBS PROJECT NUMBER:
63797

TEST METHOD: ASTM D422

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-099	B35XC1	63.8	7	0.4	0.3	0.2	0.03	0.00	7	75	18

Columbia Basin Analytical Laboratories | 2710 North 20th Avenue, Pasco, WA 99301 | 509.545.4989

WWW.RJLEEGROUP.COM

COLLECTOR Ed Kauer CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9403, I-005	PROJECT DESIGNATION 100-NR-2 Drilling - Soil	FIELD LOGBOOK NO. HNF-N-645 5 - 125	SAF NO. F16-043	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE
ICE CHEST NO. NA	ACTUAL SAMPLE DEPTH 13.8 - 66.3	COA 304070	BILL OF LADING/AIR BILL NO. NA	ORIGINAL	

SHIPPED TO RJ LEE - GEOTECHNICAL	OFFSITE PROPERTY NO. NA	PRESERVATION None	HOLDING TIME None	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 1000g	SPECIAL HANDLING AND/OR STORAGE SEE ITEM (1) IN SPECIAL INSTRUCTIONS
MATRIX* A=Air DL=Drum L=Liquid 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/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA						

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	DATE/TIME
B35XC1	SOIL	JUL 05 2016	1132	✓

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
CHPRC	JUL 05 2016 1400	SSU-1	JUL 05 2016 1400
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
SSU-1	JUL 06 2016 1150	RECEIVED BY/STORED IN	JUL 06 2016 1150
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

CHAIN OF POSSESSION **SIGN/PRINT NAMES** **SPECIAL INSTRUCTIONS**

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

LABORATORY SECTION **RECEIVED BY** **TITLE** **DATE/TIME**

FINAL SAMPLE DISPOSITION **DISPOSAL METHOD** **DISPOSED BY** **DATE/TIME**

PRINTED ON 6/2/2016 **FSR ID = FSR33021** **TRVL NUM = TRVL-16-165** A-6003-618 (REV 2)

10/11/2016

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-043-059	
COLLECTOR	Ed Kaup* CHPRC	COMPANY CONTACT	TODAK, D	TELEPHONE NO.	376-6427
SAMPLING LOCATION	C9403, 1-005	PROJECT DESIGNATION	100-NR-2 Drilling - Soil	PROJECT COORDINATOR	TODAK, D
ICE CHEST NO.	N/A	FIELD LOGBOOK NO.	HNF-N-645 5 - 125	ACTUAL SAMPLE DEPTH	63.8 - 66.3
SHIPPED TO	RJ LEE - GEOTECHNICAL	OFFSITE PROPERTY NO.	N/A	COA	304070
SPECIAL INSTRUCTIONS		BILL OF LADING/AIR BILL NO.		METHOD OF SHIPMENT	

SAMPLE B35XC1 WILL BE SAMPLED FROM SPLIT SPOON PORTION C OR D BASED ON WHICHEVER LINER HAS BETTER PERCENT RECOVERY; ** 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. (1) D2937 _ DENSITY: COMMON {Bulk density - dry, Bulk density - wet}; D422 _ PARTICLE SIZE (Dry Sieve): COMMON {Percent passing 1.5 inch sieve, Percent passing 3 inch sieve, Percent passing 3/4 inch sieve, Percent passing 3/8 inch sieve, Percent passing No.10 sieve, Percent passing No.100 sieve, Percent passing No.140 sieve, Percent passing No.20 sieve, Percent passing No.200 sieve, Percent passing No.4 sieve, Percent passing No.40 sieve};

10/11/2016

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	REV NUM	0
	DATE INITIATED	8/22/2016

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