RJ LEE GROUP
DELIVERING SCIENTIFIC RESOLUTION

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 # W607012, 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 #) W607012.

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 # W607012, has been assigned a PBS Geotechnical Lab Sample number per the below table.

CHPRC Sample #	SDG #	Geotechnical Lab Sample #	Date Processed
B35LC1	W607012	H-0100	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.

09/15/2016

Rich Westberg
Laboratory Director, Columbia Basin Analytical Laboratories

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 # W607012,
dated September 15, 2016

PBS | 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. W607012
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 W607012.

We performed the following test:

- Grain-Size Analysis (ASTM D422)

A permeability/hydraulic conductivity test (ASTM D2434 or D5084) was requested, but was not performed due to a lack of sufficient soil material to create a soil column for testing by either method. The Hydrometer portion of the grain-size analysis was requested, but was not performed due to an insufficient amount of material passing the No. 10 sieve. The remaining requested 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.

08/16/2016

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

AS/rg

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

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

Bend | Boise | Coos Bay | Eugene | Portland | Seattle | Tri-Cities | Vancouver | Walla Walla

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-582
REV NUM	0
DATE INITIATED	8/22/2016

SAMPLE EVENT INFORMATION

SAF NUM(S)	F16-037
OPERABLE UNIT(S)	100-KR-4
PROJECT(S)	100-KR-4 RM ACT
SAMPLE EVENT TITLE(S)	100-K Area
LABORATORY	RJ LEE - GEOTECHNICAL

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B35LC1
SAMPLE MATRIX	SOIL
COLLECTION DATE	6/30/2016 - 6/30/2016
SDG NUM	W607012

ISSUE BACKGROUND

CLASS	General Laboratory Direction
TYPE	Cancellation of Analyses
DESCRIPTION	Unable to run permeability or hydraulic conductivity due to large size of gravel, Not enough soil passing #10 sieve to run particle size test.

DISPOSITION

DESCRIPTION	Cancel the referenced permeability and hydraulic conductivity tests.
JUSTIFICATION	Final Disposition: Accept proposed resolution. SUBMITTED BY: Antonio Jaimes DATE: 08/22/2016 ACCEPTED BY: Dave Todak DATE: 08/22/2016

RJ LEE GROUP
DELIVERING SCIENTIFIC RESOLUTION

REPORT OF LABORATORY TESTING

Report to:	CH2M-Hill - Plateau Remediation 2420 Stevens Center Place PO Box 1600 Richland, WA 99354	**Date:** **Sample Delivery Group No.:** **Sample Authorization No.:**	8/16/2016 W607012 F16-037
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 (ASTM D422):
Mechanical Grain Size Analyses (wet sieve) were conducted on each of the soil samples to determine their grain size distribution. The results of the mechnical grain size analyses are plotted on the attached Figure (Particle Size Analysis Test Results, pages 1 and 2).

LABORATORY TEST RESULTS

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

Customer Sample Number	Laboratory Sample Number	Percent Passing by Sieve Size											
		3-in.	1½-in.	¾-in.	⅜-in.	No. 4	No. 10	No. 20	No. 40	No. 60	No. 100	No. 140	No. 200
B35LC1	H-0100	100	88.48	18.1	3.6	1.8	1.5	--	--	--	--	--	--

SHEET 1 OF 2 REVIEWED BY: A. Swenson, P.E.

REV.1

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10/11/2016

__PARTICLE-SIZE ANALYSIS-RJ LEE GRP 63797_RESULTS.GPJ PBS_DATATMPL_GEO.GDT PRINT DATE: 8/16/16:RPG

RJ LEE GROUP
DELIVERING SCIENTIFIC RESOLUTION

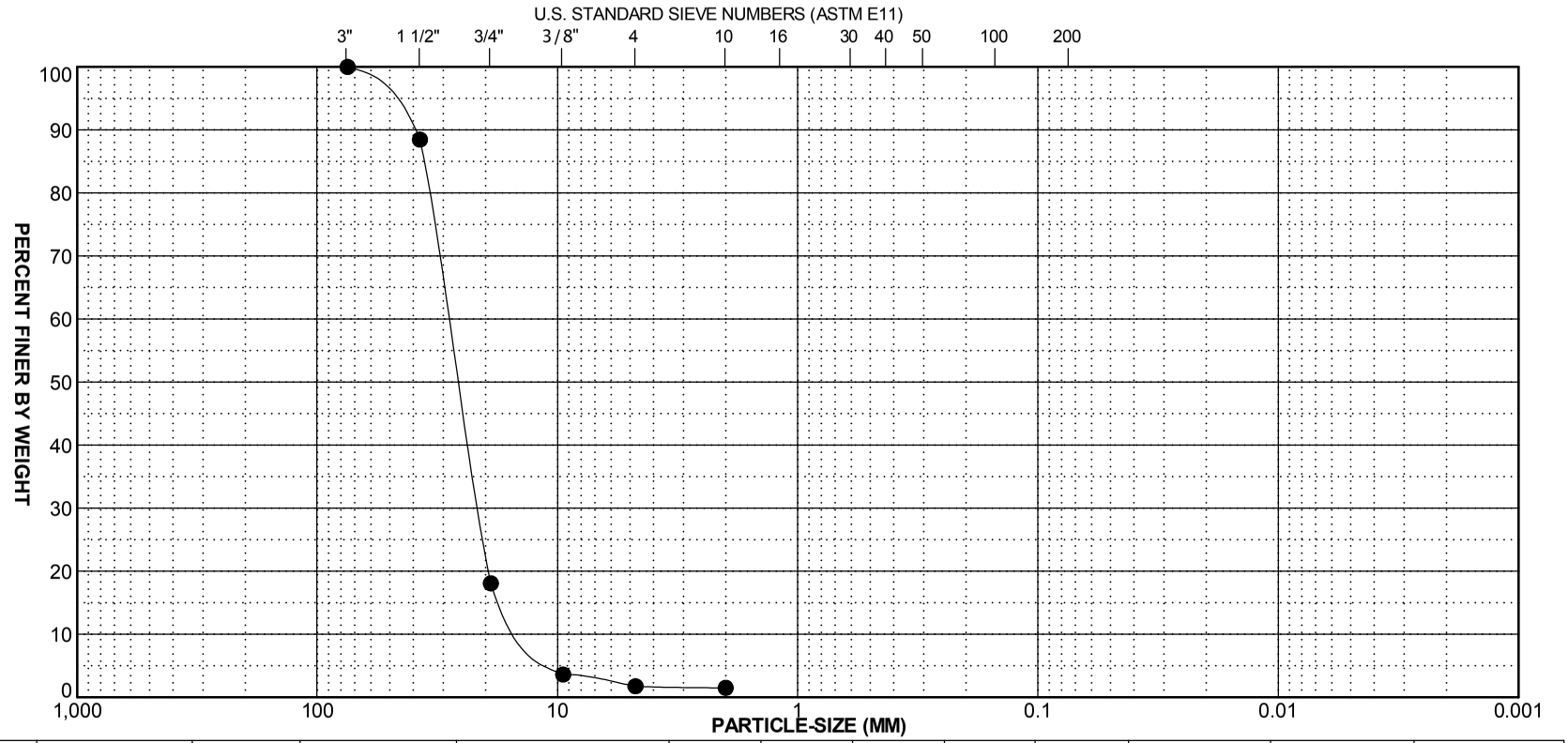
PARTICLE-SIZE ANALYSIS TEST RESULTS

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-100	B35LC1	75.1	1	28.5	25.9	21.3	12.9	10.1	98		

REV. 1

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-037-022	PAGE 1 OF 1
COLLECTOR: Curt Hoffman CHPRC	COMPANY CONTACT: LYNCH, SA	TELEPHONE NO.: 373-5586	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 8H	DATA TURNAROUND: 30 Days / 30 Days
SAMPLING LOCATION: C9595 SAMPLE I-005	PROJECT DESIGNATION: 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO.: F16-037	AIR QUALITY ☐	
ICE CHEST NO.: NA	FIELD LOGBOOK NO.: HNF-N-645-6/4	ACTUAL SAMPLE DEPTH: 75.13' - 77.63'	COA: 300085	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: RJ LEE - GEOTECHNICAL	OFFSITE PROPERTY NO.: NA		BILL OF LADING/AIR BILL NO.: NA		

W607012

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/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None
HOLDING TIME	None
TYPE OF CONTAINER	Split Spoon Liner
NO. OF CONTAINER(S)	2
VOLUME	1000g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B35LC1 ✓	SOIL	6/30/16	0840	✓ (A & B)

10/11/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Curt Hoffman CHPRC	DATE/TIME: JUN 30 2016 1030	RECEIVED BY/STORED IN: J.C. Fulton CHPRC	DATE/TIME: JUN 30 2016 1030
RELINQUISHED BY/REMOVED FROM: J.C. Fulton CHPRC	DATE/TIME: JUN 30 2016 1050	RECEIVED BY/STORED IN: SSU-1	DATE/TIME: JUN 30 2016 1050
RELINQUISHED BY/REMOVED FROM: SSU-1	DATE/TIME: JUL 06 2016 1150	RECEIVED BY/STORED IN: Lesly Wall /CHPRC	DATE/TIME: JUL 06 2016 1150
RELINQUISHED BY/REMOVED FROM: Lesly Wall /CHPRC	DATE/TIME: JUL 06 2016 1441	RECEIVED BY/STORED IN: RJLG	DATE/TIME: JUL 06 2016 1441
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

SPECIAL INSTRUCTIONS

** 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.** Laboratory shall perform the Particle Size (Dry Sieve) analysis to determine if they should proceed with Permeability by D2434 or Hydraulic Conductive by D5084.
(1) D422_PARTICLE SIZE (Dry Sieve): COMMON; D2434_PERMEABILTIY: COMMON; D5084_HYRDRAULIC CONDUCTIVITY: COMMON; D4373_CARBONATE CONTENT: COMMON;

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

PRINTED ON 5/16/2016 FSR ID = FSR32262 TRVL NUM = TRVL-16-146 A-6003-618 (REV 2)

SAMPLE ISSUE RESOLUTION	SIR NUM	SIR16-582
	REV NUM	0
	DATE INITIATED	8/22/2016

SAMPLE EVENT INFORMATION

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OPERABLE UNIT(S)	100-KR-4
PROJECT(S)	100-KR-4 RM ACT
SAMPLE EVENT TITLE(S)	100-K Area
LABORATORY	RJ LEE - GEOTECHNICAL

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