



JUNE 17, 2016

June 17, 2016

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 # W604056, 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 #) W604056.

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 # W604056, has been assigned a PBS Geotechnical Lab Sample number per the below table.

| CHPRC Sample # | SDG # | Geotechnical Lab Sample # |
|----------------|---------|---------------------------|
| B354K0 | W604056 | H-0065 |

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.

06/17/2016

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.

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Attachment 1

PBS Geotechnical Laboratory Testing Results, SDG # W604056,
dated June 17, 2016

JUNE 17, 2016



Engineering +
Environmental

June 14, 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. W604056
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 W604056.

We performed the following tests:

- Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass (ASTM D2216)
- Density of Soil in Place by the Drive-Cylinder Method (ASTM D2937)

The 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.



6/14/2016

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

AS/rg

Attachments: Report of Laboratory Testing – Density by Drive Cylinder and Moisture Contents
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

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**REPORT OF LABORATORY TESTING**

| | |
|---|---|
| Report to: CH2M-Hill - Plateau Remediation 2420 Stevens Center Place P.O. Box 1600 Richland, WA 99352 | Date: 6/14/2016 |
| | Sample Delivery Group No.: W604056 |
| | Sample Authorization No.: F15-028 |

| | |
|---|----------------------------------|
| Project: CHPRC Laboratory | Project No.: 63797.000 |
| Report of: Density by Drive Cylinder (ASTM D2937) Moisture Content (ASTM D2216) | 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:

Density by Drive Cylinder (ASTM D2937).

The dry densities (dry unit weight) of representative soils were determined in the laboratory using the relatively undisturbed soil samples. The dimensions of the specimen were carefully measured, the volume calculated, and the specimen weighed. A representative sample was obtained from the specimen, weighed, and placed in the oven to dry. After oven drying, the representative sample was reweighed and the water content calculated. The dry density was then computed. The results of tests are included in the table below.

Moisture Content (ASTM D2216).

Natural moisture content determinations were made on the samples of the fine-grained soils (that is, silts, clays, and silty sands). The natural moisture content is defined as the ratio of the weight of water to dry weight of soil, expressed as a percentage.

LABORATORY TEST RESULTS**Density by Drive Cylinder (ASTM D2937)****Moisture Content (ASTM D2216)**

| Customer Sample Number | Laboratory Sample Number | Wet Density (lbs/ft ³) | Water Content (%) | Dry Density (lbs/ft ³) |
|------------------------|--------------------------|------------------------------------|-------------------|------------------------------------|
| B354K0 | H-0065 | 122.3 | 4.3 | 117.3 |
| | | | | |
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SHEET 1 OF 1

REVIEWED BY: A. Swenson, P.E.

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|---|---|--|--------------------------------------|------------------------------------|--|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | F16-028-012 | PAGE 1 OF 1 |
| COLLECTOR Don Brotherton CHPRC | COMPANY CONTACT TODAK, D | TELEPHONE NO. 376-6427 | PROJECT COORDINATOR TODAK, D | PRICE CODE 8H | DATA TURNAROUND 30 Days / 30 Days |
| SAMPLING LOCATION C9414, 200-WA-1 #5 | PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil | FIELD LOGBOOK NO. HNF-N-645 | ACTUAL SAMPLE DEPTH 338.70-473-11 | SAF NO. F16-028 | METHOD OF SHIPMENT GOVERNMENT VEHICLE |
| ICE CHEST NO. GWS-451 | OFFSITE PROPERTY NO. N/A | DATE APR 13 2016 0725 | DATE APR 13 2016 0830 | COA NO. 304043 | ORIGINAL |
| SHIPPED TO RJ EE - GEOTECHNICAL | DATE APR 13 2016 0725 | DATE APR 13 2016 0830 | DATE APR 13 2016 0830 | BILL OF LADING/AIR BILL NO. N/A | |

| | | | | | | | |
|--|--|---------------------------------|----------------------|--|--------------------------|-----------------|---|
| 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 regulated for transportation per 49 CFR/JATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. | PRESERVATION None | HOLDING TIME None | TYPE OF CONTAINER Split Spoon Liner | NO. OF CONTAINER(S) 1 | VOLUME 1000g | SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS |
| SAMPLE NO. B354K0 | MATRIX* SOIL | SAMPLE DATE APR 13 2016 0725 | SAMPLE TIME 0725 | SPECIAL HANDLING AND/OR STORAGE | | | |

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|---|-------------------------------|---|-------------------------------|---|--|
| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS | |
| RELINQUISHED BY/REMOVED FROM Don Brotherton CHPRC | DATE/TIME APR 13 2016 0830 | RECEIVED BY/STORED IN SSU-1 | DATE/TIME APR 13 2016 0830 | Liner B to be submitted intact for geotechnical analysis with end caps taped to prevent loss or infiltration of moisture (1) D2216 MOISTURE CONTENT: COMMON {Percent moisture (dry sample), Percent moisture (wet sample)}; D2937_ DENSITY: COMMON {Bulk density - dry, Bulk density - wet}; | |
| RELINQUISHED BY/REMOVED FROM SSU-1 | DATE/TIME APR 14 2016 0720 | RECEIVED BY/STORED IN C.M. Aguilar/CHPRC | DATE/TIME APR 14 2016 0720 | | |
| RELINQUISHED BY/REMOVED FROM C.M. Aguilar/CHPRC | DATE/TIME APR 14 2016 0745 | RECEIVED BY/STORED IN PEZ R J L | DATE/TIME APR 14 2016 0745 | | |
| 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 |
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |

PRINTED ON 3/23/2016 FSR ID = FSR28197 TRVL NUM = TRVL-16-059

JUNE 17, 2016



Geotechnical Laboratory Sample Receipt

Date Time Received 4/14/16 8:45

SDG# W604056

Work Order Number: 304043

SAF# F16-028

Shipping Container Identification: GWS-451

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: 1
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: Yes
12. Chain of Custody # F16-028

Comments: _____

Sample Custodian/Laboratory C Jones Date: 4/14/16

Telephoned to: _____ On _____ by _____