



March 29, 2018

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF F14-026
Work Order: 446470
SDG: GEL446470

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 23, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Anna Dupree for
Heather Shaffer
Project Manager

Purchase Order: 300009

Chain of Custody: F14-026-030, F14-026-031, F14-026-032, F14-026-033, F14-026-034, F14-026-035 and
F14-026-036

Enclosures

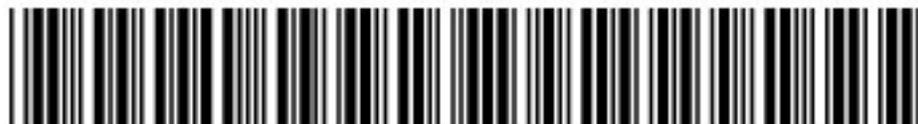


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Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F14-026
SDG: GEL446470**

March 29, 2018

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on March 23, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification

The laboratory received the following samples:

| <u>Laboratory Identification</u> | <u>Sample Description</u> |
|---|----------------------------------|
| 446470001 | B3HYL4 |
| 446470002 | B3HYL5 |
| 446470003 | B3HYL6 |
| 446470004 | B3HYL7 |
| 446470005 | B3HYL8 |
| 446470006 | B3HYL9 |
| 446470007 | B3HYM0 |

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.



Anna Dupree for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL446470
Work Order #: 446470

Metals

Determination of Metals by ICP

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Determination of Metals by ICP-MS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

General Chemistry

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Manual Integrations

Samples 1203995560 (B3HYM0DUP), 446470001 (B3HYL4), 446470002 (B3HYL5), 446470003 (B3HYL6), 446470004 (B3HYL7), 446470005 (B3HYL8), 446470006 (B3HYL9) and 446470007 (B3HYM0) were manually integrated to correctly position the baseline as set in the calibration standards.

Radiochemistry

9310_ALPHABETA_GPC: Gross Beta

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information**Additional Comments**

The matrix spike and matrix spike duplicate, 1203995605 (Non SDG 446304005MS) and 1203995606 (Non SDG 446304005MSD), aliquots were reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

| | | | | | | |
|--|--|---|--|--------------------------------------|---------------------------------------|-------------|
| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST ³⁷¹⁰³ 446470 | | | F14-026-036 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim W. Baunsee</i> <i>Jim W. Baunsee CHPRC</i> | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 12 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>10: 3/22/18</i> <i>#01 605-640</i> | | FIELD LOGBOOK NO. <i>HNF-N-762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | | |

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|---|--|----------------------------|--------------------------------------|--------------------------------------|---|---|
| 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. | PRESERVATION | Cool <=6C | HNO3 to pH <2 | | |
| | | HOLDING TIME | 6 Months | 6 Months | | |
| | | TYPE OF CONTAINER | G/P | G/P | | |
| | | NO. OF CONTAINER(S) | 1 | 1 | | |
| | | VOLUME | 500mL | 500mL | | |
| SPECIAL HANDLING AND/OR STORAGE N/A | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYMO | N/A | WATER | 3-22-18 | 0925 | ✓ | ✓ |

3/29/2018

| | | | | |
|--|------------------|--|--------------------------------|---|
| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| <i>Jim W. Baunsee (CHPRC)</i> <i>Jim W. Baunsee</i> | MAR 22 2018 1025 | <i>Lesly Wall</i> ICHPRC | MAR 22 2018 1025 | |
| <i>Lesly Wall</i> ICHPRC | MAR 22 2018 1400 | FEDEX Chakeris Tarplin GEL Laboratories | <i>CTarplin</i> 3/23/18 805 | |
| Fed Ex | | | | |

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|---------------------------------|------------------------|--------------------|------------------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |

| | | | | | | |
|--|--|---|-----------------------------------|---|---------------------------------------|-------------|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | | F14-026-030 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim Wabrusce</i> Jim Wabrusce @ H PRC | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 1 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>NO. 312218</i> <i>#01 GWS-640</i> | | FIELD LOGBOOK NO. <i>NO. 312218</i> <i>HNSF-N-762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | |

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|---|--|----------------------------|--------------------|--------------------------------------|--------------------------------------|---|
| 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. | PRESERVATION | | Cool <=6C | HNO3 to pH <2 | |
| | | HOLDING TIME | | 6 Months | 6 Months | |
| | | TYPE OF CONTAINER | | G/P | G/P | |
| | | NO. OF CONTAINER(S) | | 1 | 1 | |
| | | VOLUME | | 500mL | 500mL | |
| SPECIAL HANDLING AND/OR STORAGE N/A | | SAMPLE ANALYSIS | | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYL4 | N/A | WATER | 3-22-18 | 0912 | ✓ | ✓ |

3/29/2018

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| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | |
| <i>Jim Wabrusce (H PRC)</i> <i>Lesly Wald</i> Lesly Wald ICP/RC | <i>Lesly Wald</i> FEDEX | TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| DATE/TIME | DATE/TIME | |
| MAR 22 2018 1025 | MAR 22 2018 1025 | |
| <i>Lesly Wald</i> Fed Ex | <i>Chakeris Tarplin</i> GEL Laboratories | |
| DATE/TIME | DATE/TIME | |
| MAR 22 2018 1400 | 3/23/18 845 | |

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|---------------------------------|------------------------|--------------------|------------------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |

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|--|--|---|-----------------------------------|--|---------------------------------------|-------------|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | | F14-026-031 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim W. Abner</i> <i>Jim Wabner CHPRC</i> | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 3 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>AD-2122118</i> <i>GWS-640</i> | | FIELD LOGBOOK NO. <i>HNF-N-762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | |

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|--|---|--|-------------|-----------------|--------------------------------------|--------------------------------------|
| 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. | PRESERVATION | | Cool <=6C | HNO3 to pH <2 | |
| | | HOLDING TIME | | 6 Months | 6 Months | |
| | | TYPE OF CONTAINER | | G/P | G/P | |
| | | NO. OF CONTAINER(S) | | 1 | 1 | |
| | | VOLUME | | 500mL | 500mL | |
| | | SPECIAL HANDLING AND/OR STORAGE N/A | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYL5 | N/A | WATER | 3-22-18 | 0915 | ✓ | ✓ |

3/29/2018

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|--|------------------|---|------------------|--|
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| <i>Jim W. Abner (CHPRC)</i> <i>Jim Wabner</i> | MAR 22 2018 1025 | <i>Lesly Wall</i> CHPRC | MAR 22 2018 1025 | TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| <i>Lesly Wall</i> CHPRC | MAR 22 2018 1400 | FEDEX | | |
| Fed Ex | | <i>Chakeris Tarplin</i> GEL Laboratories | 3/23/18 845 | |
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| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
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|---|--|---|-----------------------------------|--|---------------------------------------|-------------|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | | F14-026-032 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim WABANSEE</i> <i>Jim Wabansee</i> | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 4 <i>CHPRC</i> | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>101 32218</i> <i>101 GWS-640</i> | | FIELD LOGBOOK NO. <i>HNF-N-762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | |

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|---|--|----------------|----------------------------|--------------------------------------|--------------------------------------|
| 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. | | PRESERVATION | Cool <=6C | HNO3 to pH <2 |
| | | | HOLDING TIME | 6 Months | 6 Months |
| | | | TYPE OF CONTAINER | G/P | G/P |
| | | | NO. OF CONTAINER(S) | 1 | 1 |
| | | | VOLUME | 500mL | 500mL |
| | | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS |
| SPECIAL HANDLING AND/OR STORAGE N/A | | | | | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
| B3HYL6 | N/A | WATER | <i>7-22-18</i> | <i>0916</i> | <i>✓ ✓</i> |

3/29/2018

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|--|-------------------------|-------------------------------------|------------------------------|---|
| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| <i>Jim WABANSEE (CHPRC)</i> <i>Jim Wabansee</i> | <i>MAR 22 2018 1025</i> | <i>Lesly Wall</i> ICHPRC | <i>MAR 22 2018 1025</i> | |
| <i>Lesly Wall</i> ICHPRC | <i>MAR 22 2018 1400</i> | FEDEX | | |
| Fed Ex | | <i>Chakeris</i> GEL Laboratories | <i>3/23/18</i> <i>845</i> | |

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|---------------------------------|------------------------|--------------------|------------------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |

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|---|--|---|--|---------------------------------------|------------------------|
| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | F14-026-033 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim W. Wauson</i> <i>Julie Wauson CHPRC</i> | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 5 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL |
| ICE CHEST NO. <i>20-322110</i> <i>#OT 605-640</i> | FIELD LOGBOOK NO. <i>HNF-N-762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | |

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|---|--|----------------------------|--------------------------------------|--------------------------------------|---|---|
| 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. | PRESERVATION | Cool <=6C | HNO3 to pH <2 | | |
| | | HOLDING TIME | 6 Months | 6 Months | | |
| | | TYPE OF CONTAINER | G/P | G/P | | |
| | | NO. OF CONTAINER(S) | 1 | 1 | | |
| | | VOLUME | 500mL | 500mL | | |
| | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | | |
| SPECIAL HANDLING AND/OR STORAGE N/A | | | | | | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYL7 | N/A | WATER | 3-22-18 | 0918 | ✓ | ✓ |

3/29/2018

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|------------------------------|--|--|
| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | |
| <i>Jim Wauson (CHPRC)</i> | <i>Leahy Wall CHPRC</i> | TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| <i>Julie Wauson</i> | <i>Leahy Wall</i> | |
| <i>Leahy Wall CHPRC</i> | <i>Chakeris Thuppin GEL Laboratories</i> | |
| <i>Fed Ex</i> | <i>Chakeris Thuppin</i> | |
| DATE/TIME | DATE/TIME | |
| <i>MAR 22 2018 1025</i> | <i>MAR 22 2018 1025</i> | |
| <i>MAR 22 2018 1400</i> | <i>3/23/18 845</i> | |

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|---------------------------------|------------------------|--------------------|------------------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |

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|--|---|---|--|--------------------------------------|---------------------------------------|-------------|
| CH2M Hill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | | F14-026-034 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim W. Abansie</i> <i>Jim W. Abansie</i> CHPRC | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 6 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>3722118</i> <i>401 GWS-640</i> | | FIELD LOGBOOK NO. <i>HNF-N-1762-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | | |
| 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. | PRESERVATION Cool <=6C | HNO3 to pH <2 | | | |
| | | HOLDING TIME | 6 Months | 6 Months | | |
| | | TYPE OF CONTAINER | G/P | G/P | | |
| | | NO. OF CONTAINER(S) | 1 | 1 | | |
| | | VOLUME | 500mL | 500mL | | |
| SPECIAL HANDLING AND/OR STORAGE N/A | | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | SEE ITEM (2) IN SPECIAL INSTRUCTIONS | | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYL8 | N/A | WATER | <i>3-22-18</i> | <i>0920</i> | ✓ | ✓ |

3/29/2018

| | | |
|--|---|--|
| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | |
| <i>Jim W. Abansie (CHPRC)</i> <i>Jim W. Abansie</i> | <i>Ledy Wall</i> CHPRC | TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| <i>MAR 22 2018 1025</i> | <i>MAR 22 2018 1025</i> | |
| <i>Ledy Wall</i> CHPRC Fed Ex | FEDEX Chakeris Tarplin/ GEL Laboratories <i>Chakeris</i> | |
| <i>MAR 22 2018 1400</i> | <i>3/23/18</i> <i>845</i> | |

14 of 68

REV.0

| | | | |
|--------------------------|-----------------|-------------|-----------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |

PRINTED ON 2/28/2018 FSR ID = FSR58323 TRVL NUM = TRVL-18-093 A-6003-618 (REV 3)

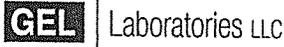
| | | | | | | |
|--|--|---|-----------------------------------|--|---------------------------------------|-------------|
| CH2MHill Plateau Remediation Company | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 446470 | | | F14-026-035 | PAGE 1 OF 1 |
| COLLECTOR <i>Jim WABAUNSEE</i> <i>Jim WABAUNSEE (CHERC)</i> | | COMPANY CONTACT KILLAND, KE | TELEPHONE NO. 373-0221 | PROJECT COORDINATOR KILLAND, KE | REQUIRED TAT 7 Days | |
| SAMPLING LOCATION 2018 WESF Annual Sampling, Pool 7 | | PROJECT DESIGNATION Waste Encapsulation and Storage Facility (WESF) Pool Cells | | SAF NO. F14-026 | ORIGINAL | |
| ICE CHEST NO. <i>NO. 3122116</i> <i>#1</i> <i>6205-640</i> | | FIELD LOGBOOK NO. <i>HNF-N-7602-13</i> | ACTUAL SAMPLE DEPTH <i>N/A</i> | PURCHASE ORDER/CHARGE CODE 300009 | METHOD OF SHIPMENT FEDERAL EXPRESS | |
| SHIPPED TO GEL Laboratories, LLC | | OFFSITE PROPERTY NO. <i>9215</i> | | BILL OF LADING/AIR BILL NO. <i>771810595580</i> | | |

| | | | | | | |
|---|--|--|--------------------|------------------------|---------------|--------------------------------------|
| 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. | PRESERVATION | | Cool <=6C | HNO3 to pH <2 | |
| | | HOLDING TIME | | 6 Months | 6 Months | |
| | | TYPE OF CONTAINER | | G/P | G/P | |
| | | NO. OF CONTAINER(S) | | 1 | 1 | |
| | | VOLUME | | 500mL | 500mL | |
| | | SPECIAL HANDLING AND/OR STORAGE | | SAMPLE ANALYSIS | | SEE ITEM (1) IN SPECIAL INSTRUCTIONS |
| N/A | | | | | | |
| SAMPLE NO. | FILTERED | MATRIX* | SAMPLE DATE | SAMPLE TIME | | |
| B3HYL9 | N/A | WATER | 3-22-18 | 0922 | ✓ | ✓ |

3/29/2018

| CHAIN OF POSSESSION | SIGN/ PRINT NAMES | SPECIAL INSTRUCTIONS |
|--|---|--|
| RELINQUISHED BY/REMOVED FROM | RECEIVED BY/STORED IN | |
| DATE/TIME | DATE/TIME | |
| <i>Jim WABAUNSEE (CHERC)</i> <i>Jim WABAUNSEE</i> | <i>Lesly Wall</i> ICHPRC | TRVL-18-093; ** The Facility will supply a GKI with each sample event. (1) BETA_GPC: COMMON; 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) 6010_METALS_ICP: COMMON {Sodium}; 6020_METALS_ICPMS: COMMON {Aluminum}; |
| MAR 27 2019 1025 | MAR 22 2019 1025 | |
| <i>Lesly Wall</i> ICHPRC | FEDEX | |
| | <i>Chakeris Tarplin</i> GEL Laboratories | |
| | <i>Chakeris Tarplin</i> GEL Laboratories | |
| | | |
| | | |
| | | |

| | | | |
|---------------------------------|------------------------|--------------------|------------------|
| FINAL SAMPLE DISPOSITION | DISPOSAL METHOD | DISPOSED BY | DATE/TIME |
| | | | |



SAMPLE RECEIPT & REVIEW FORM

45

| | | | |
|--|---|---|--|
| Client: <u>CPRC</u> | | SDG/AR/COC/Work Order: <u>446470</u> | |
| Received By: <u>C. Tarplin</u> | | Date Received: <u>03/23/18</u> | |
| Carrier and Tracking Number | | Circle Applicable: FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <input type="checkbox"/> | |
| | | <u>771810595580 (2c)</u> <u>771813852117 (2c)</u> <u>771813871947 (19c)</u> <u>771808080436 (2c)</u> | |
| Suspected Hazard Information | Yes <input type="checkbox"/> No <input type="checkbox"/> | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. | |
| Shipped as a DOT Hazardous? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Hazard Class Shipped: _____ UN#: _____ | |
| COC/Samples marked or classified as radioactive? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: <u>Rad 1</u> Rad 2 Rad 3 | |
| Is package, COC, and/or Samples marked HAZ? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: | |

| Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|-------------------------------------|----|-------------------------------------|--|
| 1 Shipping containers received intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | | | |
| 3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | | | Preservation Method: <u>Wet Ice</u> Ice Packs Dry ice <u>None</u> Other: *all temperatures are recorded in Celsius TEMP: _____ |
| 4 Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | | | Temperature Device Serial #: <u>IR4-17</u> Secondary Temperature Device Serial # (If Applicable): _____ |
| 5 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 6 Samples requiring chemical preservation at proper pH? | <input checked="" type="checkbox"/> | | | Sample ID's and Containers Affected: If Preservation added, Lot#: |
| 7 Do any samples require Volatile Analysis? | <input checked="" type="checkbox"/> | | | If Yes, Are Encores or Soil Kits present? Yes _____ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No _____ N/A _____ (If unknown, select No) VOA vials free of headspace? Yes _____ No <input checked="" type="checkbox"/> N/A _____ Sample ID's and containers affected: <u>B3FH6 3qs</u> <u>B3F8M8 1qs</u> |
| 8 Samples received within holding time? | <input checked="" type="checkbox"/> | | | ID's and tests affected: |
| 9 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 10 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 11 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 12 Are sample containers identifiable as GEL provided? | | | <input checked="" type="checkbox"/> | |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | | | |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HRM Date 03/26/18 Page 1 of 1

Data Review Qualifier Definitions

Project Specific Qualifier Definitions for GEL Client Code: CPRC

| Qualifier | Qualifier Definition | Department | Fraction |
|-----------|---|-------------------|---------------|
| U | Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. | | |
| J | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated | Organics | |
| P | Aroclor target analyte with greater than 25% difference between column analyses. | Organics | |
| C | Analyte has been confirmed by GC/MS analysis | Organics | Pesticide |
| B | The analyte was detected in both the associated QC blank and in the sample. | Organics | |
| E | Concentration exceeds the calibration range of the instrument | Organics | |
| A | The TIC is a suspected aldol-condensation product | Organics | Semi-Volatile |
| X | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | |
| N | Spike Sample recovery is outside control limits. | | |
| * | Duplicate analysis not within control limits | Inorganics | |
| > | Result greater than quantifiable range or greater than upper limit of the analysis range | General Chemistry | |
| Z | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | |
| B | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). | Inorganics | Metals |
| D | Results are reported from a diluted aliquot of sample. | | |
| E | Reported value is estimated due to interferences. See comment in narrative. | Inorganics | Metals |
| M | Duplicate precision not met. | Inorganics | Metals |
| o | Analyte failed to recover within LCS limits (Organics only) | Organics | |
| S | Reported value determined by the Method of Standard Additions (MSA) | Inorganics | |
| T | Spike and/or spike duplicate sample recovery is outside control limits. | Organics | |
| W | Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency. | Inorganics | |
| B | The analyte was detected in the associated method blank \geq MDC or $>$ 5% sample activity. | Radiological | |
| Y | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | |
| + | Correlation coefficient for Method of Standard Additions (MSA) is < 0.995 | Inorganics | |
| B | The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). | General Chemistry | |
| C | Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples. | Inorganics | Metals |
| C | Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples. | General Chemistry | |
| < | Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide | General Chemistry | |
| UX | Gamma Spectroscopy--Uncertain identification | Radiological | |

Laboratory Certifications

List of current GEL Certifications as of 29 March 2018

| State | Certification |
|--------------------------|------------------------------|
| Alaska | 17-018 |
| Arkansas | 88-0651 |
| CLIA | 42D0904046 |
| California | 2940 |
| Colorado | SC00012 |
| Connecticut | PH-0169 |
| Delaware | SC00012 |
| DoD ELAP/ ISO17025 A2LA | 2567.01 |
| Florida NELAP | E87156 |
| Foreign Soils Permit | P330-15-00283, P330-15-00253 |
| Georgia | SC00012 |
| Georgia SDWA | 967 |
| Hawaii | SC00012 |
| Idaho Chemistry | SC00012 |
| Idaho Radiochemistry | SC00012 |
| Illinois NELAP | 200029 |
| Indiana | C-SC-01 |
| Kansas NELAP | E-10332 |
| Kentucky SDWA | 90129 |
| Kentucky Wastewater | 90129 |
| Louisiana NELAP | 03046 (AI33904) |
| Louisiana SDWA | LA180011 |
| Maryland | 270 |
| Massachusetts | M-SC012 |
| Michigan | 9976 |
| Mississippi | SC00012 |
| Nebraska | NE-OS-26-13 |
| Nevada | SC000122018-1 |
| New Hampshire NELAP | 205415 |
| New Jersey NELAP | SC002 |
| New Mexico | SC00012 |
| New York NELAP | 11501 |
| North Carolina | 233 |
| North Carolina SDWA | 45709 |
| North Dakota | R-158 |
| Oklahoma | 9904 |
| Pennsylvania NELAP | 68-00485 |
| Puerto Rico | SC00012 |
| S. Carolina Radiochem | 10120002 |
| South Carolina Chemistry | 10120001 |
| Tennessee | TN 02934 |
| Texas NELAP | T104704235-18-13 |
| Utah NELAP | SC000122018-26 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL446470
Work Order #: 446470

Product: Determination of Metals by ICP**Analytical Method:** SW846 3005A/6010D**Analytical Procedure:** GL-MA-E-013 REV# 30**Analytical Batch:** 1749830**Product: Determination of Metals by ICP-MS****Analytical Method:** SW846 3005A/6020B**Analytical Procedure:** GL-MA-E-014 REV# 32**Analytical Batch:** 1749821**Preparation Method:** SW846 3005A**Preparation Procedure:** GL-MA-E-006 REV# 14**Preparation Batches:** 1749820 and 1749829

The following samples were analyzed using the above methods and analytical procedure(s).

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 446470001 | B3HYL4 |
| 446470002 | B3HYL5 |
| 446470003 | B3HYL6 |
| 446470004 | B3HYL7 |
| 446470005 | B3HYL8 |
| 446470006 | B3HYL9 |
| 446470007 | B3HYM0 |
| 1203995598 | Method Blank (MB) ICP |
| 1203995599 | Laboratory Control Sample (LCS) |
| 1203995602 | 446470001(B3HYL4L) Serial Dilution (SD) |
| 1203995600 | 446470001(B3HYL4S) Matrix Spike (MS) |
| 1203995601 | 446470001(B3HYL4SD) Matrix Spike Duplicate (MSD) |
| 1203995579 | Method Blank (MB) ICP-MS |
| 1203995580 | Laboratory Control Sample (LCS) |
| 1203995583 | 446470001(B3HYL4L) Serial Dilution (SD) |
| 1203995581 | 446470001(B3HYL4S) Matrix Spike (MS) |
| 1203995582 | 446470001(B3HYL4SD) Matrix Spike Duplicate (MSD) |

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Calibration Information

ICSA/ICSAB Statement

For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL446470 GEL Work Order: 446470

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- D Results are reported from a diluted aliquot of sample.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:**Name: Kristen Mizzell****Date: 29 MAR 2018****Title: Team Leader**

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470001

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL4

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 16:24 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 11:40 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470002

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL5

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 16:47 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 11:56 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470003

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL6

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 16:50 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 11:59 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470004

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL7

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 16:53 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 12:02 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470005

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL8

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 16:56 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 12:05 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D

MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470006

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYL9

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 17:00 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 12:08 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL446470

CONTRACT: CPRC0F14026

METHOD TYPE: SW846

SAMPLE ID:446470007

BASIS: As Received

DATE COLLECTED 22-MAR-18

CLIENT ID: B3HYM0

LEVEL: Low

DATE RECEIVED 23-MAR-18

MATRIX: WATER

%SOLIDS: 0

| CAS | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|-----------|----------|--------|-------|------|------|-----|------|----|----|---------|----------------|----------------|------------------|
| 7429-90-5 | Aluminum | 19.3 | ug/L | U | 19.3 | 50 | 50 | 1 | MS | BAJ | 03/26/18 17:03 | 180326-2 | 1749821 |
| 7440-23-5 | Sodium | 100 | ug/L | U | 100 | 300 | 300 | 1 | P | TXT1 | 03/29/18 12:10 | 032918-1 | 1749830 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|-------------|------------------|-------|----------------|-------|----------|---------|
| 1749821 | 1749820 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |
| 1749830 | 1749829 | SW846 3005A | 50 | mL | 50 | mL | 03/23/18 | JXM8 |

***Analytical Methods:**

P SW846 3005A/6010D
MS SW846 3005A/6020B

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 29, 2018

Page 1 of 2

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 446470

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|-----------|--------|---------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1749821 | | | | | | | | | | |
| QC1203995580 | LCS | | | | | | | | | | |
| Aluminum | 2000 | | | 2310 | ug/L | | 115 | (80%-120%) | BAJ | 03/26/18 | 16:20 |
| QC1203995579 | MB | | | | | | | | | | |
| Aluminum | | | U | 19.3 | ug/L | | | | | 03/26/18 | 16:17 |
| QC1203995581 | 446470001 | MS | | | | | | | | | |
| Aluminum | 2000 | U | 19.3 | 1870 | ug/L | | 93.6 | (75%-125%) | | 03/26/18 | 16:27 |
| QC1203995582 | 446470001 | MSD | | | | | | | | | |
| Aluminum | 2000 | U | 19.3 | 1960 | ug/L | 4.54 | 98 | (0%-20%) | | 03/26/18 | 16:30 |
| QC1203995583 | 446470001 | SDILT | | | | | | | | | |
| Aluminum | | U | 1.71 DU | 96.5 | ug/L | N/A | | (0%-20%) | | 03/26/18 | 16:37 |
| Metals Analysis-ICP | | | | | | | | | | | |
| Batch | 1749830 | | | | | | | | | | |
| QC1203995599 | LCS | | | | | | | | | | |
| Sodium | 5000 | | | 4550 | ug/L | | 91 | (80%-120%) | TXT1 | 03/29/18 | 11:38 |
| QC1203995598 | MB | | | | | | | | | | |
| Sodium | | | U | 100 | ug/L | | | | | 03/29/18 | 11:35 |
| QC1203995600 | 446470001 | MS | | | | | | | | | |
| Sodium | 5000 | U | 100 | 4610 | ug/L | | 91.9 | (75%-125%) | | 03/29/18 | 11:43 |
| QC1203995601 | 446470001 | MSD | | | | | | | | | |
| Sodium | 5000 | U | 100 | 4570 | ug/L | 0.693 | 91.2 | (0%-20%) | | 03/29/18 | 11:45 |

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QC Summary

Workorder: 446470

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| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|----------------------------|-----------|--------|------|-----|-------|--------|------|----------|-------|----------|-------|
| Metals Analysis-ICP | | | | | | | | | | | |
| Batch | 1749830 | | | | | | | | | | |
| QC1203995602 | 446470001 | SDILT | | | | | | | | | |
| Sodium | U | 13.6 | DU | 500 | ug/L | N/A | | (0%-20%) | TXT1 | 03/29/18 | 11:48 |

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL446470
Work Order #: 446470**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batch:** 1749807

The following samples were analyzed using the above methods and analytical procedure(s).

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 446470001 | B3HYL4 |
| 446470002 | B3HYL5 |
| 446470003 | B3HYL6 |
| 446470004 | B3HYL7 |
| 446470005 | B3HYL8 |
| 446470006 | B3HYL9 |
| 446470007 | B3HYM0 |
| 1203995558 | Method Blank (MB) |
| 1203995559 | Laboratory Control Sample (LCS) |
| 1203995560 | 446470007(B3HYM0) Sample Duplicate (DUP) |
| 1203995561 | 446470007(B3HYM0) Post Spike (PS) |

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Manual Integrations**

Samples 1203995560 (B3HYM0DUP), 446470001 (B3HYL4), 446470002 (B3HYL5), 446470003 (B3HYL6), 446470004 (B3HYL7), 446470005 (B3HYL8), 446470006 (B3HYL9) and 446470007 (B3HYM0) were manually integrated to correctly position the baseline as set in the calibration standards.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL446470 GEL Work Order: 446470

The Qualifiers in this report are defined as follows:

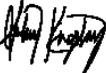
B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: **Name:** Aubrey Kingsbury**Date:** 28 MAR 2018**Title:** Analyst I

Sample Data Summary

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Certificate of Analysis

Report Date: March 28, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL4 Project: CPRC0F14026
 Sample ID: 446470001 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:12
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1057 | 1749807 | 1 |
| Chloride | B | 107 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 38.5 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 28, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL5 Project: CPRC0F14026
 Sample ID: 446470002 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:15
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1127 | 1749807 | 1 |
| Chloride | B | 78.6 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 37.1 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

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Report Date: March 28, 2018

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 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL6 Project: CPRC0F14026
 Sample ID: 446470003 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:16
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1158 | 1749807 | 1 |
| Chloride | B | 80.9 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 37.1 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

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 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL7 Project: CPRC0F14026
 Sample ID: 446470004 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:18
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1229 | 1749807 | 1 |
| Chloride | B | 85.1 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 42.7 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

Column headers are defined as follows:

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 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 28, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL8 Project: CPRC0F14026
 Sample ID: 446470005 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:20
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1259 | 1749807 | 1 |
| Chloride | B | 84.3 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 42.5 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

Column headers are defined as follows:

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 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 28, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYL9 Project: CPRC0F14026
 Sample ID: 446470006 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:22
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1331 | 1749807 | 1 |
| Chloride | B | 87.3 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 39.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: March 28, 2018

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F14-026

Client Sample ID: B3HYM0 Project: CPRC0F14026
 Sample ID: 446470007 Client ID: CPRC001
 Matrix: WATER
 Collect Date: 22-MAR-18 09:25
 Receive Date: 23-MAR-18
 Collector: Client

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|-----|-------|----|----|---------|----------|------|---------|--------|
| Ion Chromatography | | | | | | | | | | | | |
| 9056_ANIONS_IC:COMMON + (Add-on) "As Received" | | | | | | | | | | | | |
| Bromide | U | 67.0 | 67.0 | 250 | ug/L | | 1 | JXH5 | 03/23/18 | 1402 | 1749807 | 1 |
| Chloride | B | 79.5 | 67.0 | 200 | ug/L | | 1 | | | | | |
| Fluoride | U | 33.0 | 33.0 | 500 | ug/L | | 1 | | | | | |
| Nitrate-N | B | 37.5 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Nitrite-N | U | 33.0 | 33.0 | 250 | ug/L | | 1 | | | | | |
| Phosphorus in phosphate | U | 67.0 | 67.0 | 500 | ug/L | | 1 | | | | | |
| Sulfate | U | 133 | 133 | 500 | ug/L | | 1 | | | | | |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|----------------|------------------|
| 1 | 9056_ANIONS_IC | |

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: March 28, 2018

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 446470

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|-----------|--------|------|------|-------|--------|------|------------|-------|----------|-------|
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1749807 | | | | | | | | | | |
| QC1203995560 | 446470007 | DUP | | | | | | | | | |
| Bromide | U | 67.0 | U | 67.0 | ug/L | N/A | | | JXH5 | 03/23/18 | 14:33 |
| Chloride | B | 79.5 | B | 86.8 | ug/L | 8.78 ^ | | (+/-200) | | | |
| Fluoride | U | 33.0 | U | 33.0 | ug/L | N/A | | | | | |
| Nitrate-N | B | 37.5 | B | 39.7 | ug/L | 5.7 ^ | | (+/-250) | | | |
| Nitrite-N | U | 33.0 | U | 33.0 | ug/L | N/A | | | | | |
| Phosphorus in phosphate | U | 67.0 | U | 67.0 | ug/L | N/A | | | | | |
| Sulfate | U | 133 | U | 133 | ug/L | N/A | | | | | |
| QC1203995559 | LCS | | | | | | | | | | |
| Bromide | 1250 | | | 1220 | ug/L | | 98 | (80%-120%) | | 03/23/18 | 17:07 |
| Chloride | 5000 | | | 4720 | ug/L | | 94.5 | (80%-120%) | | | |
| Fluoride | 2500 | | | 2450 | ug/L | | 98.2 | (80%-120%) | | | |
| Nitrate-N | 2500 | | | 2400 | ug/L | | 96.1 | (80%-120%) | | | |
| Nitrite-N | 2500 | | | 2410 | ug/L | | 96.5 | (80%-120%) | | | |
| Phosphorus in phosphate | 1250 | | | 1200 | ug/L | | 96 | (80%-120%) | | | |

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QC Summary

Workorder: 446470

Page 2 of 3

| Paramname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|--------------|--------|--------|------|-------|------|------|------------|-------|----------|-------|
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1749807 | | | | | | | | | | |
| Sulfate | 10000 | | | 9690 | ug/L | | 96.9 | (80%-120%) | JXH5 | 03/23/18 | 17:07 |
| QC1203995558 | MB | | | | | | | | | | |
| Bromide | | | U | 67.0 | ug/L | | | | | 03/23/18 | 16:36 |
| Chloride | | | U | 67.0 | ug/L | | | | | | |
| Fluoride | | | U | 33.0 | ug/L | | | | | | |
| Nitrate-N | | | U | 33.0 | ug/L | | | | | | |
| Nitrite-N | | | U | 33.0 | ug/L | | | | | | |
| Phosphorus in phosphate | | | U | 67.0 | ug/L | | | | | | |
| Sulfate | | | U | 133 | ug/L | | | | | | |
| QC1203995561 | 446470007 PS | | | | | | | | | | |
| Bromide | 1.25 | U | 0.00 | 1.29 | mg/L | | 103 | (75%-125%) | | 03/23/18 | 15:04 |
| Chloride | 5.00 | B | 0.0795 | 4.85 | mg/L | | 95.4 | (75%-125%) | | | |
| Fluoride | 2.50 | U | 0.0141 | 2.52 | mg/L | | 100 | (75%-125%) | | | |
| Nitrate-N | 2.50 | B | 0.0375 | 2.47 | mg/L | | 97.4 | (75%-125%) | | | |
| Nitrite-N | 2.50 | U | 0.00 | 2.48 | mg/L | | 99.2 | (75%-125%) | | | |
| Phosphorus in phosphate | 1.25 | U | 0.0388 | 1.24 | mg/L | | 96.2 | (75%-125%) | | | |

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QC Summary

Workorder: 446470

Page 3 of 3

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|---------|--------|--------|------|-------|------|------------|-------|----------|-------|------|
| Ion Chromatography | | | | | | | | | | | |
| Batch | 1749807 | | | | | | | | | | |
| Sulfate | 10.0 | U | 0.0782 | 9.94 | mg/L | 98.7 | (75%-125%) | JXH5 | 03/23/18 | 15:04 | |

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $>$ 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

**Radiochemistry
 Technical Case Narrative
 CH2MHill Plateau Remediation Company (CPRC)
 SDG #: GEL446470
 Work Order #: 446470**

Product: 9310_ALPHABETA_GPC: Gross Beta
Analytical Method: 9310_ALPHABETA_GPC
Analytical Procedure: GL-RAD-A-001 REV# 19
Analytical Batch: 1749833

The following samples were analyzed using the above methods and analytical procedure(s).

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--|
| 446470001 | B3HYL4 |
| 446470002 | B3HYL5 |
| 446470003 | B3HYL6 |
| 446470004 | B3HYL7 |
| 446470005 | B3HYL8 |
| 446470006 | B3HYL9 |
| 446470007 | B3HYM0 |
| 1203995603 | Method Blank (MB) |
| 1203995604 | 446304005(NonSDG) Sample Duplicate (DUP) |
| 1203995605 | 446304005(NonSDG) Matrix Spike (MS) |
| 1203995606 | 446304005(NonSDG) Matrix Spike Duplicate (MSD) |
| 1203995607 | Laboratory Control Sample (LCS) |

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Gross Alpha/Beta Preparation Information

High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments

The matrix spike and matrix spike duplicate, 1203995605 (Non SDG 446304005MS) and 1203995606 (Non SDG 446304005MSD), aliquots were reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL446470 GEL Work Order: 446470

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:**Name: Theresa Austin****Date: 28 MAR 2018****Title: Group Leader**

Sample Data Summary

**Rad
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470001 | Date Collected: 03/22/2018 09:12 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL4 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC6B |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 120 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | 3.48 | pCi/L | +/-2.36 | 2.44 | 3.81 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470002 | Date Collected: 03/22/2018 09:15 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL5 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC6C |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 60 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | 0.0297 | pCi/L | +/-1.89 | 1.89 | 3.54 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470003 | Date Collected: 03/22/2018 09:16 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL6 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC7A |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 60 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | -0.421 | pCi/L | +/-1.70 | 1.70 | 3.30 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470004 | Date Collected: 03/22/2018 09:18 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL7 | Method: 9310_ALPHABETA_GPC | Prep Basis: "As Received" |
| Batch ID: 1749833 | Analyst: JXK3 | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Aliquot: 125 mL | Instrument: PIC7B |
| Data File: AB1749833r1.xls | Prep Method: EPA 900.0/SW846 9310 | Count Time: 60 min |
| Prep Batch: 1749833 | | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | 1.40 | pCi/L | +/-2.12 | 2.13 | 3.65 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470005 | Date Collected: 03/22/2018 09:20 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL8 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC7C |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 60 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | 0.0501 | pCi/L | +/-1.63 | 1.63 | 3.08 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470006 | Date Collected: 03/22/2018 09:22 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYL9 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC7D |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 60 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | -0.434 | pCi/L | +/-1.52 | 1.52 | 3.02 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

| | | |
|------------------------------------|--|----------------------------------|
| SDG Number: GEL446470 | Client: CPRC001 | Project: CPRC0F14026 |
| Lab Sample ID: 446470007 | Date Collected: 03/22/2018 09:25 | Matrix: WATER |
| | Date Received: 03/23/2018 08:45 | |
| Client ID: B3HYM0 | | Prep Basis: "As Received" |
| Batch ID: 1749833 | Method: 9310_ALPHABETA_GPC | SOP Ref: GL-RAD-A-001 |
| Run Date: 03/27/2018 17:40 | Analyst: JXK3 | Instrument: PIC8A |
| Data File: AB1749833r1.xls | Aliquot: 125 mL | Count Time: 60 min |
| Prep Batch: 1749833 | Prep Method: EPA 900.0/SW846 9310 | |
| Prep Date: 03/27/2018 07:35 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|--------------|------|--------|-------|---------|------|------|------|
| 12587-47-2 | Beta BETA | U | 1.10 | pCi/L | +/-1.87 | 1.87 | 3.25 | 4.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
|---------------------------|--------|---------|-------|-----------|-------------------|

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: March 28, 2018
Page 1 of 2

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 446470

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|---------------------|-----------|------------------|------|------------------|-------|---------------------|-------|---------|---------------|
| Rad Gas Flow | | | | | | | | | |
| Batch | 1749833 | | | | | | | | |
| QC1203995603 | MB | | | | | | | | |
| Beta | | | U | -0.283 | pCi/L | | | JXK3 | 03/27/1817:40 |
| | | | | Uncert: +/-0.835 | | | | | |
| | | | | TPU: +/-0.836 | | | | | |
| QC1203995604 | 446304005 | DUP | | | | | | | |
| Beta | | 4.55 | | 4.94 | pCi/L | | | | 03/27/1817:40 |
| | | Uncert: +/-0.690 | | +/-0.792 | | RPD: 8 (0%-20%) | | | |
| | | TPU: +/-1.02 | | +/-1.14 | | RER: 0.505 (0-2) | | | |
| QC1203995605 | 446304005 | MS | | | | | | | |
| Beta | 1570 | 4.55 | | 1630 | pCi/L | REC: 104 (75%-125%) | | | 03/27/1817:40 |
| | | Uncert: +/-0.690 | | +/-56.6 | | | | | |
| | | TPU: +/-1.02 | | +/-271 | | | | | |
| QC1203995606 | 446304005 | MSD | | | | | | | |
| Beta | 1570 | 4.55 | | 1550 | pCi/L | REC: 99 (75%-125%) | | | 03/27/1817:40 |
| | | Uncert: +/-0.690 | | +/-55.6 | | RPD: 5 (0%-20%) | | | |
| | | TPU: +/-1.02 | | +/-257 | | RER: 0.43 (0-2) | | | |
| QC1203995607 | LCS | | | | | | | | |
| Beta | 313 | | | 332 | pCi/L | REC: 106 (80%-120%) | | | 03/27/1817:40 |
| | | Uncert: +/-11.5 | | | | | | | |
| | | TPU: +/-55.2 | | | | | | | |

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The analyte was detected in the associated method blank >= MDC or >5% sample activity.
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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QC Summary

Workorder: 446470

Page 2 of 2

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|----------|--|--------|------|----|-------|-------------|-------|---------|------|------|
| Y | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | | | | | | | | |
| Z | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier | | | | | | | | | |

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.