



July 20, 2017

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

Re: CHPRC SAF F17-050
Work Order: 426295
SDG: GEL426295

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 24, 2017. 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,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 302632 - 7H
Chain of Custody: F17-050-002
Enclosures

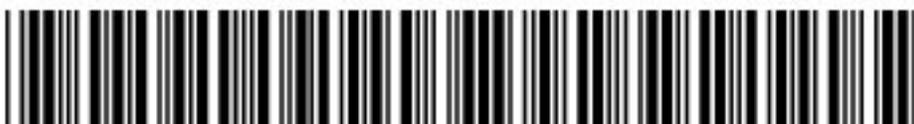


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Sample Issue Resolution

July 21, 2017

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR17-0801
Rev. Number: 0
Date Initiated: 07/06/2017

SAMPLE EVENT INFORMATION

SAF NUM(S): F17-050
LABORATORY: GEL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1
SAMPLE NUMBERS: B3BLJ0
SAMPLE MATRIX: WATER
SDG NUM(S): GEL426295

ISSUE BACKGROUND

CLASS: Laboratory Issue
TYPE: Quality Control Failure
DESCRIPTION: Kerosene recovered below 70% in the LCS and LCSD at 54% and 53%. That is within GEL's SPC limits. No hits of kerosene and samples are out of holding now.

RESOLUTION

PROPOSED RESOLUTION: Report as is.
FINAL RESOLUTION: Bassed on SAP requirements, accept porposed resolution.

SUBMITTED BY:

SHAFFER, H

07/06/2017

ACCEPTED BY:

FITZGERALD, SL

07/06/2017

Case Narrative

July 21, 2017

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F17-050
SDG: GEL426295

July 20, 2017

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 June 24, 2017, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Please see the enclosed SIR for further details on analysis issues..

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 sample:

| Laboratory Identification | Sample Description |
|--------------------------------------|-------------------------------|
| 426295001 | B3BLJ0 |

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: Diesel Range Organics, GC Semivolatile PCB, GC/MS Semivolatile, GC/MS Volatile, 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.

July 21, 2017

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

July 21, 2017

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

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

Initial Calibration

The initial calibration criteria has been evaluated by SW846 8000D and method 8260B/C. All the analytes met the established 8260B/C method criteria. However, analytes did not meet the guidance provided in SW846 8000D. It is the opinion of the laboratory that the data provided is usable for these compounds.

Continuing Calibration Verification Requirements

The calibration verification standard requirements were not all met for samples. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported. W3VM170710-10A for Acetone (-26.28), 2-Butanone (-29.73), and 2-Hexanone (-27.02) W3VM170711-02 for Acetone (30.39)

GC/MS Semivolatile

Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry

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.

Quality Control (QC) Information

Surrogate Recoveries

Samples (See Below) did not meet surrogate recovery acceptance criteria. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

| Sample | Analyte | Value |
|------------------|------------------|----------------|
| 1203821143 (MB) | 2-Fluorobiphenyl | 67* (70%-130%) |
| | 2-Fluorophenol | 38* (70%-130%) |
| | Nitrobenzene-d5 | 69* (70%-130%) |
| | Phenol-d5 | 23* (70%-130%) |
| 1203821144 (LCS) | 2-Fluorobiphenyl | 68* (70%-130%) |
| | 2-Fluorophenol | 37* (70%-130%) |

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| | | |
|-----------------------------------|----------------------|----------------|
| | Phenol-d5 | 24* (70%-130%) |
| 1203821147 (Non SDG 426288001MS) | 2-Fluorophenol | 46* (70%-130%) |
| | Phenol-d5 | 35* (70%-130%) |
| 1203821148 (Non SDG 426288001MSD) | 2-Fluorophenol | 46* (70%-130%) |
| | Phenol-d5 | 36* (70%-130%) |
| 426295001 (B3BLJ0) | 2,4,6-Tribromophenol | 63* (70%-130%) |
| | 2-Fluorobiphenyl | 58* (70%-130%) |
| | 2-Fluorophenol | 28* (70%-130%) |
| | Nitrobenzene-d5 | 58* (70%-130%) |
| | Phenol-d5 | 18* (70%-130%) |

Diesel Range Organics

Analysis of Diesel Range Organics by Flame Ionization Detector

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

Continuing Calibration Verification (CCV) Requirements

The calibration verification standard (ICV or CCV) did not meet acceptance criteria. The ICV failed to meet the acceptance criteria with positive bias. However, this non-compliance had no adverse effects on the data as Kerosene was not detected above the PQL sample 426295001 (B3BLJ0).

Quality Control (QC) Information

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS (See Below) did not meet CPRC's requested limits (70-130%), but recovered within the lab's statistically derived limits.

| Sample | Analyte | Value |
|-------------------|----------------|----------------|
| 1203820659 (LCS) | Kerosene | 55* (70%-130%) |
| 1203820660 (LCSD) | Kerosene | 54* (70%-130%) |

GC Semivolatile PCB

Analysis of Polychlorinated Biphenyls by ECD

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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria for the target Aroclors. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Surrogate Recoveries

Samples (See Below) did not meet the client require surrogate recovery acceptance criteria, but met the laboratory acceptance criteria.

| Sample | Analyte | Value |
|-----------------------------------|---------|----------------|
| 1203827653 (MB) | 4cmx | 68* (70%-130%) |
| 1203827654 (LCS) | 4cmx | 64* (70%-130%) |
| | 4cmx | 65* (70%-130%) |
| 1203827659 (Non SDG 425603014MS) | 4cmx | 69* (70%-130%) |
| 1203827660 (Non SDG 425603014MSD) | 4cmx | 67* (70%-130%) |
| | 4cmx | 68* (70%-130%) |

Technical Information

Preparation/Analytical Method Verification

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences.

Miscellaneous Information

Manual integrations

Samples 1203827654 (LCS), 1203827659 (Non SDG 425603014MS) and 1203827660 (Non SDG 425603014MSD) required manual integration to correctly position the baseline as set in the calibration standard injections and to properly identify one or more peaks.

Additional Comments

The lower results from either column have been chosen and reported in the data package for the client samples, MB and LCS. The data reported for the MS/MSD are from the same analytical column as the parent sample.

Metals

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,

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continuing calibration, instrument controls and process controls where applicable.

Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

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

Cyanide, Total

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

Sample Dilutions

The following samples 1203818396 (Non SDG 426170001DUP) and 1203818398 (Non SDG 426170001MS) were diluted because target analyte concentrations exceeded the calibration range.

Ammonia Nitrogen

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.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB 1203816312 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Technical Information

Sample Re-analysis

Samples 1203816312 (MB) and 1203816313 (LCS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

Radiochemistry

PUISO_PRECIP_AEA:COMMON

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.

Quality Control (QC) Information

QC Information

Refer to Miscellaneous Information section.

Miscellaneous Information

AMCMISO_EIE_PRECIP_AEA: COMMON

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.

UIISO_IE_PRECIP_AEA:COMMON

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.

NP237_IE_PRECIP_AEA: COMMON

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.

NI63_LSC:COMMON

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.

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 | | F17-050-002 | PAGE 2 OF 2 |
| COLLECTOR KATHY TURNER CHPRC | COMPANY CONTACT LYNCH, SA | TELEPHONE NO. 373-5586 | PROJECT COORDINATOR FITZGERALD, SL | PRICE CODE 7H | DATA TURNAROUND 30 Days / 30 Days |
| SAMPLING LOCATION C9497, DOWN HOLE WATER (GLACIER) | PROJECT DESIGNATION Well Drilling in 200-DV-1 - Water | | SAF NO. F17-050 | AIR QUALITY <input type="checkbox"/> | |
| ICE CHEST NO. 605-398 | FIELD LOGBOOK NO. HNF-N-507-28-16 | ACTUAL SAMPLE DEPTH N/A | COA 302632 | METHOD OF SHIPMENT FEDERAL EXPRESS | ORIGINAL |
| SHIPPED TO GEL Laboratories, LLC | OFFSITE PROPERTY NO. 8088 | BILL OF LADING/AIR BILL NO. 7794 | | | 7796 4077 |

SPECIAL INSTRUCTIONS

TRVL-17-171
 (1) 7470_MERCURY_CV: COMMON (AQUEOUS); 6020_METALS_ICPMS: COMMON {Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Selenium}; 6020_METALS_ICPMS: COMMON (Add-on) {Antimony, Arsenic, Manganese, Nickel, Silver, Uranium};
 (2) 8270_SVOA_GCMS: COMMON (Add-on) {Tributyl phosphate};
 (3) 8082_PCB_GC: COMMON; 8082_PCB_GC: COMMON (Add-on);
 (4) AMCMISO_IE_PRECIP_AEA: COMMON {Americium-241}; PUISO_IE_PRECIP_AEA: COMMON {Plutonium-238; Plutonium-239/240}; UJISO_IE_PRECIP_AEA: COMMON {Uranium-233/234, Uranium-235, Uranium-238}; NP237_IE_PRECIP_AEA: COMMON {Neptunium-237};

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SAMPLE RECEIPT & REVIEW FORM

| | | |
|--------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Client: CPRC | | SDG/AR/COC/Work Order: 426295 |
| Received By: STACY BOONE | | Date Received: JUNE 24, 2017 |
| Carrier and Tracking Number | | Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other 7794 7796 4478 → 10C 7794 7796 4077 → 10C 7794 8060 3670 → 10C 7794 8389 9340 → 10C |
| 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? | <input type="checkbox"/> | Hazard Class Shipped: _____ UN#: _____ |
| COC/Samples marked or classified as radioactive? | <input type="checkbox"/> | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <input checked="" type="checkbox"/> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3 |
| Is package, COC, and/or Samples marked HAZ? | <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"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Chain of custody documentation included with shipment? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Preservation Method: Wet Ice Ice Packs Dry Ice None Other *all temperatures are recorded in Celsius: _____ TEMP: _____ |
| 4 Daily check performed and passed on 1k temperature gun? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Temperature Device Serial #: 103-17 Secondary Temperature Device Serial # (If Applicable): _____ |
| 5 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 6 Samples requiring chemical preservation at proper pH? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's and Containers Affected: If Preservation added, Lot#: _____ |
| 7 Do any samples require Volatile Analysis? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input 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 _____ No <input checked="" type="checkbox"/> 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: _____ |
| 8 Samples received within holding time? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | ID's and tests affected: _____ |
| 9 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's and containers affected: _____ |
| 10 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 11 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Sample ID's affected: _____ |
| 12 Are sample containers identifiable as GEL provided? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 6/26/17 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 associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample | 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 20 July 2017

| State | Certification |
|--------------------------|------------------------------|
| Alaska | UST-0110 |
| 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 | LA170010 |
| Maryland | 270 |
| Massachusetts | M-SC012 |
| Michigan | 9976 |
| Mississippi | SC00012 |
| Nebraska | NE-OS-26-13 |
| Nevada | SC000122017-1 |
| 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 |
| S.Carolina Radchem | 10120002 |
| South Carolina Chemistry | 10120001 |
| Tennessee | TN 02934 |
| Texas NELAP | T104704235-17-12 |
| Utah NELAP | SC000122017-22 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

Volatile Analysis

Case Narrative

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GC/MS Volatile

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL426295

Work Order #: 426295

Product: Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW846 8260C

Analytical Procedure: GL-OA-E-038 REV# 26

Analytical Batch: 1680264

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|----------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203825795 | Method Blank (MB) |
| 1203825796 | Laboratory Control Sample (LCS) |
| 1203825797 | 426854001(NonSDG) Post Spike (PS) |
| 1203825798 | 426854001(NonSDG) Post Spike Duplicate (PSD) |
| 1203828975 | Method Blank (MB) |
| 1203828976 | Laboratory Control Sample (LCS) |

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

Data Summary:

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.

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.

July 21, 2017

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: GEL426295 GEL Work Order: 426295

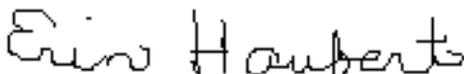
The Qualifiers in this report are defined as follows:

- T Spike and/or spike duplicate 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.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

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: Erin Haubert

Date: 21 JUL 2017

Title: Data Validator

Sample Data Summary

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Volatile

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Certificate of Analysis
Sample Summary

| | | |
|-----------------------------|----------------------------------|----------------------|
| SDG Number: GEL426295 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| Lab Sample ID: 426295001 | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Client: CPRC001 | Project: CPRC0F17050 |
| Batch ID: 1680264 | Method: SW846 8260C | SOP Ref: GL-OA-E-038 |
| Run Date: 07/06/2017 16:06 | Inst: VOA3.I | Dilution: 1 |
| Prep Date: 07/06/2017 16:06 | Analyst: JP1 | Purge Vol: 5 mL |
| Data File: 070617V3\3K407.D | Column: DB-624 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ | RDL |
|----------|----------------------|-----------|--------|-------|---------|---------|------|
| 108-10-1 | 4-Methyl-2-pentanone | U | 3.00 | ug/L | 3.00 | 10.0 | 10.0 |

Quality Control Summary

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 21, 2017

Page 1 of 3

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|-------------------------|---------|--------|------|------|-------|------|------|------------|-------|----------|-------|
| Volatile-GC/MS | | | | | | | | | | | |
| Batch | 1680264 | | | | | | | | | | |
| QC1203825796 | LCS | | | | | | | | | | |
| 4-Methyl-2-pentanone | 250 | | | 233 | ug/L | | 93 | (70%-130%) | JP1 | 07/06/17 | 14:03 |
| **1,2-Dichloroethane-d4 | 50.0 | | | 43.9 | ug/L | | 88 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | | 60.7 | ug/L | | 121 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | | 43.7 | ug/L | | 87 | (70%-130%) | | | |
| QC1203828976 | LCS | | | | | | | | | | |
| 4-Methyl-2-pentanone | 250 | | | 232 | ug/L | | 93 | (70%-130%) | VXY1 | 07/11/17 | 12:27 |
| **1,2-Dichloroethane-d4 | 50.0 | | | 47.0 | ug/L | | 94 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | | 55.0 | ug/L | | 110 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | | 48.5 | ug/L | | 97 | (70%-130%) | | | |
| QC1203825795 | MB | | | | | | | | | | |
| 4-Methyl-2-pentanone | | | U | 3.00 | ug/L | | | | JP1 | 07/06/17 | 15:35 |
| **1,2-Dichloroethane-d4 | 50.0 | | | 46.7 | ug/L | | 93 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | | 52.7 | ug/L | | 105 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | | 44.3 | ug/L | | 89 | (70%-130%) | | | |

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|-------------------------|---------------|--------|------|------|-------|------|------|------------|-------|----------|-------|
| Volatile-GC/MS | | | | | | | | | | | |
| Batch | 1680264 | | | | | | | | | | |
| QC1203828975 | MB | | | | | | | | | | |
| 4-Methyl-2-pentanone | | | U | 3.00 | ug/L | | | | VXY1 | 07/11/17 | 14:30 |
| **1,2-Dichloroethane-d4 | 50.0 | | | 51.6 | ug/L | | 103 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | | 48.0 | ug/L | | 96 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | | 51.1 | ug/L | | 102 | (70%-130%) | | | |
| QC1203825797 | 426854001 PS | | | | | | | | | | |
| 4-Methyl-2-pentanone | 250 | U | 0.00 | 215 | ug/L | | 86 | (70%-130%) | | 07/11/17 | 22:42 |
| **1,2-Dichloroethane-d4 | 50.0 | | 45.9 | 43.1 | ug/L | | 86 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | 46.5 | 48.9 | ug/L | | 98 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | 51.3 | 47.3 | ug/L | | 95 | (70%-130%) | | | |
| QC1203825798 | 426854001 PSD | | | | | | | | | | |
| 4-Methyl-2-pentanone | 250 | U | 0.00 | 210 | ug/L | 2 | 84 | (0%-20%) | | 07/11/17 | 23:13 |
| **1,2-Dichloroethane-d4 | 50.0 | | 45.9 | 42.6 | ug/L | | 85 | (70%-130%) | | | |
| **Bromofluorobenzene | 50.0 | | 46.5 | 47.0 | ug/L | | 94 | (70%-130%) | | | |
| **Toluene-d8 | 50.0 | | 51.3 | 45.4 | ug/L | | 91 | (70%-130%) | | | |

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|----|-------|------|------|-------|-------|------|------|
| D | Results are reported from a diluted aliquot of sample. | | | | | | | | | | |
| E | Concentration exceeds the calibration range of the instrument | | | | | | | | | | |
| 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 | | | | | | | | | | |
| N | Spike Sample recovery is outside control limits. | | | | | | | | | | |
| P | Aroclor target analyte with greater than 25% difference between column analyses. | | | | | | | | | | |
| T | Spike and/or spike duplicate 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 | | | | | | | | | | |
| o | Analyte failed to recover within LCS limits (Organics only) | | | | | | | | | | |

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.

July 21, 2017

Surrogate Recovery Report

SDG Number: GEL426295

Matrix Type: LIQUID

| Sample ID | Client ID | DCED4 %REC | TOL %REC | BFB %REC |
|------------|-----------------------|---------------|-------------|-------------|
| 1203825796 | LCS for batch 1680264 | 88 | 87 | 121 |
| 1203825795 | MB for batch 1680264 | 93 | 89 | 105 |
| 426295001 | B3BLJ0 | 94 | 93 | 106 |
| 1203828976 | LCS for batch 1680264 | 94 | 97 | 110 |
| 1203828975 | MB for batch 1680264 | 103 | 102 | 96 |
| 1203825797 | B39RF7PS | 86 | 95 | 98 |
| 1203825798 | B39RF7PSD | 85 | 91 | 94 |

Surrogate**Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4 (70%-130%)
TOL = Toluene-d8 (70%-130%)
BFB = Bromofluorobenzene (70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Semi-Volatile Analysis

Case Narrative

July 21, 2017

GC/MS Semivolatile
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

Product: Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry
Analytical Method: SW846 3510C/8270D
Analytical Procedure: GL-OA-E-009 REV# 39
Analytical Batch: 1678170

Preparation Method: SW846 3510C
Preparation Procedure: GL-OA-E-013 REV# 31
Preparation Batch: 1678169

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|-----------------------|------------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203821143 | Method Blank (MB) |
| 1203821144 | Laboratory Control Sample (LCS) |
| 1203821147 | 426288001(NonSDG) Matrix Spike (MS) |
| 1203821148 | 426288001(NonSDG) 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.

Quality Control (QC) Information

Surrogate Recoveries

Samples (See Below) did not meet surrogate recovery acceptance criteria. The client established the limits of 70%-130%. Failures are expected. The data were reported per client request.

| Sample | Analyte | Value |
|----------------------------------|------------------|----------------|
| 1203821143 (MB) | 2-Fluorobiphenyl | 67* (70%-130%) |
| | 2-Fluorophenol | 38* (70%-130%) |
| | Nitrobenzene-d5 | 69* (70%-130%) |
| | Phenol-d5 | 23* (70%-130%) |
| 1203821144 (LCS) | 2-Fluorobiphenyl | 68* (70%-130%) |
| | 2-Fluorophenol | 37* (70%-130%) |
| | Phenol-d5 | 24* (70%-130%) |
| 1203821147 (Non SDG 426288001MS) | 2-Fluorophenol | 46* (70%-130%) |
| | Phenol-d5 | 35* (70%-130%) |

July 21, 2017

| | | |
|-----------------------------------|----------------------|----------------|
| 1203821148 (Non SDG 426288001MSD) | 2-Fluorophenol | 46* (70%-130%) |
| | Phenol-d5 | 36* (70%-130%) |
| 426295001 (B3BLJ0) | 2,4,6-Tribromophenol | 63* (70%-130%) |
| | 2-Fluorobiphenyl | 58* (70%-130%) |
| | 2-Fluorophenol | 28* (70%-130%) |
| | Nitrobenzene-d5 | 58* (70%-130%) |
| | Phenol-d5 | 18* (70%-130%) |

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.

July 21, 2017

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: GEL426295 GEL Work Order: 426295

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.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

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: **Barbara Bailey**

Date: **20 JUL 2017**

Title: **Data Validator**

Sample Data Summary

July 21, 2017

Semi-Volatile

Page 1 of 1

**Certificate of Analysis
Sample Summary**

| | | |
|---------------------------------------|-----------------------------------------|-----------------------------|
| SDG Number: GEL426295 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| Lab Sample ID: 426295001 | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Client: CPRC001 | Project: CPRC0F17050 |
| Batch ID: 1678170 | Method: SW846 3510C/8270D | SOP Ref: GL-OA-E-009 |
| Run Date: 06/29/2017 17:44 | Inst: MSD3.I | Dilution: 1 |
| Prep Date: 06/29/2017 05:30 | Analyst: JLD1 | Inj. Vol: 1 uL |
| Data File: s062917.B\s3f2918.D | Aliquot: 1000 mL | Final Volume: 1 mL |
| | Column: DB-5ms | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|----------|-------------------|-----------|--------|-------|---------|---------|
| 126-73-8 | Tributylphosphate | U | 3.00 | ug/L | 3.00 | 10.0 |

Quality Control Summary

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 30, 2017

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------------------------|---------|--------|------|------|-------|------|------|------------|-------|----------|-------|
| Semi-Volatile-GC/MS | | | | | | | | | | | |
| Batch | 1678170 | | | | | | | | | | |
| QC1203821144 | LCS | | | | | | | | | | |
| Tributylphosphate | 50.0 | | | 40.5 | ug/L | | 81 | (70%-130%) | JLD1 | 06/29/17 | 12:19 |
| **2,4,6-Tribromophenol | 100 | | | 78.5 | ug/L | | 78 | (70%-130%) | | | |
| **2-Fluorobiphenyl | 50.0 | | | 34.0 | ug/L | | 68 * | (70%-130%) | | | |
| **2-Fluorophenol | 100 | | | 36.9 | ug/L | | 37 * | (70%-130%) | | | |
| **Nitrobenzene-d5 | 50.0 | | | 34.8 | ug/L | | 70 | (70%-130%) | | | |
| **Phenol-d5 | 100 | | | 24.4 | ug/L | | 24 * | (70%-130%) | | | |
| **p-Terphenyl-d14 | 50.0 | | | 35.4 | ug/L | | 71 | (70%-130%) | | | |
| QC1203821143 MB | | | | | | | | | | | |
| Tributylphosphate | | | U | 3.00 | ug/L | | | | | 06/29/17 | 11:50 |
| **2,4,6-Tribromophenol | 100 | | | 70.8 | ug/L | | 71 | (70%-130%) | | | |
| **2-Fluorobiphenyl | 50.0 | | | 33.3 | ug/L | | 67 * | (70%-130%) | | | |
| **2-Fluorophenol | 100 | | | 37.8 | ug/L | | 38 * | (70%-130%) | | | |
| **Nitrobenzene-d5 | 50.0 | | | 34.4 | ug/L | | 69 * | (70%-130%) | | | |
| **Phenol-d5 | 100 | | | 23.1 | ug/L | | 23 * | (70%-130%) | | | |

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------------------------|---------|--------|------|------|-------|------|------|------------|-------|----------|-------|
| Semi-Volatile-GC/MS | | | | | | | | | | | |
| Batch | 1678170 | | | | | | | | | | |
| **p-Terphenyl-d14 | 50.0 | | | 38.9 | ug/L | | 78 | (70%-130%) | JLD1 | 06/29/17 | 11:50 |
| QC1203821147 426288001 MS | | | | | | | | | | | |
| Tributylphosphate | 100 | U | 3.00 | 87.9 | ug/L | | 88 | (44%-121%) | | 06/29/17 | 16:45 |
| **2,4,6-Tribromophenol | 200 | | 79.8 | 162 | ug/L | | 81 | (70%-130%) | | | |
| **2-Fluorobiphenyl | 100 | | 36.8 | 74.5 | ug/L | | 75 | (70%-130%) | | | |
| **2-Fluorophenol | 200 | | 34.2 | 92.5 | ug/L | | 46* | (70%-130%) | | | |
| **Nitrobenzene-d5 | 100 | | 35.8 | 73.1 | ug/L | | 73 | (70%-130%) | | | |
| **Phenol-d5 | 200 | | 21.3 | 70.8 | ug/L | | 35* | (70%-130%) | | | |
| **p-Terphenyl-d14 | 100 | | 48.6 | 86.5 | ug/L | | 87 | (70%-130%) | | | |
| QC1203821148 426288001 MSD | | | | | | | | | | | |
| Tributylphosphate | 100 | U | 3.00 | 90.5 | ug/L | 3 | 91 | (0%-20%) | | 06/29/17 | 17:15 |
| **2,4,6-Tribromophenol | 200 | | 79.8 | 170 | ug/L | | 85 | (70%-130%) | | | |
| **2-Fluorobiphenyl | 100 | | 36.8 | 74.5 | ug/L | | 75 | (70%-130%) | | | |
| **2-Fluorophenol | 200 | | 34.2 | 92.9 | ug/L | | 46* | (70%-130%) | | | |
| **Nitrobenzene-d5 | 100 | | 35.8 | 74.5 | ug/L | | 74 | (70%-130%) | | | |
| **Phenol-d5 | 200 | | 21.3 | 71.6 | ug/L | | 36* | (70%-130%) | | | |

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Workorder: 426295

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| Parname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------|-----|---------|------|------|-------|------|------|------------|-------|----------|-------|
| Semi-Volatile-GC/MS | | | | | | | | | | | |
| Batch | | 1678170 | | | | | | | | | |
| **p-Terphenyl-d14 | 100 | 48.6 | | 83.1 | ug/L | | 83 | (70%-130%) | JLD1 | 06/29/17 | 17:15 |

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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
- o Analyte failed to recover within LCS limits (Organics only)

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.

July 21, 2017
Semi-Volatile

Surrogate Recovery Report

SDG Number: GEL426295

Matrix Type: LIQUID

| Sample ID | Client ID | 2FP %REC | PHL %REC | NBZ %REC | FBP %REC | TBP %REC | TPH %REC |
|------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 1203821143 | MB for batch 1678169 | 38 * | 23 * | 69 * | 67 * | 71 | 78 |
| 1203821144 | LCS for batch 1678169 | 37 * | 24 * | 70 | 68 * | 78 | 71 |
| 1203821147 | B39T11MS | 46 * | 35 * | 73 | 75 | 81 | 87 |
| 1203821148 | B39T11MSD | 46 * | 36 * | 74 | 75 | 85 | 83 |
| 426295001 | B3BLJ0 | 28 * | 18 * | 58 * | 58 * | 63 * | 75 |

Surrogate

Acceptance Limits

| | | |
|-----|------------------------|------------|
| 2FP | = 2-Fluorophenol | (70%-130%) |
| PHL | = Phenol-d5 | (70%-130%) |
| NBZ | = Nitrobenzene-d5 | (70%-130%) |
| FBP | = 2-Fluorobiphenyl | (70%-130%) |
| TBP | = 2,4,6-Tribromophenol | (70%-130%) |
| TPH | = p-Terphenyl-d14 | (70%-130%) |

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

FID Diesel Range Organics Analysis

Case Narrative

July 21, 2017

Diesel Range Organics
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

Product: Analysis of Diesel Range Organics by Flame Ionization Detector

Analytical Method: NWTPH-Dx

Analytical Procedure: GL-OA-E-003 REV# 29

Analytical Batch: 1677947

Preparation Method: SW846 3535A

Preparation Procedure: GL-OA-E-013 REV# 31

Preparation Batch: 1677946

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|-----------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203820655 | Method Blank (MB) |
| 1203820659 | Laboratory Control Sample (LCS) |
| 1203820660 | Laboratory Control Sample Duplicate (LCSD) |

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

Continuing Calibration Verification (CCV) Requirements

The calibration verification standard (ICV or CCV) did not meet acceptance criteria. The ICV failed to meet the acceptance criteria with positive bias. However, this non-compliance had no adverse effects on the data as Kerosene was not detected above the PQL sample 426295001 (B3BLJ0).

Quality Control (QC) Information

Laboratory Control Sample (LCS/LCSD) Recovery

The LCS (See Below) did not meet CPRC's requested limits (70-130%), but recovered within the lab's statistically derived limits.

| Sample | Analyte | Value |
|-------------------|----------|----------------|
| 1203820659 (LCS) | Kerosene | 55* (70%-130%) |
| 1203820660 (LCSD) | Kerosene | 54* (70%-130%) |

July 21, 2017

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.

July 21, 2017

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: GEL426295 GEL Work Order: 426295

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.

DL Indicates that sample is diluted.

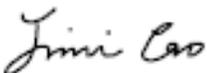
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

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: Jimin Cao

Date: 20 JUL 2017

Title: Data Validator

Sample Data Summary

July 21, 2017
FID Diesel Range Organics

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Certificate of Analysis

Sample Summary

| | | | | | |
|----------------|---------------------------|-----------------|------------------|---------------|-------------|
| SDG Number: | GEL426295 | Date Collected: | 06/22/2017 11:54 | Matrix: | WATER |
| Lab Sample ID: | 426295001 | Date Received: | 06/24/2017 08:45 | Project: | CPRC0F17050 |
| Client ID: | B3BLJ0 | Client: | CPRC001 | SOP Ref: | GL-OA-E-003 |
| Batch ID: | 1677947 | Method: | NWTPH-Dx | Dilution: | 1 |
| Run Date: | 07/06/2017 07:39 | Inst: | FID7.I | Inj. Vol: | 1 uL |
| Prep Date: | 06/28/2017 09:25 | Analyst: | LXA1 | Final Volume: | 1 mL |
| Data File: | 070517-KERO-MO\F7Fg0533.D | Aliquot: | 930 mL | | |
| | | Column: | DB-5ms | | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ |
|-----------|----------|-----------|--------|-------|---------|---------|
| 8008-20-6 | Kerosene | U | 35.8 | ug/L | 35.8 | 215 |

Quality Control Summary

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 20, 2017

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CH2M Hill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

Table with columns: Parmname, NOM, Sample, Qual, QC, Units, RPD%, REC%, Range, Anlst, Date, Time. Rows include Diesel Range Organics, Kerosene, and **o-Terphenyl for various sample IDs (QC1203820659, QC1203820660, QC1203820655).

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
B The analyte was detected in both the associated QC blank and in the sample.
C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of sample.
E Concentration exceeds the calibration range of the instrument
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
N Spike Sample recovery is outside control limits.
P Aroclor target analyte with greater than 25% difference between column analyses.
T Spike and/or spike duplicate 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

July 21, 2017

GEL LABORATORIES LLC

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QC Summary

Workorder: 426295

Page 2 of 2

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|

- o Analyte failed to recover within LCS limits (Organics only)

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.

July 21, 2017
FID Diesel Range Organics

Surrogate Recovery Report

SDG Number: GEL426295

Matrix Type: LIQUID

| Sample ID | Client ID | OTP %REC |
|------------|------------------------|-------------|
| 1203820655 | MB for batch 1677946 | 68 |
| 1203820659 | LCS for batch 1677946 | 82 |
| 1203820660 | LCSD for batch 1677946 | 73 |
| 426295001 | B3BLJ0 | 79 |

Surrogate

OTP = o-Terphenyl

Acceptance Limits

(60%-140%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

PCB Analysis

Case Narrative

July 21, 2017

GC Semivolatile PCB
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

Product: Analysis of Polychlorinated Biphenyls by ECD

Analytical Method: 8082_PCB_GC

Analytical Procedure: GL-OA-E-040 REV# 24

Analytical Batch: 1680992

Preparation Method: SW846 3535A

Preparation Procedure: GL-OA-E-037 REV# 7

Preparation Batch: 1680990

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|-----------------------|------------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203827653 | Method Blank (MB) |
| 1203827654 | Laboratory Control Sample (LCS) |
| 1203827659 | 425603014(NonSDG) Matrix Spike (MS) |
| 1203827660 | 425603014(NonSDG) 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

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standards (ICV or CCV) met the acceptance criteria for the target Aroclors. All analytes were within the established retention time windows for this method.

Quality Control (QC) Information

Surrogate Recoveries

Samples (See Below) did not meet the client require surrogate recovery acceptance criteria, but met the laboratory acceptance criteria.

| Sample | Analyte | Value |
|----------------------------------|---------|----------------|
| 1203827653 (MB) | 4cmx | 68* (70%-130%) |
| 1203827654 (LCS) | 4cmx | 64* (70%-130%) |
| | 4cmx | 65* (70%-130%) |
| 1203827659 (Non SDG 425603014MS) | 4cmx | 69* (70%-130%) |

July 21, 2017

| | | |
|-----------------------------------|------|----------------|
| 1203827660 (Non SDG 425603014MSD) | 4cmx | 67* (70%-130%) |
| | 4cmx | 68* (70%-130%) |

Technical Information

Preparation/Analytical Method Verification

All samples and QC in this batch were cleaned using alumina in order to remove oil and other high molecular weight interferences. All reported analyte detections in client and quality control samples were within the established retention time windows. Reported analyte concentrations were confirmed on dissimilar columns.

Miscellaneous Information

Manual integrations

Samples 1203827654 (LCS), 1203827659 (Non SDG 425603014MS) and 1203827660 (Non SDG 425603014MSD) required manual integration to correctly position the baseline as set in the calibration standard injections and to properly identify one or more peaks.

Additional Comments

The lower results from either column have been chosen and reported in the data package for the client samples, MB and LCS. The data reported for the MS/MSD are from the same analytical column as the parent sample.

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.

July 21, 2017

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL426295 GEL Work Order: 426295

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.

DL Indicates that sample is diluted.

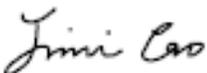
RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

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: Jimin Cao

Date: 12 JUL 2017

Title: Data Validator

Sample Data Summary

July 21, 2017
PCB

**Certificate of Analysis
Sample Summary**

| | | |
|--------------------------------------|-----------------------------------------|-----------------------------|
| SDG Number: GEL426295 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| Lab Sample ID: 426295001 | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Client: CPRC001 | Project: CPRC0F17050 |
| Batch ID: 1680992 | Method: 8082_PCB_GC | SOP Ref: GL-OA-E-040 |
| Run Date: 07/11/2017 15:52 | Inst: ECD9A.I | Dilution: 1 |
| Prep Date: 07/11/2017 04:38 | Analyst: YS1 | Inj. Vol: 1 uL |
| Data File: 071117.S\E9g1157.D | Aliquot: 950 mL | Final Volume: 1 mL |
| 071117.S\E9g1157.D | Column: 1 RTX-CLPEST 1 | |
| | 2 RTX-CLPEST 2 | |

| CAS No. | Parmname | Qualifier | Result | Units | MDL/LOD | PQL/LOQ | Column |
|------------|--------------|-----------|--------|-------|---------|---------|--------|
| 12674-11-2 | Aroclor-1016 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 11104-28-2 | Aroclor-1221 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 11141-16-5 | Aroclor-1232 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 53469-21-9 | Aroclor-1242 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 12672-29-6 | Aroclor-1248 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 11097-69-1 | Aroclor-1254 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 11096-82-5 | Aroclor-1260 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 37324-23-5 | Aroclor-1262 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |
| 11100-14-4 | Aroclor-1268 | U | 0.0351 | ug/L | 0.0351 | 0.105 | 1 |

Quality Control Summary

July 21, 2017
PCB
Surrogate Recovery Report

SDG Number: GEL426295

Matrix Type: LIQUID

| Sample ID | Client ID | 4CMX 1 %REC # | 4CMX 2 %REC # | DCB 1 %REC # | DCB 2 %REC # |
|------------|-----------------------|------------------|------------------|-----------------|-----------------|
| 1203827654 | LCS for batch 1680990 | 65 * | 64 * | 96 | 89 |
| 1203827653 | MB for batch 1680990 | 71 | 68 * | 98 | 91 |
| 1203827659 | B3B3F7MS | 72 | 69 * | 106 | 99 |
| 1203827660 | B3B3F7MSD | 68 * | 67 * | 99 | 93 |
| 426295001 | B3BLJ0 | 78 | 74 | 97 | 87 |

Surrogate

4CMX = 4cmx

DCB = Decachlorobiphenyl

Acceptance Limits

(70%-130%)

(70%-130%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

July 21, 2017

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QC Summary

Report Date: July 12, 2017

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|---------|--------|------|--------|-------|------|------|------------|-------|----------|-------|
| Semi-Volatiles-PCB | | | | | | | | | | | |
| Batch | 1680992 | | | | | | | | | | |
| QC1203827654 | LCS | | | | | | | | | | |
| Aroclor-1016 | 1.00 | | | 0.743 | ug/L | | 74 | (70%-130%) | YS1 | 07/11/17 | 12:42 |
| Aroclor-1260 | 1.00 | | | 0.835 | ug/L | | 83 | (70%-130%) | | | |
| **4cmx | 0.200 | | | 0.128 | ug/L | | 64 * | (70%-130%) | | | |
| **Decachlorobiphenyl | 0.200 | | | 0.179 | ug/L | | 89 | (70%-130%) | | | |
| QC1203827653 | MB | | | | | | | | | | |
| Aroclor-1016 | | | U | 0.0333 | ug/L | | | | | 07/11/17 | 12:54 |
| Aroclor-1221 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1232 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1242 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1248 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1254 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1260 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1262 | | | U | 0.0333 | ug/L | | | | | | |
| Aroclor-1268 | | | U | 0.0333 | ug/L | | | | | | |

July 21, 2017

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QC Summary

Workorder: 426295

Page 2 of 3

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|-----------|--------|--------|-------|-------|------|------|------------|-------|----------|-------|
| Semi-Volatiles-PCB | | | | | | | | | | | |
| Batch | 1680992 | | | | | | | | | | |
| **4cmx | 0.200 | | | 0.137 | ug/L | | 68 * | (70%-130%) | YS1 | 07/11/17 | 12:54 |
| **Decachlorobiphenyl | 0.200 | | | 0.182 | ug/L | | 91 | (70%-130%) | | | |
| QC1203827659 | 425603014 | MS | | | | | | | | | |
| Aroclor-1016 | 1.00 | U | 0.0333 | 0.717 | ug/L | | 72 | (26%-110%) | | 07/11/17 | 13:41 |
| Aroclor-1260 | 1.00 | U | 0.0333 | 0.857 | ug/L | | 86 | (30%-127%) | | | |
| **4cmx | 0.200 | | 0.152 | 0.138 | ug/L | | 69 * | (70%-130%) | | | |
| **Decachlorobiphenyl | 0.200 | | 0.217 | 0.197 | ug/L | | 99 | (70%-130%) | | | |
| QC1203827660 | 425603014 | MSD | | | | | | | | | |
| Aroclor-1016 | 1.00 | U | 0.0333 | 0.699 | ug/L | 3 | 70 | (0%-15%) | | 07/11/17 | 13:53 |
| Aroclor-1260 | 1.00 | U | 0.0333 | 0.831 | ug/L | 3 | 83 | (0%-15%) | | | |
| **4cmx | 0.200 | | 0.152 | 0.133 | ug/L | | 67 * | (70%-130%) | | | |
| **Decachlorobiphenyl | 0.200 | | 0.217 | 0.186 | ug/L | | 93 | (70%-130%) | | | |

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.

July 21, 2017

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QC Summary

Workorder: 426295

Page 3 of 3

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|----------------------------------------------------------------------------------------------------------------------------------|--------|------|----|-------|------|------|-------|-------|------|------|
| T | Spike and/or spike duplicate 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 | | | | | | | | | | |
| o | Analyte failed to recover within LCS limits (Organics only) | | | | | | | | | | |

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.

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

Product: Determination of Metals by ICP-MS

Analytical Method: SW846 3005A/6020B

Analytical Procedure: GL-MA-E-014 REV# 30

Analytical Batch: 1677157

Product: Mercury Analysis Using the Perkin Elmer Automated Mercury Analyzer

Analytical Method: 7470_HG_CVAA

Analytical Procedure: GL-MA-E-010 REV# 34

Analytical Batch: 1678324

Preparation Method: SW846 3005A

Preparation Procedure: GL-MA-E-006 REV# 13

Preparation Batch: 1677156

Preparation Method: SW846 7470A Prep

Preparation Procedure: GL-MA-E-010 REV# 34

Preparation Batch: 1678323

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203818813 | Method Blank (MB)ICP-MS |
| 1203818814 | Laboratory Control Sample (LCS) |
| 1203818817 | 426288003(NonSDGL) Serial Dilution (SD) |
| 1203818815 | 426288003(NonSDGS) Matrix Spike (MS) |
| 1203818816 | 426288003(NonSDGSD) Matrix Spike Duplicate (MSD) |
| 1203821500 | Method Blank (MB)CVAA |
| 1203821501 | Laboratory Control Sample (LCS) |
| 1203821504 | 426295001(B3BLJ0L) Serial Dilution (SD) |
| 1203821502 | 426295001(B3BLJ0D) Sample Duplicate (DUP) |
| 1203821503 | 426295001(B3BLJ0S) Matrix Spike (MS) |

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

July 21, 2017

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.

July 21, 2017

GEL LABORATORIES LLC

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL426295 GEL Work Order: 426295

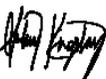
The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- 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).
- 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.

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: 17 JUL 2017

Title: Analyst I

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL426295

CONTRACT: CPRC0F17050

METHOD TYPE: SW846

SAMPLE ID:426295001

BASIS: As Received

DATE COLLECTED 22-JUN-17

CLIENT ID: B3BLJ0

LEVEL: Low

DATE RECEIVED 24-JUN-17

MATRIX: WATER

%SOLIDS: 0

| CAS No. | 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 | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-36-0 | Antimony | 1 | ug/L | U | 1 | 3 | 3 | 1 | MS | BAJ | 07/08/17 04:47 | 170707-2 | 1677157 |
| 7440-38-2 | Arsenic | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-39-3 | Barium | 1.54 | ug/L | B | 0.67 | 2 | 2 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-43-9 | Cadmium | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-47-3 | Chromium | 3 | ug/L | U | 3 | 10 | 10 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-50-8 | Copper | 0.351 | ug/L | B | 0.3 | 1 | 1 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7439-92-1 | Lead | 0.50 | ug/L | U | 0.5 | 2 | 2 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7439-96-5 | Manganese | 1 | ug/L | U | 1 | 5 | 5 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7439-97-6 | Mercury | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | AV | MTM1 | 06/30/17 10:59 | 063017W1-3 | 1678324 |
| 7440-02-0 | Nickel | 0.60 | ug/L | U | 0.6 | 2 | 2 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7782-49-2 | Selenium | 2 | ug/L | U | 2 | 5 | 5 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-22-4 | Silver | 0.30 | ug/L | U | 0.3 | 1 | 1 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |
| 7440-61-1 | Uranium | 0.067 | ug/L | U | 0.067 | 0.2 | 0.2 | 1 | MS | BAJ | 07/07/17 23:06 | 170707-1 | 1677157 |

Prep Information:

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|------------------|------------|------------------|------------------|-------|----------------|-------|----------|---------|
| 1677157 | 1677156 | SW846 3005A | 50 | mL | 50 | mL | 06/26/17 | SXW1 |
| 1678324 | 1678323 | SW846 7470A Prep | 20 | mL | 20 | mL | 06/29/17 | AXS5 |

***Analytical Methods:**

MS SW846 3005A/6020B
AV SW846 7470A

Quality Control Summary

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: July 17, 2017

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|-------------------------|---------|--------|------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1677157 | | | | | | | | | | |
| QC1203818814 | LCS | | | | | | | | | | |
| Aluminum | 2000 | | | 2230 | ug/L | | 112 | (80%-120%) | BAJ | 07/07/17 | 22:31 |
| Antimony | 50.0 | | | 50.0 | ug/L | | 99.9 | (80%-120%) | | 07/08/17 | 04:12 |
| Arsenic | 50.0 | | | 54.2 | ug/L | | 108 | (80%-120%) | | 07/07/17 | 22:31 |
| Barium | 50.0 | | | 51.1 | ug/L | | 102 | (80%-120%) | | | |
| Cadmium | 50.0 | | | 52.7 | ug/L | | 105 | (80%-120%) | | | |
| Chromium | 50.0 | | | 53.0 | ug/L | | 106 | (80%-120%) | | | |
| Copper | 50.0 | | | 52.8 | ug/L | | 106 | (80%-120%) | | | |
| Lead | 50.0 | | | 52.0 | ug/L | | 104 | (80%-120%) | | | |
| Manganese | 50.0 | | | 51.7 | ug/L | | 103 | (80%-120%) | | | |
| Nickel | 50.0 | | | 52.5 | ug/L | | 105 | (80%-120%) | | | |
| Selenium | 50.0 | | | 56.1 | ug/L | | 112 | (80%-120%) | | | |
| Silver | 50.0 | | | 53.6 | ug/L | | 107 | (80%-120%) | | | |
| Uranium | 50.0 | | | 50.5 | ug/L | | 101 | (80%-120%) | | | |

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Workorder: 426295

Page 2 of 6

| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|------|--------|------|-------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch 1677157 | | | | | | | | | | | |
| QC1203818813 MB | | | | | | | | | | | |
| Aluminum | | | U | 19.3 | ug/L | | | | BAJ | 07/07/17 | 22:27 |
| Antimony | | | U | 1.00 | ug/L | | | | | 07/08/17 | 04:08 |
| Arsenic | | | U | 2.00 | ug/L | | | | | 07/07/17 | 22:27 |
| Barium | | | U | 0.670 | ug/L | | | | | | |
| Cadmium | | | U | 0.300 | ug/L | | | | | | |
| Chromium | | | U | 3.00 | ug/L | | | | | | |
| Copper | | | U | 0.300 | ug/L | | | | | | |
| Lead | | | U | 0.500 | ug/L | | | | | | |
| Manganese | | | U | 1.00 | ug/L | | | | | | |
| Nickel | | | U | 0.600 | ug/L | | | | | | |
| Selenium | | | U | 2.00 | ug/L | | | | | | |
| Silver | | | U | 0.300 | ug/L | | | | | | |
| Uranium | | | U | 0.067 | ug/L | | | | | | |
| QC1203818815 426288003 MS | | | | | | | | | | | |
| Aluminum | 2000 | B | 19.7 | 2130 | ug/L | | 105 | (75%-125%) | | 07/07/17 | 22:37 |
| Antimony | 50.0 | U | 1.00 | 50.5 | ug/L | | 100 | (75%-125%) | | 07/08/17 | 04:18 |

July 21, 2017

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QC Summary

Workorder: 426295

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| Parname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|----------------------------|---------|--------|-------|------|-------|--------|------|------------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1677157 | | | | | | | | | | |
| Arsenic | 50.0 | B | 3.30 | 57.1 | ug/L | | 108 | (75%-125%) | BAJ | 07/07/17 | 22:37 |
| Barium | 50.0 | | 40.1 | 89.0 | ug/L | | 97.8 | (75%-125%) | | | |
| Cadmium | 50.0 | U | 0.300 | 52.4 | ug/L | | 105 | (75%-125%) | | | |
| Chromium | 50.0 | | 104 | 148 | ug/L | | 88.6 | (75%-125%) | | | |
| Copper | 50.0 | B | 0.914 | 49.8 | ug/L | | 97.7 | (75%-125%) | | | |
| Lead | 50.0 | U | 0.500 | 49.5 | ug/L | | 99 | (75%-125%) | | | |
| Manganese | 50.0 | B | 4.02 | 52.3 | ug/L | | 96.5 | (75%-125%) | | | |
| Nickel | 50.0 | B | 0.619 | 50.1 | ug/L | | 98.9 | (75%-125%) | | | |
| Selenium | 50.0 | B | 2.65 | 57.1 | ug/L | | 109 | (75%-125%) | | | |
| Silver | 50.0 | U | 0.300 | 51.9 | ug/L | | 104 | (75%-125%) | | | |
| Uranium | 50.0 | | 3.49 | 53.8 | ug/L | | 101 | (75%-125%) | | | |
| QC1203818816 426288003 MSD | | | | | | | | | | | |
| Aluminum | 2000 | B | 19.7 | 2060 | ug/L | 3.13 | 102 | (0%-20%) | | 07/07/17 | 22:40 |
| Antimony | 50.0 | U | 1.00 | 50.5 | ug/L | 0.0851 | 100 | (0%-20%) | | 07/08/17 | 04:21 |
| Arsenic | 50.0 | B | 3.30 | 56.0 | ug/L | 1.95 | 105 | (0%-20%) | | 07/07/17 | 22:40 |
| Barium | 50.0 | | 40.1 | 87.7 | ug/L | 1.56 | 95.1 | (0%-20%) | | | |

July 21, 2017

GEL LABORATORIES LLC

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QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|---------|--------|-------|------|-------|--------|------|----------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1677157 | | | | | | | | | | |
| Cadmium | 50.0 | U | 0.300 | 51.1 | ug/L | 2.39 | 102 | (0%-20%) | BAJ | 07/07/17 | 22:40 |
| Chromium | 50.0 | | 104 | 146 | ug/L | 0.967 | 85.7 | (0%-20%) | | | |
| Copper | 50.0 | B | 0.914 | 49.2 | ug/L | 1.15 | 96.6 | (0%-20%) | | | |
| Lead | 50.0 | U | 0.500 | 49.6 | ug/L | 0.0525 | 99 | (0%-20%) | | | |
| Manganese | 50.0 | B | 4.02 | 51.6 | ug/L | 1.38 | 95.1 | (0%-20%) | | | |
| Nickel | 50.0 | B | 0.619 | 48.6 | ug/L | 3.11 | 95.9 | (0%-20%) | | | |
| Selenium | 50.0 | B | 2.65 | 55.6 | ug/L | 2.53 | 106 | (0%-20%) | | | |
| Silver | 50.0 | U | 0.300 | 50.7 | ug/L | 2.33 | 101 | (0%-20%) | | | |
| Uranium | 50.0 | | 3.49 | 53.1 | ug/L | 1.29 | 99.2 | (0%-20%) | | | |
| QC1203818817 426288003 SDILT | | | | | | | | | | | |
| Aluminum | | B | 19.7 | DU | 96.5 | ug/L | N/A | (0%-20%) | | 07/07/17 | 22:47 |
| Antimony | | U | 0.347 | DU | 5.00 | ug/L | N/A | (0%-20%) | | 07/08/17 | 04:28 |
| Arsenic | | B | 3.30 | DU | 10.0 | ug/L | N/A | (0%-20%) | | 07/07/17 | 22:47 |
| Barium | | | 40.1 | D | 7.78 | ug/L | 3.1 | (0%-20%) | | | |
| Cadmium | | U | 0.006 | DU | 1.50 | ug/L | N/A | (0%-20%) | | | |
| Chromium | | | 104 | D | 21.2 | ug/L | 2.16 | (0%-20%) | | | |

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QC Summary

Workorder: 426295

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| Parname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|--------------------------------|---------|--------|------|-------|-------|--------|------|----------|-------|----------|-------|
| Metals Analysis - ICPMS | | | | | | | | | | | |
| Batch | 1677157 | | | | | | | | | | |
| Copper | B | 0.914 | BD | 0.766 | ug/L | 319 | | (0%-20%) | BAJ | 07/07/17 | 22:47 |
| Lead | U | 0.050 | DU | 2.50 | ug/L | N/A | | (0%-20%) | | | |
| Manganese | B | 4.02 | DU | 5.00 | ug/L | N/A | | (0%-20%) | | | |
| Nickel | B | 0.619 | DU | 3.00 | ug/L | N/A | | (0%-20%) | | | |
| Selenium | B | 2.65 | DU | 10.0 | ug/L | N/A | | (0%-20%) | | | |
| Silver | U | 0.008 | DU | 1.50 | ug/L | N/A | | (0%-20%) | | | |
| Uranium | | 3.49 | D | 0.696 | ug/L | .229 | | (0%-20%) | | | |

Metals Analysis-Mercury

Batch 1678324

| | | | | | | | | | | | |
|--------------|-----------|-------|---|-------|----|-------|------|-----|------------|------|----------------|
| QC1203821502 | 426295001 | DUP | | | | | | | | | |
| Mercury | | | U | 0.067 | U | 0.067 | ug/L | N/A | | MTM1 | 06/30/17 11:00 |
| QC1203821501 | LCS | | | | | | | | | | |
| Mercury | | 2.00 | | | | 2.06 | ug/L | 103 | (80%-120%) | | 06/30/17 10:57 |
| QC1203821500 | MB | | | | | | | | | | |
| Mercury | | | U | 0.067 | | 0.067 | ug/L | | | | 06/30/17 10:55 |
| QC1203821503 | 426295001 | MS | | | | | | | | | |
| Mercury | | 2.00 | U | 0.067 | | 2.05 | ug/L | 102 | (75%-125%) | | 06/30/17 11:02 |
| QC1203821504 | 426295001 | SDILT | | | | | | | | | |
| Mercury | | | U | 0.004 | DU | 0.335 | ug/L | N/A | (0%-10%) | | 06/30/17 11:04 |

Notes:

The Qualifiers in this report are defined as follows:

July 21, 2017

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QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date | Time |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|----|-------|--------|------|-------|-------|------|------|
| * | 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 >= 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

July 21, 2017

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL426295
Work Order #: 426295

Product: Cyanide, Total

Analytical Method: 9012_CYANIDE

Analytical Procedure: GL-GC-E-095 REV# 20

Analytical Batches: 1677002 and 1677001

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203818393 | Method Blank (MB) |
| 1203818394 | Laboratory Control Sample (LCS) |
| 1203818396 | 426170001(NonSDG) Sample Duplicate (DUP) |
| 1203818398 | 426170001(NonSDG) Matrix Spike (MS) |

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

Sample Dilutions

The following samples 1203818396 (Non SDG 426170001DUP) and 1203818398 (Non SDG 426170001MS) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Product: Ammonia Nitrogen

Analytical Method: EPA 350.1

Analytical Procedure: GL-GC-E-106 REV# 9

Analytical Batch: 1676102

Preparation Method: EPA 350.1 Prep

Preparation Procedure: GL-GC-E-072 REV# 17

Preparation Batch: 1676101

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203816312 | Method Blank (MB) |
| 1203816313 | Laboratory Control Sample (LCS) |
| 1203818951 | 426169001(NonSDG) Sample Duplicate (DUP) |
| 1203818952 | 426169001(NonSDG) Matrix Spike (MS) |

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.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB 1203816312 (MB) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Technical Information

Sample Re-analysis

Samples 1203816312 (MB) and 1203816313 (LCS) were re-analyzed due to CCV failure. The reanalysis data with passing instrument QC was reported.

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.

July 21, 2017

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL426295 GEL Work Order: 426295

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).

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.

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: 27 JUN 2017

Title: Analyst I

Sample Data Summary

Certificate of Analysis

Report Date: June 27, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-050

| | |
|-------------------------------|----------------------|
| Client Sample ID: B3BLJ0 | Project: CPRC0F17050 |
| Sample ID: 426295001 | Client ID: CPRC001 |
| Matrix: WATER | |
| Collect Date: 22-JUN-17 11:54 | |
| Receive Date: 24-JUN-17 | |
| Collector: Client | |

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|-------------------------------------|-----------|--------|------|------|-------|------|----|---------|----------|------|---------|--------|
| Flow Injection Analysis | | | | | | | | | | | | |
| 9012_CYANIDE: COMMON "As Received" | | | | | | | | | | | | |
| Cyanide, Total | U | 1.67 | 1.67 | 5.00 | ug/L | 1.00 | 1 | AXH3 | 06/26/17 | 1220 | 1677002 | 1 |
| Nutrient Analysis | | | | | | | | | | | | |
| 350.1_AMMONIA: COMMON "As Received" | | | | | | | | | | | | |
| Nitrogen in Ammonia | U | 17.0 | 17.0 | 50.0 | ug/L | 1.00 | 1 | KLP1 | 06/27/17 | 1321 | 1676102 | 2 |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|--------------------------|---------------------------------|---------|----------|------|------------|
| EPA 350.1 Prep | EPA 350.1 Ammonia Nitrogen Prep | AXH3 | 06/27/17 | 1132 | 1676101 |
| SW846 9010C Distillation | SW846 9010C Prep | AXH3 | 06/26/17 | 1115 | 1677001 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|--------------|------------------|
| 1 | 9012_CYANIDE | |
| 2 | EPA 350.1 | |

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

July 21, 2017

GEL LABORATORIES LLC

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

QC Summary

Report Date: June 27, 2017

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|

Flow Injection Analysis

| | | | | | | | | | | | |
|----------------|-----------|-----|-----|---|------|------|------|----------|------------|----------|-------|
| Batch | 1677002 | | | | | | | | | | |
| QC1203818396 | 426170001 | DUP | | | | | | | | | |
| Cyanide, Total | | D | 635 | D | 730 | ug/L | 13.9 | (0%-20%) | AXH3 | 06/26/17 | 12:22 |
| QC1203818394 | LCS | | | | | | | | | | |
| Cyanide, Total | 50.0 | | | | 53.0 | ug/L | | 106 | (80%-120%) | 06/26/17 | 11:51 |
| QC1203818393 | MB | | | | | | | | | | |
| Cyanide, Total | | | | U | 1.67 | ug/L | | | | 06/26/17 | 11:50 |
| QC1203818398 | 426170001 | MS | | | | | | | | | |
| Cyanide, Total | 100 | D | 635 | D | 755 | ug/L | | N/A | (75%-125%) | 06/26/17 | 12:23 |

Nutrient Analysis

| | | | | | | | | | | | |
|---------------------|-----------|-----|-----|---|------|------|------|----------|------------|----------|-------|
| Batch | 1676102 | | | | | | | | | | |
| QC1203818951 | 426169001 | DUP | | | | | | | | | |
| Nitrogen in Ammonia | | | 786 | | 771 | ug/L | 1.93 | (0%-20%) | KLP1 | 06/27/17 | 13:18 |
| QC1203816313 | LCS | | | | | | | | | | |
| Nitrogen in Ammonia | 1000 | | | | 1070 | ug/L | | 107 | (80%-120%) | 06/27/17 | 12:51 |
| QC1203816312 | MB | | | | | | | | | | |
| Nitrogen in Ammonia | | | | B | 37.9 | ug/L | | | | 06/27/17 | 12:50 |
| QC1203818952 | 426169001 | MS | | | | | | | | | |
| Nitrogen in Ammonia | 1000 | | 786 | | 1690 | ug/L | | 90.4 | (75%-125%) | 06/27/17 | 13:19 |

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

July 21, 2017

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QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|----|-------|------|------|-------|-------|------|------|
| 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 >= 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

July 21, 2017

Radiochemistry

Technical Case Narrative

CH2MHill Plateau Remediation Company (CPRC)

SDG #: GEL426295

Work Order #: 426295

Product: PUISO_PRECIP_AEA:COMMON

Analytical Method: PUISO_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1677692

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203820112 | Method Blank (MB) |
| 1203820113 | Laboratory Control Sample (LCS) |
| 1203820115 | 426295001(B3BLJ0) Sample Duplicate (DUP) |

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.

Quality Control (QC) Information

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: Refer to Miscellaneous Information section.

Miscellaneous Information

1. The Pu-242 tracer for samples 4246411003 and 1203820115 did not meet the resolution requirements of having a full width half maximum of 100 keV or less. 2. The Pu-242 tracer for sample 1203820112 is greater than 50 keV from the expected energy of 4890 keV. 1. The tracer peaks are within the Pu-242 and the client tracer yield recovery requirements were met. Reporting results. 2. The tracer peak is within the Pu-242 and the client tracer yield recovery requirements were met. Reporting results.

Product: AMCMISO_EIE_PRECIP_AEA: COMMON

Analytical Method: AMCMISO_EIE_PREC_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1677694

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |

July 21, 2017

| | |
|------------|------------------------------------------|
| 1203820130 | Method Blank (MB) |
| 1203820131 | Laboratory Control Sample (LCS) |
| 1203820133 | 426295001(B3BLJ0) Sample Duplicate (DUP) |

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

Data Summary:

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.

Product: UIISO_IE_PRECIP_AEA:COMMON

Analytical Method: UIISO_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1677699

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203820134 | Method Blank (MB) |
| 1203820135 | Laboratory Control Sample (LCS) |
| 1203820138 | 426295001(B3BLJ0) Sample Duplicate (DUP) |

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

Data Summary:

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.

Product: NP237_IE_PRECIP_AEA: COMMON

Analytical Method: ASTM C 1475-00 Modified

Analytical Procedure: GL-RAD-A-032 REV# 21

Analytical Batch: 1677709

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203820152 | Method Blank (MB) |
| 1203820153 | 426295001(B3BLJ0) Sample Duplicate (DUP) |
| 1203820154 | Laboratory Control Sample (LCS) |

July 21, 2017

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

Data Summary:

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.

Product: NI63_LSC:COMMON

Analytical Method: NI63_LSC

Analytical Procedure: GL-RAD-A-022 REV# 18

Analytical Batch: 1678879

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

| <u>GEL Sample ID#</u> | <u>Client Sample Identification</u> |
|------------------------------|--------------------------------------------|
| 426295001 | B3BLJ0 |
| 1203822852 | Method Blank (MB) |
| 1203822853 | 426295001(B3BLJ0) Sample Duplicate (DUP) |
| 1203822854 | Laboratory Control Sample (LCS) |

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

Data Summary:

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.

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.

July 21, 2017

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: GEL426295 GEL Work Order: 426295

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: Kate Gellatly

Date: 16 JUL 2017

Title: Analyst I

Sample Data Summary

July 21, 2017
Rad

**Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------------|----------------------------------------------|----------------------------------|
| SDG Number: GEL426295 | Client: CPRC001 | Project: CPRC0F17050 |
| Lab Sample ID: 426295001 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Method: PUIISO_PRECIP_AEA | Prep Basis: "As Received" |
| Batch ID: 1677692 | Analyst: BXA4 | SOP Ref: GL-RAD-A-011 |
| Run Date: 07/01/2017 10:56 | Aliquot: 0.4 L | Instrument: 1070 |
| Data File: S0426295001_PU.1A.gcnf | Prep Method: DOE EML HASL-300, Pu-11- | Count Time: 239.9998 min |
| Prep Batch: 1677692 | | |
| Prep Date: 06/30/2017 00:00 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|-------------------|------|---------|-------|-----------|--------|-------|------|
| I3981-16-3 | Plutonium-238 | U | 0.0224 | pCi/L | +/-0.0617 | 0.0617 | 0.107 | 1.00 |
| OER-100-70 | Plutonium-239/240 | U | -0.0504 | pCi/L | +/-0.0454 | 0.0454 | 0.161 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Plutonium-242 Tracer | 4.16 | 4.92 | pCi/L | 84.5 | (30%-105%) |

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.

July 21, 2017
Rad

**Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------------|---------------------------------------------|----------------------------------|
| SDG Number: GEL426295 | Client: CPRC001 | Project: CPRC0F17050 |
| Lab Sample ID: 426295001 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Method: AMCMISO_EIE_PREC_AEA | Prep Basis: "As Received" |
| Batch ID: 1677694 | Analyst: BXA4 | SOP Ref: GL-RAD-A-011 |
| Run Date: 07/01/2017 10:53 | Aliquot: 0.4 L | Instrument: 1096 |
| Data File: S0426295001_AM.1A.gcnf | Prep Method: DOE EML HASL-300, Am-05 | Count Time: 239.9998 min |
| Prep Batch: 1677694 | | |
| Prep Date: 06/30/2017 00:00 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|---------------|------|--------|-------|-----------|--------|-------|------|
| 14596-10-2 | Americium-241 | U | 0.0128 | pCi/L | +/-0.0574 | 0.0574 | 0.112 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Americium-243 Tracer | 4.80 | 5.24 | pCi/L | 91.6 | (30%-105%) |

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.

July 21, 2017

**Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------------|----------------------------------------------|----------------------------------|
| SDG Number: GEL426295 | Client: CPRC001 | Project: CPRC0F17050 |
| Lab Sample ID: 426295001 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Method: UIISO_IE_PRECIP_AEA | Prep Basis: "As Received" |
| Batch ID: 1677699 | Analyst: BXA4 | SOP Ref: GL-RAD-A-011 |
| Run Date: 07/01/2017 10:12 | Aliquot: 0.4 L | Instrument: 1016 |
| Data File: S0426295001_UU.1A.gcnf | Prep Method: DOE EML HASL-300, U-02-R | Count Time: 239.9998 min |
| Prep Batch: 1677699 | | |
| Prep Date: 06/30/2017 00:00 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---------------------------------------------------|-----------------|------|---------|-------|-----------|--------|-------|------|
| U-233/234 <small>13968-55-3/13966-29-5</small> | Uranium-233/234 | U | 0.0239 | pCi/L | +/-0.0822 | 0.0823 | 0.157 | 1.00 |
| 15117-96-1/13982-7 | Uranium-235/236 | U | -0.0104 | pCi/L | +/-0.0461 | 0.0462 | 0.120 | 1.00 |
| 7440-61-1 | Uranium-238 | U | 0.0274 | pCi/L | +/-0.0723 | 0.0724 | 0.130 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Uranium-232 Tracer | 4.15 | 5.21 | pCi/L | 79.5 | (30%-105%) |

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.

July 21, 2017
Rad

**Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------------|---------------------------------------------|----------------------------------|
| SDG Number: GEL426295 | Client: CPRC001 | Project: CPRC0F17050 |
| Lab Sample ID: 426295001 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Method: ASTM C 1475-00 Modified | Prep Basis: "As Received" |
| Batch ID: 1677709 | Analyst: BXA4 | SOP Ref: GL-RAD-A-032 |
| Run Date: 07/01/2017 10:56 | Aliquot: 0.1 L | Instrument: 1166 |
| Data File: S0426295001_NP.1A.gcnf | Prep Method: ASTM C 1475-00 Modified | Count Time: 240 min |
| Prep Batch: 1677709 | | |
| Prep Date: 06/30/2017 00:00 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|------------|---------------|------|--------|-------|----------|-------|-------|------|
| 13994-20-2 | Neptunium-237 | U | 0.0384 | pCi/L | +/-0.213 | 0.213 | 0.409 | 1.00 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Americium-243 Tracer | 2030 | 2140 | pCi/L | 95.1 | (30%-105%) |

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.

July 21, 2017

**Certificate of Analysis
Sample Summary**

| | | |
|------------------------------------|---------------------------------------------|----------------------------------|
| SDG Number: GEL426295 | Client: CPRC001 | Project: CPRC0F17050 |
| Lab Sample ID: 426295001 | Date Collected: 06/22/2017 11:54 | Matrix: WATER |
| | Date Received: 06/24/2017 08:45 | |
| Client ID: B3BLJ0 | Method: NI63_LSC | Prep Basis: "As Received" |
| Batch ID: 1678879 | Analyst: TXJ1 | SOP Ref: GL-RAD-A-022 |
| Run Date: 07/11/2017 22:19 | Aliquot: 150 mL | Instrument: LSCGREEN |
| Data File: N1678879.xls | Prep Method: DOE RESL Ni-1, Modified | Count Time: 15 min |
| Prep Batch: 1678879 | | |
| Prep Date: 07/07/2017 14:29 | | |

| CAS No. | Parmname | Qual | Result | Units | Uncert | TPU | MDC | RDL |
|---------|-----------|------|--------|-------|---------|------|------|------|
| NI-63 | Nickel-63 | U | -13.4 | pCi/L | +/-18.1 | 18.1 | 32.9 | 50.0 |

| Surrogate/Tracer recovery | Result | Nominal | Units | Recovery% | Acceptable Limits |
|---------------------------|--------|---------|-------|-----------|-------------------|
| Nickel Carrier | 20.6 | 25.2 | mg | 81.7 | (40%-110%) |

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

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

QC Summary

Report Date: July 16, 2017
Page 1 of 4

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Contact: Mr. Scot Fitzgerald

Workorder: 426295

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|------------------------|-----------|--------|---------|-------------------|---------|-------------|------------|------------|---------------|
| Rad Alpha Spec | | | | | | | | | |
| Batch | 1677692 | | | | | | | | |
| QC1203820112 | MB | | | | | | | | |
| Plutonium-238 | | | U | -0.0389 | pCi/L | | | BXA4 | 07/01/1710:56 |
| | | | | Uncert: +/-0.0737 | | | | | |
| | | | | TPU: +/-0.0739 | | | | | |
| Plutonium-239/240 | | | U | 0.0168 | pCi/L | | | | |
| | | | | Uncert: +/-0.0936 | | | | | |
| | | | | TPU: +/-0.0938 | | | | | |
| **Plutonium-242 Tracer | 4.92 | | | 2.76 | pCi/L | REC: 56 | (30%-105%) | | |
| | | | | Uncert: +/-0.788 | | | | | |
| | | | | TPU: +/-1.15 | | | | | |
| QC1203820113 | LCS | | | | | | | | |
| Plutonium-238 | | | U | 0.0115 | pCi/L | | | | 07/01/1710:56 |
| | | | | Uncert: +/-0.0638 | | | | | |
| | | | | TPU: +/-0.0639 | | | | | |
| Plutonium-239/240 | 4.94 | | | 4.63 | pCi/L | REC: 94 | (80%-120%) | | |
| | | | | Uncert: +/-0.631 | | | | | |
| | | | | TPU: +/-0.914 | | | | | |
| **Plutonium-242 Tracer | 4.92 | | | 3.82 | pCi/L | REC: 78 | (30%-105%) | | |
| | | | | Uncert: +/-0.649 | | | | | |
| | | | | TPU: +/-0.957 | | | | | |
| QC1203820115 | 426295001 | DUP | | | | | | | |
| Plutonium-238 | | U | 0.0224 | U | 0.00501 | pCi/L | | | |
| | | | | Uncert: +/-0.0617 | | RPD: 0 | N/A | | |
| | | | | TPU: +/-0.0617 | | RER: 0.421 | (0-2) | | |
| Plutonium-239/240 | | U | -0.0504 | U | 0.0093 | pCi/L | | | |
| | | | | Uncert: +/-0.0454 | | RPD: 0 | N/A | | |
| | | | | TPU: +/-0.0517 | | RER: 1.7 | (0-2) | | |
| **Plutonium-242 Tracer | 4.92 | | 4.16 | | 4.19 | pCi/L | REC: 85 | (30%-105%) | |
| | | | | Uncert: +/-0.577 | | | | | |
| | | | | TPU: +/-0.859 | | | | | |
| Batch | 1677694 | | | | | | | | |
| QC1203820130 | MB | | | | | | | | |
| Americium-241 | | | U | 0.0245 | pCi/L | | | BXA4 | 07/01/1710:56 |
| | | | | Uncert: +/-0.0563 | | | | | |
| | | | | TPU: +/-0.0564 | | | | | |
| **Americium-243 Tracer | 5.24 | | | 4.93 | pCi/L | REC: 94 | (30%-105%) | | |
| | | | | Uncert: +/-0.568 | | | | | |
| | | | | TPU: +/-0.874 | | | | | |
| QC1203820131 | LCS | | | | | | | | |
| Americium-241 | | | | 4.37 | pCi/L | REC: 89 | (80%-120%) | | 07/01/1710:53 |
| | | | | Uncert: +/-0.540 | | | | | |
| | | | | TPU: +/-0.781 | | | | | |
| **Americium-243 Tracer | 5.24 | | | 5.30 | pCi/L | REC: 101 | (30%-105%) | | |
| | | | | Uncert: +/-0.583 | | | | | |
| | | | | TPU: +/-0.894 | | | | | |

QC Summary

Workorder: 426295

Page 2 of 4

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|------------------------|-----------|--------|-----------|----|-----------|-------------|---------------|---------|---------------|
| Rad Alpha Spec | | | | | | | | | |
| Batch | 1677694 | | | | | | | | |
| QC1203820133 | 426295001 | DUP | | | | | | | |
| Americium-241 | | U | 0.0128 | U | 0.0189 | pCi/L | | | |
| | Uncert: | | +/-0.0574 | | +/-0.0521 | | RPD: | 0 | N/A |
| | TPU: | | +/-0.0574 | | +/-0.0522 | | RER: | 0.155 | (0-2) |
| **Americium-243 Tracer | 5.24 | | 4.80 | | 4.66 | pCi/L | REC: | 89 | (30%-105%) |
| | Uncert: | | +/-0.566 | | +/-0.544 | | | | |
| | TPU: | | +/-0.871 | | +/-0.843 | | | | |
| Batch | 1677699 | | | | | | | | |
| QC1203820134 | MB | | | | | | | | |
| Uranium-233/234 | | | | U | 0.00902 | pCi/L | | BXA4 | 07/01/1710:12 |
| | Uncert: | | | | +/-0.0669 | | | | |
| | TPU: | | | | +/-0.0669 | | | | |
| Uranium-235/236 | | | | U | 0.00209 | pCi/L | | | |
| | Uncert: | | | | +/-0.0744 | | | | |
| | TPU: | | | | +/-0.0744 | | | | |
| Uranium-238 | | | | U | -0.027 | pCi/L | | | |
| | Uncert: | | | | +/-0.0826 | | | | |
| | TPU: | | | | +/-0.0827 | | | | |
| **Uranium-232 Tracer | 5.21 | | | | 5.03 | pCi/L | REC: | 97 | (30%-105%) |
| | Uncert: | | | | +/-0.538 | | | | |
| | TPU: | | | | +/-0.850 | | | | |
| QC1203820135 | LCS | | | | | | | | |
| Uranium-233/234 | | | | | 7.48 | pCi/L | | | 07/01/1710:17 |
| | Uncert: | | | | +/-0.866 | | | | |
| | TPU: | | | | +/-1.46 | | | | |
| Uranium-235/236 | | | | | 0.320 | pCi/L | | | |
| | Uncert: | | | | +/-0.209 | | | | |
| | TPU: | | | | +/-0.215 | | | | |
| Uranium-238 | 6.75 | | | | 7.81 | pCi/L | REC: | 116 | (80%-120%) |
| | Uncert: | | | | +/-0.885 | | | | |
| | TPU: | | | | +/-1.51 | | | | |
| **Uranium-232 Tracer | 5.21 | | | | 3.70 | pCi/L | REC: | 71 | (30%-105%) |
| | Uncert: | | | | +/-0.727 | | | | |
| | TPU: | | | | +/-1.10 | | | | |
| QC1203820138 | 426295001 | DUP | | | | | | | |
| Uranium-233/234 | | U | 0.0239 | U | 0.0498 | pCi/L | 07/01/1710:17 | | |
| | Uncert: | | +/-0.0822 | | +/-0.0978 | | RPD: | 0 | N/A |
| | TPU: | | +/-0.0823 | | +/-0.0982 | | RER: | 0.396 | (0-2) |
| Uranium-235/236 | | U | -0.0104 | U | 0.0182 | pCi/L | | | |
| | Uncert: | | +/-0.0461 | | +/-0.101 | | RPD: | 0 | N/A |
| | TPU: | | +/-0.0462 | | +/-0.101 | | RER: | 0.504 | (0-2) |
| Uranium-238 | | U | 0.0274 | U | 0.00 | pCi/L | | | |
| | Uncert: | | +/-0.0723 | | +/-0.057 | | RPD: | 0 | N/A |
| | TPU: | | +/-0.0724 | | +/-0.0572 | | RER: | 0.583 | (0-2) |
| **Uranium-232 Tracer | 5.21 | | 4.15 | | 3.45 | pCi/L | REC: | 66 | (30%-105%) |
| | Uncert: | | +/-0.603 | | +/-0.759 | | | | |
| | TPU: | | +/-0.933 | | +/-1.14 | | | | |
| Batch | 1677709 | | | | | | | | |
| QC1203820152 | MB | | | | | | | | |
| Neptunium-237 | | | | U | -0.0201 | pCi/L | | BXA4 | 07/01/1710:56 |

QC Summary

Workorder: 426295

Page 3 of 4

| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date Time |
|---------------------------------|-----------|--------|--------|---------|-------|-------------|------------|---------|---------------|
| Rad Alpha Spec | | | | | | | | | |
| Batch | 1677709 | | | | | | | | |
| | | | | Uncert: | | | | | |
| | | | | TPU: | | | | | |
| **Americium-243 Tracer | 2140 | | | 1820 | pCi/L | REC: 85 | (30%-105%) | | |
| QC1203820153 | 426295001 | DUP | | | | | | | |
| Neptunium-237 | | U | 0.0384 | U | 0.040 | | | | 07/01/1710:56 |
| | | | | Uncert: | | RPD: 0 | N/A | | |
| | | | | TPU: | | RER: 0.0105 | (0-2) | | |
| **Americium-243 Tracer | 2140 | | 2030 | 1980 | pCi/L | REC: 93 | (30%-105%) | | |
| QC1203820154 | LCS | | | | | | | | |
| Neptunium-237 | 44.7 | | | 42.9 | pCi/L | REC: 96 | (80%-120%) | | 07/01/1710:56 |
| | | | | Uncert: | | | | | |
| | | | | TPU: | | | | | |
| **Americium-243 Tracer | 2140 | | | 2100 | pCi/L | REC: 98 | (30%-105%) | | |
| Rad Liquid Scintillation | | | | | | | | | |
| Batch | 1678879 | | | | | | | | |
| QC1203822852 | MB | | | | | | | | |
| Nickel-63 | | | U | -11.2 | pCi/L | | | TXJ1 | 07/11/1722:35 |
| | | | | Uncert: | | | | | |
| | | | | TPU: | | | | | |
| **Nickel Carrier | 25.2 | | | 20.0 | mg | REC: 79 | (40%-110%) | | |
| QC1203822853 | 426295001 | DUP | | | | | | | |
| Nickel-63 | | U | -13.4 | U | 1.81 | | | | 07/11/1722:51 |
| | | | | Uncert: | | RPD: 0 | N/A | | |
| | | | | TPU: | | RER: 1.17 | (0-2) | | |
| **Nickel Carrier | 25.2 | | 20.6 | 21.7 | mg | REC: 86 | (40%-110%) | | |
| QC1203822854 | LCS | | | | | | | | |
| Nickel-63 | 894 | | | 881 | pCi/L | REC: 99 | (80%-120%) | | 07/11/1723:08 |
| | | | | Uncert: | | | | | |
| | | | | TPU: | | | | | |
| **Nickel Carrier | 25.2 | | | 20.7 | mg | REC: 82 | (40%-110%) | | |

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
- A The TIC is a suspected aldol-condensation product
- 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 both the associated QC blank and in the sample.
- B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
- C Analyte has been confirmed by GC/MS analysis
- 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 Concentration exceeds the calibration range of the instrument

QC Summary

Workorder: 426295

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| Parmname | NOM | Sample | Qual | QC | Units | QC Criteria | Range | Analyst | Date | Time |
|----------|-----|--------|------|----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|------|------|
| E | | | | | | Reported value is estimated due to interferences. See comment in narrative. | | | | |
| 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 | | | | |
| M | | | | | | Duplicate precision not met. | | | | |
| N | | | | | | Spike Sample recovery is outside control limits. | | | | |
| P | | | | | | Aroclor target analyte with greater than 25% difference between column analyses. | | | | |
| S | | | | | | Reported value determined by the Method of Standard Additions (MSA) | | | | |
| T | | | | | | Spike and/or spike duplicate 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. | | | | |
| 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 | | | | |
| 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 | | | | |
| o | | | | | | Analyte failed to recover within LCS limits (Organics only) | | | | |

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.