GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

July 27, 2016

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

Re: CHPRC SAF F16-057
Work Order: 401681
SDG: GEL401681

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 15, 2016. 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: 303110 - 7C
Chain of Custody: F16-057-023, F16-057-024, F16-057-028 and F16-057-029
Enclosures

# Table of Contents

Case Narrative.....1

Chain of Custody and Supporting Documentation.....6

Data Review Qualifier Definitions.....12

Laboratory Certifications.....14

Metals Analysis.....16

Case Narrative.....17

Sample Data Summary.....20

Quality Control Summary.....25

General Chem Analysis.....29

Case Narrative.....30

Sample Data Summary.....37

Quality Control Summary.....42

# Case Narrative

**General Narrative**
**for**
**CH2MHill Plateau Remediation Company**
**CHPRC SAF F16-057**
**SDG: GEL401681**

**July 27, 2016**

**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 July 15, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

**Sample Identification**
The laboratory received the following samples:

| Laboratory Identification | Sample Description |
|---|---|
| 401681001 | B362L7 |
| 401681002 | B367Y4 |
| 401681003 | B362M1 |
| 401681004 | B367Y5 |

**Case Narrative**

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

**Data Package**

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

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.

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

**Technical Case Narrative**
**CH2MHill Plateau Remediation Company (CPRC)**
**SDG #: GEL401681**
**Work Order #: 401681**

# Metals

**Determination of Metals by ICP**

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

# General Chemistry

**Carbon, Total Organic**

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 1203586711 (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.

**Solids, Total Dissolved**

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.

**COD**

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.

**Total Hardness**

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

**Miscellaneous Information**

**Additional Comments**
More than 15 ml of titrant was used on initial run, therefore, samples were re-analyzed with a smaller amount (10 ml of sample was used). 401681004 (B367Y5).

**Alkalinity**

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 | | | F16-057-023 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Kevin Patterson, CHPRC | COMPANY CONTACT: SUMNER, LC | TELEPHONE NO.: 376-3922 | PROJECT COORDINATOR: SUMNER, LC | PRICE CODE: 7C | DATA TURNAROUND: 15 Days / 15 Days |
| SAMPLING LOCATION: ITB TANK VALVE 105-491H *PRE FLUSH | PROJECT DESIGNATION: 200 West Pump & Treat - Special Sampling - Water | | SAF NO.: F16-057 | AIR QUALITY ☐ | |
| ICE CHEST NO.: GWS-413 | FIELD LOGBOOK NO.: ~~HNF-N~~ 49115 | ACTUAL SAMPLE DEPTH: N/A | COA: 303110 | METHOD OF SHIPMENT: FEDERAL EXPRESS | ORIGINAL |
| SHIPPED TO: GEL Laboratories, LLC | OFFSITE PROPERTY NO.: 68246 | | BILL OF LADING/AIR BILL NO.: 7767 4415 ~~3318~~ 9271416 3318 | | |

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

**SPECIAL HANDLING AND/OR STORAGE**

| | |
|---|---|
| PRESERVATION | HNO3 to pH <2 |
| HOLDING TIME | 6 Months |
| TYPE OF CONTAINER | G/P |
| NO. OF CONTAINER(S) | 1 |
| VOLUME | 500mL |
| SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B362L7 | WATER | JUL 13 2016 | 1335 | ✓ |

401681

7/28/2016

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Kevin Patterson, CHPRC | DATE/TIME: JUL 13 2016 1410 | RECEIVED BY/STORED IN: SSU-1 | DATE/TIME: JUL 13 2016 1410 |
| RELINQUISHED BY/REMOVED FROM: SSU-1 | DATE/TIME: JUL 14 2016 0730 | RECEIVED BY/STORED IN: Troy Bacon, CHPRC | DATE/TIME: JUL 14 2016 0730 |
| RELINQUISHED BY/REMOVED FROM: Troy Bacon, CHPRC | DATE/TIME: JUL 14 2016 1400 | RECEIVED BY/STORED IN: FEDEX | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM: FX | DATE/TIME: | RECEIVED BY/STORED IN: M. [illegible] | DATE/TIME: 7-15-16 0900 |
| RELINQUISHED BY/REMOVED FROM: | DATE/TIME: | RECEIVED BY/STORED IN: | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM: | DATE/TIME: | RECEIVED BY/STORED IN: | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM: | DATE/TIME: | RECEIVED BY/STORED IN: | DATE/TIME: |

**SPECIAL INSTRUCTIONS**
NA
(1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON;

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

PRINTED ON 7/13/2016 FSR ID = FSR34092 TRVL NUM = TRVL-16-184 A-6003-618 (REV 2)

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | F16-057-024 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR: Kevin Patterson CHPRC | COMPANY CONTACT: SUMNER, LC | TELEPHONE NO.: 376-3922 | PROJECT COORDINATOR: SUMNER, LC | PRICE CODE: 7C | DATA TURNAROUND: 15 Days / 15 Days |
| SAMPLING LOCATION: ITB TANK VALVE V05-491H *PRE FLUSH | PROJECT DESIGNATION: 200 West Pump & Treat - Special Sampling - Water | | SAF NO.: F16-057 | AIR QUALITY ☐ | |
| ICE CHEST NO.: GWS-413 | FIELD LOGBOOK NO.: HNF-N-491 15 | ACTUAL SAMPLE DEPTH: N/A | COA: 303110 | METHOD OF SHIPMENT: FEDERAL EXPRESS | ORIGINAL |
| SHIPPED TO: GEL Laboratories, LLC | OFFSITE PROPERTY NO.: 68246 | | BILL OF LADING/AIR BILL NO.: 7767 4415 3318 | | |

401681

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegetation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE

| PRESERVATION | HCl or H2SO4 to pH <2/Cool | HNO3 to pH <2 | Cool <=6C | Cool <=6C | H2SO4 to pH <2/Cool <=6C |
|---|---|---|---|---|---|
| HOLDING TIME | 28 Days | 6 Months | 7 Days | 14 Days | 28 Days |
| TYPE OF CONTAINER | aG | G/P | G/P | G/P | G/P |
| NO. OF CONTAINER(S) | 1 | 1 | 1 | 1 | 1 |
| VOLUME | 250mL | 500mL | 500mL | 250mL | 125mL |
| SAMPLE ANALYSIS | 9060_TOC: COMMON; | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | 160.1_TDS: COMMON; | 2320_ALKALINITY: COMMON; | 410.4_COD: COMMON; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | | | | | |
|---|---|---|---|---|---|---|---|---|
| B367Y4 | WATER | JUL 1 3 2016 | 1335 | ✓ | ✓ | ✓ | ✓ | ✓ |

7/28/2016

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | |
|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM: Kevin Patterson CHPRC | DATE/TIME: JUL 1 3 2016 1410 | RECEIVED BY/STORED IN: SSU-1 | DATE/TIME: JUL 1 3 2016 1410 |
| RELINQUISHED BY/REMOVED FROM: SSU-1 | DATE/TIME: JUL 1 4 2016 0730 | RECEIVED BY/STORED IN: Troy Bacon CHPRC Troy L. Bacon | DATE/TIME: JUL 1 4 2016 0730 |
| RELINQUISHED BY/REMOVED FROM: Troy Bacon CHPRC Troy L. Bacon | DATE/TIME: JUL 1 4 2016 1400 | RECEIVED BY/STORED IN: FEDEX | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM: FE | DATE/TIME: | RECEIVED BY/STORED IN: M. Gustow | DATE/TIME: 7-15-16 0910 |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME: | RECEIVED BY/STORED IN | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME: | RECEIVED BY/STORED IN | DATE/TIME: |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME: | RECEIVED BY/STORED IN | DATE/TIME: |

SPECIAL INSTRUCTIONS

NA

(1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON;

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

PRINTED ON 7/13/2016 FSR ID = FSR34092 TRVL NUM = TRVL-16-184 A-6003-618 (REV 2)

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | F16-057-028 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR<br>Kevin Patterson<br>CHPRC | COMPANY CONTACT<br>SUMNER, LC | TELEPHONE NO.<br>376-3922 | PROJECT COORDINATOR<br>SUMNER, LC | PRICE CODE 7C<br>AIR QUALITY ☐ | DATA TURNAROUND<br>15 Days / 15 Days |
| SAMPLING LOCATION<br>289-T, Effluent Tank, Valve V07-Y80B*PRE FLUSH | PROJECT DESIGNATION<br>200 West Pump & Treat - Special Sampling - Water | | SAF NO.<br>F16-057 | | |
| ICE CHEST NO.<br>GWS-413 | FIELD LOGBOOK NO.<br>HNF-N-491 15 | ACTUAL SAMPLE DEPTH<br>N/A | COA<br>303110 | METHOD OF SHIPMENT<br>FEDERAL EXPRESS | ORIGINAL |
| SHIPPED TO<br>GEL Laboratories, LLC | OFFSITE PROPERTY NO.<br>4826 | | BILL OF LADING/AIR BILL NO.<br>7767 4415 3318 | | |

| MATRIX* | POSSIBLE SAMPLE HAZARDS/ REMARKS | | |
|---|---|---|---|
| A=Air<br>DL=Drum<br>Liquids<br>DS=Drum<br>Solids<br>L=Liquid<br>O=Oil<br>S=Soil<br>SE=Sediment<br>T=Tissue<br>V=Vegetation<br>W=Water<br>WI=Wipe<br>X=Other | *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. | PRESERVATION | HNO3 to pH <2 |
| | | HOLDING TIME | 6 Months |
| | | TYPE OF CONTAINER | G/P |
| | | NO. OF CONTAINER(S) | 1 |
| | | VOLUME | 500mL |
| | SPECIAL HANDLING AND/OR STORAGE | SAMPLE ANALYSIS | SEE ITEM (1) IN SPECIAL INSTRUCTIONS |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | |
|---|---|---|---|---|
| B362M1 | WATER | JUL 1 3 2016 | 1247 | ✓ |

401681

7/28/2016

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM<br>Kevin Patterson CHPRC | DATE/TIME<br>JUL 1 3 2016 1410 | RECEIVED BY/STORED IN<br>SSU-1 | DATE/TIME<br>JUL 1 3 2016 1410 | NA<br>(1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON; |
| RELINQUISHED BY/REMOVED FROM<br>SSU-1 | DATE/TIME<br>JUL 1 4 2016 0730 | RECEIVED BY/STORED IN<br>Troy Bacon CHPRC Troy L. Bacon | DATE/TIME<br>JUL 1 4 2016 0730 | |
| RELINQUISHED BY/REMOVED FROM<br>Troy Bacon CHPRC Troy L. Bacon | DATE/TIME<br>JUL 1 4 2016 1400 | RECEIVED BY/STORED IN<br>FEDEX | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM<br>FA | DATE/TIME | RECEIVED BY/STORED IN<br>[illegible] 7-15-16 0910 | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |

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

PRINTED ON 7/13/2016 FSR ID = FSR34093 TRVL NUM = TRVL-16-184 A-6003-618 (REV 2)

| CH2MHill Plateau Remediation Company | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | F16-057-029 | PAGE 1 OF 1 |
|---|---|---|---|---|---|
| COLLECTOR<br>Kevin Patterson<br>CHPRC | COMPANY CONTACT<br>SUMNER, LC | TELEPHONE NO.<br>376-3922 | PROJECT COORDINATOR<br>SUMNER, LC | PRICE CODE 7C<br>AIR QUALITY ☐ | DATA TURNAROUND<br>15 Days / 15 Days |
| SAMPLING LOCATION<br>289-T, Effluent Tank, Valve V07-Y80B *PRE FLUSH | PROJECT DESIGNATION<br>200 West Pump & Treat - Special Sampling - Water | | SAF NO.<br>F16-057 | | |
| ICE CHEST NO.<br>GWS-413 | FIELD LOGBOOK NO.<br>~~HNF-N-~~ 491 15 | ACTUAL SAMPLE DEPTH<br>N/A | COA<br>303110 | METHOD OF SHIPMENT<br>FEDERAL EXPRESS | ORIGINAL |
| SHIPPED TO<br>GEL Laboratories, LLC | OFFSITE PROPERTY NO.<br>6826 | | BILL OF LADING/AIR BILL NO.<br>7767 4415 3318 | | |

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

**POSSIBLE SAMPLE HAZARDS/ REMARKS**
*Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

**SPECIAL HANDLING AND/OR STORAGE**

| PRESERVATION | HCl or H2SO4 to pH <2/Cool | HNO3 to pH <2 | Cool <=6C | Cool <=6C | H2SO4 to pH <2/Cool <=6C |
|---|---|---|---|---|---|
| HOLDING TIME | 28 Days | 6 Months | 7 Days | 14 Days | 28 Days |
| TYPE OF CONTAINER | aG | G/P | G/P | G/P | G/P |
| NO. OF CONTAINER(S) | 1 | 1 | 1 | 1 | 1 |
| VOLUME | 250mL | 500mL | 500mL | 250mL | 125mL |
| SAMPLE ANALYSIS | 9060_TOC: COMMON; | SEE ITEM (1) IN SPECIAL INSTRUCTIONS | 160.1_TDS: COMMON; | 2320_ALKALINITY: COMMON; | 410.4_COD: COMMON; |

| SAMPLE NO. | MATRIX* | SAMPLE DATE | SAMPLE TIME | | | | | |
|---|---|---|---|---|---|---|---|---|
| B367Y5 | WATER | JUL 1 3 2016 | 1247 | ✓ | ✓ | ✓ | ✓ | ✓ |

401681

7/28/2016

| CHAIN OF POSSESSION | | SIGN/ PRINT NAMES | | SPECIAL INSTRUCTIONS |
|---|---|---|---|---|
| RELINQUISHED BY/REMOVED FROM<br>Kevin Patterson<br>CHPRC | DATE/TIME<br>JUL 1 3 2016 1410 | RECEIVED BY/STORED IN<br>SSU-1 | DATE/TIME<br>JUL 1 3 2016 1410 | NA<br>(1) 6010_METALS_ICP: COMMON {Calcium, Copper, Iron, Magnesium, Manganese}; 6010_METALS_ICP: COMMON (Add-on) {Silica}; 130.2_HARDNESS: COMMON; |
| RELINQUISHED BY/REMOVED FROM<br>SSU-1 | DATE/TIME<br>JUL 1 4 2016 0730 | RECEIVED BY/STORED IN<br>Troy Bacon<br>CHPRC Troy L. Bacon | DATE/TIME<br>JUL 1 4 2016 0730 | |
| RELINQUISHED BY/REMOVED FROM<br>Troy Bacon<br>CHPRC Troy L. Bacon | DATE/TIME<br>JUL 1 4 2016 1400 | RECEIVED BY/STORED IN<br>FEDEX | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM<br>FX | DATE/TIME | RECEIVED BY/STORED IN<br>[illegible] | DATE/TIME<br>7-15-16 0910 | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |
| RELINQUISHED BY/REMOVED FROM | DATE/TIME | RECEIVED BY/STORED IN | DATE/TIME | |

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

PRINTED ON 7/13/2016 FSR ID = FSR34093 TRVL NUM = TRVL-16-184 A-6003-618 (REV 2)

GEL Laboratories LLC

# SAMPLE RECEIPT & REVIEW FORM

| | |
|---|---|
| Client: CPRC | SDG/AR/COC/Work Order: 401681 |
| Received By: MF | Date Received: 7-15-16 |

| Suspected Hazard Information | Yes | No | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. |
|---|---|---|---|
| COC/Samples marked as radioactive? | | ✓ | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): |
| Classified Radioactive II or III by RSO? | | ✓ | If yes, Were swipes taken of sample containers < action levels? |
| COC/Samples marked containing PCBs? | | ✓ | |
| Package, COC, and/or Samples marked as beryllium or asbestos containing? | | ✓ | If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group. |
| Shipped as a DOT Hazardous? | | ✓ | Hazard Class Shipped: UN#: |
| Samples identified as Foreign Soil? | | ✓ | |

| | Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|---|---|---|---|---|
| 1 | Shipping containers received intact and sealed? | ✓ | ✓ | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 | Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | ✓ | | | Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 2c |
| 2a | Daily check performed and passed on IR temperature gun? | ✓ | | | Temperature Device Serial #: 150462962 Secondary Temperature Device Serial # (If Applicable): |
| 3 | Chain of custody documents included with shipment? | ✓ | | ✓ | |
| 4 | Sample containers intact and sealed? | ✓ | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 5 | Samples requiring chemical preservation at proper pH? | | ✓ | | Sample ID's, containers affected and observed pH: If Preservation added, Lot#: |
| 6 | Do Low Level Perchlorate samples have headspace as required? | | | ✓ | Sample ID's and containers affected: |
| 7 | VOA vials contain acid preservation? | | | ✓ | (If unknown, select No) |
| 8 | VOA vials free of headspace (defined as < 6mm bubble)? | | | ✓ | Sample ID's and containers affected: |
| 9 | Are Encore containers present? | | | ✓ | (If yes, immediately deliver to Volatiles laboratory) |
| 10 | Samples received within holding time? | ✓ | | | ID's and tests affected: |
| 11 | Sample ID's on COC match ID's on bottles? | ✓ | | | Sample ID's and containers affected: |
| 12 | Date & time on COC match date & time on bottles? | ✓ | | | Sample ID's affected: |
| 13 | Number of containers received match number indicated on COC? | ✓ | | ✓ | Sample ID's affected: |
| 14 | Are sample containers identifiable as GEL provided? | ✓ | | | |
| 15 | COC form is properly signed in relinquished/received sections? | ✓ | | | |
| 16 | Carrier and tracking number. | | | | Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other<br>7767 8931 5299 2c<br>7767 4415 3330 2c<br>7767 4415 3318 2c |

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 7/15/16 Page 1 of 1

GL-CHL-SR-001 Rev 3

# Data Review Qualifier Definitions

**GEL LABORATORIES LLC**
2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 27−JUL−16

# 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 (0rganics 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 >= 2X the MDA and, after corrections, result is >= 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 >= 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 >= 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 27 July 2016**

| 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 | LA160006 |
| Maryland | 270 |
| Massachusetts | M−SC012 |
| Michigan | 9976 |
| Mississippi | SC00012 |
| Nebraska | NE−OS−26−13 |
| Nevada | SC000122016−1 |
| 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 | T104704235−16−11 |
| Utah NELAP | SC000122016−20 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780 |
| West Virginia | 997404 |

# Metals Analysis

# Case Narrative

**Metals**
**Technical Case Narrative**
**CH2MHill Plateau Remediation Company (CPRC)**
**SDG #: GEL401681**
**Work Order #: 401681**

**Product:** **Determination of Metals by ICP**
**Analytical Method:** 6010_METALS_ICP
**Analytical Procedure:** GL-MA-E-013 REV# 26
**Analytical Batch:** 1582262

**Preparation Method:** SW846 3005A
**Preparation Procedure:** GL-MA-E-006 REV# 13
**Preparation Batch:** 1582261

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681001 | B362L7 |
| 401681002 | B367Y4 |
| 401681003 | B362M1 |
| 401681004 | B367Y5 |
| 1203586202 | Method Blank (MB)**ICP** |
| 1203586203 | Laboratory Control Sample (LCS) |
| 1203586206 | 401646001(NonSDGL) Serial Dilution (SD) |
| 1203586204 | 401646001(NonSDGS) Matrix Spike (MS) |
| 1203586205 | 401646001(NonSDGSD) Matrix Spike Duplicate (MSD) |

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.

# 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: GEL401681 GEL Work Order: 401681

**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: Jamie Johnson**

**Date: 28 JUL 2016** **Title: Group Leader**

# Sample Data Summary

*GEL Laboratories LLC*

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL401681 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

**SAMPLE ID:** 401681001 **BASIS:** As Received **DATE COLLECTED** 13−JUL−16

**CLIENT ID:** B362L7 **LEVEL:** Low **DATE RECEIVED** 15−JUL−16

**MATRIX:** WATER **%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7440−70−2 | Calcium | 62100 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/19/16 16:25 | 071916−1 | 1582262 |
| 7440−50−8 | Copper | 3.78 | ug/L | B | 3 | 10 | 10 | 1 | P | HSC | 07/19/16 16:25 | 071916−1 | 1582262 |
| 7439−89−6 | Iron | 30 | ug/L | U | 30 | 100 | 100 | 1 | P | HSC | 07/19/16 16:25 | 071916−1 | 1582262 |
| 7439−95−4 | Magnesium | 21200 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/19/16 16:25 | 071916−1 | 1582262 |
| 7439−96−5 | Manganese | 24.5 | ug/L | | 2 | 10 | 10 | 1 | P | HSC | 07/21/16 12:22 | 072116−2 | 1582262 |
| 7631−86−9 | Silica | 41400 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 07/19/16 16:25 | 071916−1 | 1582262 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1582262 | 1582261 | SW846 3005A | 50 | mL | 50 | mL | 07/18/16 | SXW1 |

***Analytical Methods:**

**P** **SW846 3005A/6010C**

*GEL Laboratories LLC*

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL401681 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

**SAMPLE ID:** 401681002 **BASIS:** As Received **DATE COLLECTED** 13−JUL−16

**CLIENT ID:** B367Y4 **LEVEL:** Low **DATE RECEIVED** 15−JUL−16

**MATRIX:** WATER **%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7440−70−2 | Calcium | 62400 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/19/16 16:28 | 071916−1 | 1582262 |
| 7440−50−8 | Copper | 4.12 | ug/L | B | 3 | 10 | 10 | 1 | P | HSC | 07/19/16 16:28 | 071916−1 | 1582262 |
| 7439−89−6 | Iron | 30 | ug/L | U | 30 | 100 | 100 | 1 | P | HSC | 07/19/16 16:28 | 071916−1 | 1582262 |
| 7439−95−4 | Magnesium | 21300 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/19/16 16:28 | 071916−1 | 1582262 |
| 7439−96−5 | Manganese | 39.3 | ug/L | | 2 | 10 | 10 | 1 | P | HSC | 07/21/16 12:25 | 072116−2 | 1582262 |
| 7631−86−9 | Silica | 41500 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 07/19/16 16:28 | 071916−1 | 1582262 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1582262 | 1582261 | SW846 3005A | 50 | mL | 50 | mL | 07/18/16 | SXW1 |

***Analytical Methods:**

**P** **SW846 3005A/6010C**

*GEL Laboratories LLC*

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL401681 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

**SAMPLE ID:** 401681003 **BASIS:** As Received **DATE COLLECTED** 13−JUL−16

**CLIENT ID:** B362M1 **LEVEL:** Low **DATE RECEIVED** 15−JUL−16

**MATRIX:** WATER **%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7440−70−2 | Calcium | 63000 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/19/16 16:31 | 071916−1 | 1582262 |
| 7440−50−8 | Copper | 18.8 | ug/L | | 3 | 10 | 10 | 1 | P | HSC | 07/19/16 16:31 | 071916−1 | 1582262 |
| 7439−89−6 | Iron | 125 | ug/L | | 30 | 100 | 100 | 1 | P | HSC | 07/19/16 16:31 | 071916−1 | 1582262 |
| 7439−95−4 | Magnesium | 21400 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/19/16 16:31 | 071916−1 | 1582262 |
| 7439−96−5 | Manganese | 1550 | ug/L | | 2 | 10 | 10 | 1 | P | HSC | 07/21/16 12:28 | 072116−2 | 1582262 |
| 7631−86−9 | Silica | 41600 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 07/19/16 16:31 | 071916−1 | 1582262 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1582262 | 1582261 | SW846 3005A | 50 | mL | 50 | mL | 07/18/16 | SXW1 |

***Analytical Methods:**

**P** **SW846 3005A/6010C**

*GEL Laboratories LLC*

# METALS
## −1−
## INORGANICS ANALYSIS DATA PACKAGE

**SDG No:** GEL401681 **CONTRACT:** CPRC0F16057 **METHOD TYPE:** SW846

**SAMPLE ID:** 401681004 **BASIS:** As Received **DATE COLLECTED** 13−JUL−16

**CLIENT ID:** B367Y5 **LEVEL:** Low **DATE RECEIVED** 15−JUL−16

**MATRIX:** WATER **%SOLIDS:** 0

| CAS No. | Analyte | Result | Units | Qual | MDL | PQL | CRDL | DF | M* | Analyst | Run Date | Analytical Run | Analytical Batch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7440−70−2 | Calcium | 66800 | ug/L | | 50 | 200 | 200 | 1 | P | HSC | 07/19/16 16:34 | 071916−1 | 1582262 |
| 7440−50−8 | Copper | 58 | ug/L | | 3 | 10 | 10 | 1 | P | HSC | 07/19/16 16:34 | 071916−1 | 1582262 |
| 7439−89−6 | Iron | 385 | ug/L | | 30 | 100 | 100 | 1 | P | HSC | 07/19/16 16:34 | 071916−1 | 1582262 |
| 7439−95−4 | Magnesium | 21900 | ug/L | | 110 | 300 | 300 | 1 | P | HSC | 07/19/16 16:34 | 071916−1 | 1582262 |
| 7439−96−5 | Manganese | 4900 | ug/L | | 2 | 10 | 10 | 1 | P | HSC | 07/21/16 12:31 | 072116−2 | 1582262 |
| 7631−86−9 | Silica | 39800 | ug/L | | 53 | 213 | 213 | 1 | P | HSC | 07/19/16 16:34 | 071916−1 | 1582262 |

**Prep Information:**

| Analytical Batch | Prep Batch | Prep Method | Initial wt./vol. | Units | Final wt./vol. | Units | Date | Analyst |
|---|---|---|---|---|---|---|---|---|
| 1582262 | 1582261 | SW846 3005A | 50 | mL | 50 | mL | 07/18/16 | SXW1 |

***Analytical Methods:**

**P** **SW846 3005A/6010C**

# Quality Control Summary

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: July 28, 2016



**CH2MHill Plateau Remediation Company**
**MSIN R3-50 CHPRC**
**PO Box 1600**
**Richland, Washington**

**Contact:** **Mr. Scot Fitzgerald**

**Workorder:** **401681**

| Parmname | NOM | | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis-ICP** | | | | | | | | | | | |
| Batch 1582262 | | | | | | | | | | | |
| QC1203586203 LCS | | | | | | | | | | | |
| Calcium | 5000 | | | | 5080 | ug/L | | 102 | (80%-120%) | HSC | 07/19/16 15:33 |
| Copper | 500 | | | | 509 | ug/L | | 102 | (80%-120%) | | |
| Iron | 5000 | | | | 5050 | ug/L | | 101 | (80%-120%) | | |
| Magnesium | 5000 | | | | 5160 | ug/L | | 103 | (80%-120%) | | |
| Manganese | 500 | | | | 515 | ug/L | | 103 | (80%-120%) | | 07/21/16 11:29 |
| Silica | 10700 | | | | 10400 | ug/L | | 96.8 | (80%-120%) | | 07/19/16 15:33 |
| QC1203586202 MB | | | | | | | | | | | |
| Calcium | | | | U | 50.0 | ug/L | | | | | 07/19/16 15:29 |
| Copper | | | | U | 3.00 | ug/L | | | | | |
| Iron | | | | U | 30.0 | ug/L | | | | | |
| Magnesium | | | | U | 110 | ug/L | | | | | |
| Manganese | | | | U | 2.00 | ug/L | | | | | 07/21/16 11:25 |
| Silica | | | | U | 53.0 | ug/L | | | | | 07/19/16 15:29 |
| QC1203586204 401646001 MS | | | | | | | | | | | |
| Calcium | 5000 | | 20300 | | 25600 | ug/L | | N/A | (75%-125%) | | 07/19/16 15:39 |
| Copper | 500 | U | 3.00 | | 524 | ug/L | | 105 | (75%-125%) | | |
| Iron | 5000 | | 154 | | 5230 | ug/L | | 101 | (75%-125%) | | |
| Magnesium | 5000 | | 4960 | | 10100 | ug/L | | 103 | (75%-125%) | | |
| Manganese | 500 | | 35.8 | | 544 | ug/L | | 102 | (75%-125%) | | 07/21/16 11:35 |
| Silica | 10700 | | 30200 | | 41000 | ug/L | | 101 | (75%-125%) | | 07/19/16 15:39 |
| QC1203586205 401646001 MSD | | | | | | | | | | | |

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

# QC Summary

**Workorder:** **401681**



| Parmname | NOM | | Sample | Qual | QC | Units | RPD/D% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals Analysis-ICP** | | | | | | | | | | | |
| Batch 1582262 | | | | | | | | | | | |
| Calcium | 5000 | | 20300 | | 26100 | ug/L | 1.82 | N/A | (0%-20%) | | 07/19/16 15:42 |
| Copper | 500 | U | 3.00 | | 525 | ug/L | 0.218 | 105 | (0%-20%) | HSC | |
| Iron | 5000 | | 154 | | 5250 | ug/L | 0.458 | 102 | (0%-20%) | | |
| Magnesium | 5000 | | 4960 | | 10200 | ug/L | 1.05 | 106 | (0%-20%) | | |
| Manganese | 500 | | 35.8 | | 550 | ug/L | 1.12 | 103 | (0%-20%) | | 07/21/16 11:39 |
| Silica | 10700 | | 30200 | | 41600 | ug/L | 1.52 | 107 | (0%-20%) | | 07/19/16 15:42 |
| QC1203586206 401646001 SDILT | | | | | | | | | | | |
| Calcium | | | 20300 | D | 4120 | ug/L | 1.45 | | (0%-10%) | | 07/19/16 15:45 |
| Copper | | U | 1.02 | DU | 15.0 | ug/L | N/A | | (0%-10%) | | |
| Iron | | | 154 | BD | 35.6 | ug/L | 15.5 | | (0%-10%) | | |
| Magnesium | | | 4960 | D | 1040 | ug/L | 5.34 | | (0%-10%) | | |
| Manganese | | | 35.8 | BD | 7.75 | ug/L | 8.15 | | (0%-10%) | | 07/21/16 11:42 |
| Silica | | | 30200 | D | 5940 | ug/L | 1.52 | | (0%-10%) | | 07/19/16 15:45 |

**Notes:**

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= 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

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

# QC Summary

**Workorder:** **401681**



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

Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

# General Chem Analysis

# Case Narrative

**General Chemistry**
**Technical Case Narrative**
**CH2MHill Plateau Remediation Company (CPRC)**
**SDG #: GEL401681**
**Work Order #: 401681**

**Product:** **Carbon, Total Organic**
**Analytical Method:** SW846 9060A
**Analytical Procedure:** GL-GC-E-093 REV# 14
**Analytical Batch:** 1582489

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681002 | B367Y4 |
| 401681004 | B367Y5 |
| 1203586711 | Method Blank (MB) |
| 1203586712 | Laboratory Control Sample (LCS) |
| 1203586713 | 401681002(B367Y4) Sample Duplicate (DUP) |
| 1203586714 | 401518007(NonSDG) Sample Duplicate (DUP) |
| 1203586716 | 401681002(B367Y4) Post Spike (PS) |
| 1203586717 | 401518007(NonSDG) Post Spike (PS) |

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

**Data Summary:**

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

**Quality Control (QC) Information**

**Method Blank (MB) Statement**
The MB 1203586711 (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.

**Product:** **Solids, Total Dissolved**
**Analytical Method:** 160.1_TDS
**Analytical Procedure:** GL-GC-E-001 REV# 15
**Analytical Batch:** 1583204

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681002 | B367Y4 |
| 401681004 | B367Y5 |
| 1203588406 | Method Blank (MB) |
| 1203588407 | Laboratory Control Sample (LCS) |
| 1203588409 | 401681002(B367Y4) 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:** **COD**
**Analytical Method:** EPA 410.4
**Analytical Procedure:** GL-GC-E-061 REV# 19
**Analytical Batch:** 1582151

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681002 | B367Y4 |
| 401681004 | B367Y5 |
| 1203585880 | Method Blank (MB) |
| 1203585881 | Laboratory Control Sample (LCS) |
| 1203585883 | 401681002(B367Y4) Sample Duplicate (DUP) |
| 1203585885 | 401681002(B367Y4) Matrix Spike (MS) |

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:** **Total Hardness**
**Analytical Method:** 130.2_HARDNESS
**Analytical Procedure:** GL-GC-E-100 REV# 7
**Analytical Batch:** 1582089

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681001 | B362L7 |
| 401681002 | B367Y4 |
| 401681003 | B362M1 |
| 401681004 | B367Y5 |
| 1203585691 | Method Blank (MB) |
| 1203585692 | Laboratory Control Sample (LCS) |
| 1203585694 | 401274001(B36216) Sample Duplicate (DUP) |
| 1203585696 | 401274001(B36216) 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.

**Miscellaneous Information**

**Additional Comments**
More than 15 ml of titrant was used on initial run, therefore, samples were re-analyzed with a smaller amount (10 ml of sample was used). 401681004 (B367Y5).

**Product:** **Alkalinity**
**Analytical Method:** 2320_ALKALINITY
**Analytical Procedure:** GL-GC-E-033 REV# 12
**Analytical Batch:** 1583508

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

| GEL Sample ID# | Client Sample Identification |
|---|---|
| 401681002 | B367Y4 |
| 401681004 | B367Y5 |
| 1203589088 | Method Blank (MB) |
| 1203589089 | Laboratory Control Sample (LCS) |
| 1203589090 | 401514002(NonSDG) 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.

**Certification Statement**

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

# GEL LABORATORIES LLC

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

## Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL401681 GEL Work Order: 401681

**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).

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.

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:** Kristen Mizzell **Name: Kristen Mizzell**

**Date: 27 JUL 2016** **Title: Analyst I**

# Sample Data Summary

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

# Certificate of Analysis

Report Date: July 27, 2016

| | |
|---|---|
| Company : | CH2MHill Plateau Remediation Company |
| Address : | MSIN R3-50 CHPRC<br>PO Box 1600<br>Richland, Washington 99352 |
| Contact: | Mr. Scot Fitzgerald |
| Project: | CHPRC SAF F16-057 |

| | | | |
|---|---|---|---|
| Client Sample ID: | B362L7 | Project: | CPRC0F16057 |
| Sample ID: | 401681001 | Client ID: | CPRC001 |
| Matrix: | WATER | | |
| Collect Date: | 13-JUL-16 13:35 | | |
| Receive Date: | 15-JUL-16 | | |
| Collector: | Client | | |

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titration and Ion Analysis | | | | | | | | | | | | |
| 130.2_HARDNESS: COMMON "As Received" | | | | | | | | | | | | |
| Hardness as CaCO3 | | 242 | 1.00 | 2.00 | mg/L | | | VH1 | 07/21/16 | 1446 | 1582089 | 1 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | 130.2_HARDNESS | |

**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 |

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

# Certificate of Analysis

Report Date: July 27, 2016

| | |
|---|---|
| Company : | CH2MHill Plateau Remediation Company |
| Address : | MSIN R3-50 CHPRC<br>PO Box 1600<br>Richland, Washington 99352 |
| Contact: | Mr. Scot Fitzgerald |
| Project: | CHPRC SAF F16-057 |

| | | | |
|---|---|---|---|
| Client Sample ID: | B367Y4 | Project: | CPRC0F16057 |
| Sample ID: | 401681002 | Client ID: | CPRC001 |
| Matrix: | WATER | | |
| Collect Date: | 13-JUL-16 13:35 | | |
| Receive Date: | 15-JUL-16 | | |
| Collector: | Client | | |

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon Analysis | | | | | | | | | | | | |
| 9060_TOC: COMMON "As Received" | | | | | | | | | | | | |
| Total Organic Carbon #1 | C | 1170 | 330 | 1000 | ug/L | | 1 | TSM | 07/19/16 | 0732 | 1582489 | 1 |
| Total Organic Carbon #2 | C | 1180 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon #3 | C | 1200 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon #4 | C | 1210 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon Average | C | 1190 | 330 | 1000 | ug/L | | 1 | | | | | |
| Solids Analysis | | | | | | | | | | | | |
| 160.1_TDS:COMMON "As Received" | | | | | | | | | | | | |
| Total Dissolved Solids | | 456000 | 3400 | 14300 | ug/L | | | SXW3 | 07/20/16 | 1607 | 1583204 | 2 |
| Spectrometric Analysis | | | | | | | | | | | | |
| 410.4_COD: COMMON "As Received" | | | | | | | | | | | | |
| COD | | 27800 | 8950 | 20000 | ug/L | | 1 | VH1 | 07/19/16 | 1455 | 1582151 | 3 |
| Titration and Ion Analysis | | | | | | | | | | | | |
| 130.2_HARDNESS: COMMON "As Received" | | | | | | | | | | | | |
| Hardness as CaCO3 | | 240 | 1.00 | 2.00 | mg/L | | | VH1 | 07/21/16 | 1446 | 1582089 | 4 |
| 2320_ALKALINITY: COMMON (Alkalinity only) "As Received" | | | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 128000 | 330 | 1000 | ug/L | | 1 | RXB5 | 07/22/16 | 2136 | 1583508 | 5 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | SW846 9060A | |
| 2 | 160.1_TDS | |
| 3 | EPA 410.4 | |
| 4 | 130.2_HARDNESS | |
| 5 | 2320_ALKALINITY | |

**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 |

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

# Certificate of Analysis

Report Date: July 27, 2016

| | |
|---|---|
| Company : | CH2MHill Plateau Remediation Company |
| Address : | MSIN R3-50 CHPRC<br>PO Box 1600<br>Richland, Washington 99352 |
| Contact: | Mr. Scot Fitzgerald |
| Project: | CHPRC SAF F16-057 |

| | | | |
|---|---|---|---|
| Client Sample ID: | B362M1 | Project: | CPRC0F16057 |
| Sample ID: | 401681003 | Client ID: | CPRC001 |
| Matrix: | WATER | | |
| Collect Date: | 13-JUL-16 12:47 | | |
| Receive Date: | 15-JUL-16 | | |
| Collector: | Client | | |

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Titration and Ion Analysis | | | | | | | | | | | | |
| 130.2_HARDNESS: COMMON "As Received" | | | | | | | | | | | | |
| Hardness as CaCO3 | | 240 | 1.00 | 2.00 | mg/L | | | VH1 | 07/21/16 | 1446 | 1582089 | 1 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | 130.2_HARDNESS | |

**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 |

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

# Certificate of Analysis

Report Date: July 27, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F16-057

Client Sample ID: B367Y5
Sample ID: 401681004
Matrix: WATER
Collect Date: 13-JUL-16 12:47
Receive Date: 15-JUL-16
Collector: Client

Project: CPRC0F16057
Client ID: CPRC001

| Parameter | Qualifier | Result | DL | RL | Units | PF | DF | Analyst | Date | Time | Batch | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon Analysis | | | | | | | | | | | | |
| 9060_TOC: COMMON "As Received" | | | | | | | | | | | | |
| Total Organic Carbon #1 | C | 1370 | 330 | 1000 | ug/L | | 1 | TSM | 07/19/16 | 0939 | 1582489 | 1 |
| Total Organic Carbon #2 | C | 1380 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon #3 | C | 1410 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon #4 | C | 1420 | 330 | 1000 | ug/L | | 1 | | | | | |
| Total Organic Carbon Average | C | 1400 | 330 | 1000 | ug/L | | 1 | | | | | |
| Solids Analysis | | | | | | | | | | | | |
| 160.1_TDS:COMMON "As Received" | | | | | | | | | | | | |
| Total Dissolved Solids | | 363000 | 3400 | 14300 | ug/L | | | SXW3 | 07/20/16 | 1607 | 1583204 | 2 |
| Spectrometric Analysis | | | | | | | | | | | | |
| 410.4_COD: COMMON "As Received" | | | | | | | | | | | | |
| COD | | 27800 | 8950 | 20000 | ug/L | | 1 | VH1 | 07/19/16 | 1456 | 1582151 | 3 |
| Titration and Ion Analysis | | | | | | | | | | | | |
| 130.2_HARDNESS: COMMON "As Received" | | | | | | | | | | | | |
| Hardness as CaCO3 | | 231 | 2.50 | 5.00 | mg/L | | | VH1 | 07/21/16 | 1446 | 1582089 | 4 |
| 2320_ALKALINITY: COMMON (Alkalinity only) "As Received" | | | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 122000 | 330 | 1000 | ug/L | | 1 | RXB5 | 07/22/16 | 2142 | 1583508 | 5 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|---|---|---|
| 1 | SW846 9060A | |
| 2 | 160.1_TDS | |
| 3 | EPA 410.4 | |
| 4 | 130.2_HARDNESS | |
| 5 | 2320_ALKALINITY | |

**Notes:**

Column headers are defined as follows:

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

# Quality Control Summary

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

# QC Summary

**Report Date: July 27, 2016**



**CH2MHill Plateau Remediation Company**
**MSIN R3-50 CHPRC**
**PO Box 1600**
**Richland, Washington**

**Contact:** **Mr. Scot Fitzgerald**

**Workorder:** **401681**

| Parmname | NOM | | Sample | Qual | QC | Units | RPD% | | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Carbon Analysis** | | | | | | | | | | | | |
| Batch 1582489 | | | | | | | | | | | | |
| QC1203586713 401681002 DUP | | | | | | | | | | | | |
| Total Organic Carbon Average | | C | 1190 | | 1210 | ug/L | 1.58 | ^ | | (+/-1000) | TSM | 07/19/16 08:14 |
| QC1203586714 401518007 DUP | | | | | | | | | | | | |
| Total Organic Carbon Average | | BC | 551 | B | 553 | ug/L | 0.362 | ^ | | (+/-1000) | | 07/18/16 20:53 |
| QC1203586712 LCS | | | | | | | | | | | | |
| Total Organic Carbon Average | 10000 | | | | 10700 | ug/L | | | 107 | (80%-120%) | | 07/18/16 16:26 |
| QC1203586711 MB | | | | | | | | | | | | |
| Total Organic Carbon Average | | | | B | 376 | ug/L | | | | | | 07/18/16 16:16 |
| QC1203586716 401681002 PS | | | | | | | | | | | | |
| Total Organic Carbon Average | 10.0 | C | 1.19 | | 11.3 | mg/L | | | 102 | (75%-125%) | | 07/19/16 08:57 |
| QC1203586717 401518007 PS | | | | | | | | | | | | |
| Total Organic Carbon Average | 10.0 | BC | 0.551 | | 11.0 | mg/L | | | 105 | (75%-125%) | | 07/18/16 21:35 |
| **Solids Analysis** | | | | | | | | | | | | |
| Batch 1583204 | | | | | | | | | | | | |
| QC1203588409 401681002 DUP | | | | | | | | | | | | |
| Total Dissolved Solids | | | 456000 | | 423000 | ug/L | 7.48 | | | (0%-20%) | SXW3 | 07/20/16 16:07 |
| QC1203588407 LCS | | | | | | | | | | | | |
| Total Dissolved Solids | 300000 | | | | 299000 | ug/L | | | 99.5 | (80%-120%) | | 07/20/16 16:07 |
| QC1203588406 MB | | | | | | | | | | | | |
| Total Dissolved Solids | | | | U | 3400 | ug/L | | | | | | 07/20/16 16:07 |
| **Spectrometric Analysis** | | | | | | | | | | | | |
| Batch 1582151 | | | | | | | | | | | | |
| QC1203585883 401681002 DUP | | | | | | | | | | | | |
| COD | | | 27800 | B | 18500 | ug/L | 40.2 | ^ | | (+/-20000) | VH1 | 07/19/16 14:55 |
| QC1203585881 LCS | | | | | | | | | | | | |
| COD | 500000 | | | | 493000 | ug/L | | | 98.6 | (80%-120%) | | 07/19/16 14:52 |
| QC1203585880 MB | | | | | | | | | | | | |
| COD | | | | U | 8950 | ug/L | | | | | | 07/19/16 14:52 |
| QC1203585885 401681002 MS | | | | | | | | | | | | |
| COD | 500000 | | 27800 | | 493000 | ug/L | | | 93 | (75%-125%) | | 07/19/16 14:55 |

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

# QC Summary

**Workorder:** **401681**



| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date Time |
|---|---|---|---|---|---|---|---|---|---|---|
| **Spectrometric Analysis** | | | | | | | | | | |
| Batch 1582151 | | | | | | | | | | |
| **Titration and Ion Analysis** | | | | | | | | | | |
| Batch 1582089 | | | | | | | | | | |
| QC1203585694 401274001 DUP | | | | | | | | | | |
| Hardness as CaCO3 | | 240 | | 240 | mg/L | 0 | | (0%-10%) | VH1 | 07/21/16 14:46 |
| QC1203585692 LCS | | | | | | | | | | |
| Hardness as CaCO3 | 500 | | | 471 | mg/L | | 94.3 | (90%-110%) | | 07/21/16 14:46 |
| QC1203585691 MB | | | | | | | | | | |
| Hardness as CaCO3 | | | U | 1.00 | mg/L | | | | | 07/21/16 14:46 |
| QC1203585696 401274001 MS | | | | | | | | | | |
| Hardness as CaCO3 | 200 | 240 | | 433 | mg/L | | 96.1 | (90%-110%) | | 07/21/16 14:46 |
| Batch 1583508 | | | | | | | | | | |
| QC1203589090 401514002 DUP | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | 136000 | | 136000 | ug/L | 0.133 | | (0%-20%) | RXB5 | 07/22/16 21:00 |
| QC1203589089 LCS | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | 50000 | | | 53900 | ug/L | | 108 | (80%-120%) | | 07/22/16 20:48 |
| QC1203589088 MB | | | | | | | | | | |
| Alkalinity, Total as CaCO3 | | | U | 330 | ug/L | | | | | 07/22/16 20:43 |

**Notes:**

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= 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

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

# QC Summary

**Workorder:** **401681**



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

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.