

SAF-RC-233
100-IU-2 & 100-IU-6 Remaining
Waste Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 1/27/15
INITIAL/DATE

COMMENTS:

SDG XP0193

SAF-RC-233

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 100-B-35:1, 151-B Electrical Switchyard,
Node A20**



January 23, 2015

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354

Re: RC-233 Soil
Work Order: 365220
SDG: XP0193

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 16, 2015. 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,

Heather Shaffer
Project Manager

Purchase Order: 1510
Chain of Custody: RC-233-079
Enclosures



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Case Narrative

**Receipt Narrative
for
Eberline
SDG: XP0193
Work Order: 365220**

January 23, 2015

Laboratory Identification:

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

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on January 16, 2015 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.

Sample Identification: The laboratory received the following samples:

| <u>Laboratory ID</u> | <u>Client ID</u> |
|-----------------------------|-------------------------|
| 365220001 | J1V2X6 |
| 365220002 | J1V2X7 |
| 365220003 | J1V2X8 |
| 365220004 | J1V2X9 |
| 365220005 | J1V300 |
| 365220006 | J1V301 |

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's 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.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Diesel Range Organics and GC Semivolatile PCB.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
cooling as required

| Sample No. | Matrix | Sample Date | Sample Time | Preservation | Cool 4C | Cool 4C |
|------------|--------|-------------|-------------|--------------|---------|---------|
| J1V2X6 | SOIL | 01/14/15 | 1241 | ag | 1 | X |
| J1V2X7 | SOIL | 01/14/15 | 1247 | ag | 1 | X |
| J1V2X8 | SOIL | 01/14/15 | 1250 | ag | 1 | X |
| J1V2X9 | SOIL | 01/14/15 | 1254 | ag | 1 | X |
| J1V300 | SOIL | 01/14/15 | 1259 | ag | 1 | X |

| Sample No. | Volume | Sample Analysis |
|------------|--------|-----------------------------|
| J1V2X6 | 125mL | TPH-Diesel Range - WTPH-D + |
| J1V2X7 | 125mL | PCBs - 8082 |

| Sample No. | Volume | Sample Analysis |
|------------|--------|-----------------------------|
| J1V2X6 | 125mL | TPH-Diesel Range - WTPH-D + |
| J1V2X7 | 125mL | PCBs - 8082 |

SPECIAL INSTRUCTIONS

Received By/Removed From: WCH 1310
 Relinquished By/Removed From: MWShea DWSHEA 1/14/15
 Received By/Removed From: G. Bingham 1443
 Relinquished By/Removed From: G. Bingham 1-14-15
 Received By/Removed From: 1000 Battelle, Fridge #1A 1445
 Relinquished By/Removed From: G. Bingham 1-15-15
 Received By/Removed From: 1000 Battelle, Fridge #1A 0745
 Relinquished By/Removed From: G. Bingham 1-15-15
 Received By/Removed From: WCH 1-15-15 0800
 Relinquished By/Removed From: FEOEX
 Received By/Removed From: G. Bingham 10 JAN 17 0900



305220
XP0193



SAMPLE RECEIPT & REVIEW FORM

| | | |
|--|---|--|
| Client: <u>WCHN</u> | | SDG/AR/COC/Work Order: <u>305220</u> |
| Received By: <u>BUS CHANDLER</u> | | Date Received: <u>16 JAN 15</u> |
| Suspected Hazard Information | Yes <input type="checkbox"/> No <input type="checkbox"/> | *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. |
| COC/Samples marked as radioactive? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0CPM</u> |
| Classified Radioactive II or III by RSO? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes, Were swipes taken of sample containers < action levels? |
| COC/Samples marked containing PCBs? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |
| Package, COC, and/or Samples marked as beryllium or asbestos containing? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group. |
| Shipped as a DOT Hazardous? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Hazard Class Shipped: UN#: |
| Samples identified as Foreign Soil? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |

| Sample Receipt Criteria | Yes | NA | No | Comments/Qualifiers (Required for Non-Conforming Items) |
|---|-------------------------------------|-------------------------------------|-------------------------------------|--|
| 1 Shipping containers received intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?* | <input checked="" type="checkbox"/> | | | Preservation Method: Ice bags Blue ice Dry ice None Other (describe) <u>3°C</u> *all temperatures are recorded in Celsius |
| 2a Daily check performed and passed on IR temperature gun? | <input checked="" type="checkbox"/> | | | Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): |
| 3 Chain of custody documents included with shipment? | <input checked="" type="checkbox"/> | | | |
| 4 Sample containers intact and sealed? | <input checked="" type="checkbox"/> | | | Circle Applicable: Seals broken Damaged container Leaking container Other (describe) |
| 5 Samples requiring chemical preservation at proper pH? | | <input checked="" type="checkbox"/> | | Sample ID's, containers affected and observed pH: If Preservation added, Lot#: |
| 6 VOA vials free of headspace (defined as < 6mm bubble)? | | <input checked="" type="checkbox"/> | | Sample ID's and containers affected: |
| 7 Are Encore containers present? | | | <input checked="" type="checkbox"/> | (If yes, immediately deliver to Volatiles laboratory) |
| 8 Samples received within holding time? | <input checked="" type="checkbox"/> | | | ID's and tests affected: |
| 9 Sample ID's on COC match ID's on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's and containers affected: |
| 10 Date & time on COC match date & time on bottles? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 11 Number of containers received match number indicated on COC? | <input checked="" type="checkbox"/> | | | Sample ID's affected: |
| 12 Are sample containers identifiable as GEL provided? | <input checked="" type="checkbox"/> | | | |
| 13 COC form is properly signed in relinquished/received sections? | <input checked="" type="checkbox"/> | | | |
| 14 Carrier and tracking number. | | | | Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other <u>7725 9379 4469</u> |

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 23 January 2015

| State | Certification |
|---------------------------|------------------------------|
| Alaska | UST-110 |
| Arkansas | 88-0651 |
| CLIA | 42D0904046 |
| California | 2940 Interim |
| Colorado | SC00012 |
| Connecticut | PH-0169 |
| Delaware | SC000122013-10 |
| DoD ELAP/ ISO17025 A2LA | 2567.01 |
| Florida NELAP | E87156 |
| Foreign Soils Permit | P330-12-00283, P330-12-00284 |
| Georgia | SC00012 |
| Georgia SDWA | 967 |
| Hawaii | SC000122013-10 |
| 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 | LA150001 |
| Maryland | 270 |
| Massachusetts | M-SC012 |
| Michigan | 9976 |
| Mississippi | SC000122013-10 |
| Nebraska | NE-OS-26-13 |
| Nevada | SC000122014-1 |
| New Hampshire NELAP | 2054 |
| New Jersey NELAP | SC002 |
| New Mexico | SC00012 |
| New York NELAP | 11501 |
| North Carolina | 233 |
| North Carolina SDWA | 45709 |
| Oklahoma | 9904 |
| Pennsylvania NELAP | 68-00485 |
| Plant Material Permit | PDEP-12-00260 |
| South Carolina Chemistry | 10120001 |
| South Carolina GVL | 23611001 |
| South Carolina Radiochemi | 10120002 |
| Tennessee | TN 02934 |
| Texas NELAP | T104704235-14-9 |
| Utah NELAP | SC000122014-16 |
| Vermont | VT87156 |
| Virginia NELAP | 460202 |
| Washington | C780-12 |

FID Diesel Range Organics Analysis

Case Narrative

**FID Diesel Range Organics
Eberline (WCHN)
SDG XP0193**

Method/Analysis Information

Procedure: Analysis of Diesel Range Organics by Flame Ionization Detector
Analytical Method: NWTPH-Dx in Soil
Prep Method: SW846 3541
Analytical Batch Number: 1451161
Prep Batch Number: 1451160

Sample Analysis

The following samples were analyzed using the analytical protocol as established in NWTPH-Dx in Soil:

| Sample ID | Client ID |
|------------------|--|
| 365220001 | J1V2X6 |
| 365220002 | J1V2X7 |
| 365220003 | J1V2X8 |
| 365220004 | J1V2X9 |
| 365220005 | J1V300 |
| 365220006 | J1V301 |
| 1203246967 | MB for batch 1451160 |
| 1203246968 | Laboratory Control Sample (LCS) |
| 1203246969 | 365220001(J1V2X6) Matrix Spike (MS) |
| 1203246970 | 365220001(J1V2X6) Matrix Spike Duplicate (MSD) |

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-003 REV# 24.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria. Analyte peaks

eluted within the established retention time windows for this method.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

Samples 1203246969 (J1V2X6MS), 1203246970 (J1V2X6MSD), 365220001 (J1V2X6), 365220002 (J1V2X7) and 365220003 (J1V2X8) did not meet surrogate recovery acceptance criteria due to dilution.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 365220001 (J1V2X6) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recovery was not within the established acceptance limits due to dilution and sample matrix interference.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recovery was not within the established acceptance limits due to dilution and sample matrix interference.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. Analyte peaks eluted within the established retention time windows for this method.

Sample Dilutions

Samples 1203246969 (J1V2X6MS), 1203246970 (J1V2X6MSD), 365220001 (J1V2X6), 365220002 (J1V2X7) and 365220003 (J1V2X8) were diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Electronic Package Comment

This package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. DER #1375315 was generated for this SDG.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The additional comments were not required.

System Configuration

The Diesel Range Organics analysis was performed on the following instrument configuration:

| Instrument ID | Instrument | System Configuration | Column ID | Column Description |
|----------------------|---------------------------|-----------------------------|------------------|---------------------------|
| FID7.I | Agilent Gas Chromatograph | Agilent 6890N GC/FID | DB-5MS | 30m x 0.25mm, 0.25um(J&W) |

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.

DATA EXCEPTION REPORT

| | | | |
|-----------------------------------|---|--|-----------------------------|
| Mo.Day Yr. 23-JAN-15 | Division: Federal | Quality Criteria: Specifications | Type: Process |
| Instrument Type: GC/FID | Test / Method: NWTPH-Dx in Soil | Matrix Type: Solid | Client Code: WCHN |
| Batch ID: 1451161 | Sample Numbers: See Below | | |

Potentially affected work order(s)(SDG): 365220(XP0193)

Application Issues:

- Failed Recovery for MS/PS
- Failed Yield for Surrogates
- Failed Recovery for MSD/PSD

**Specification and Requirements
Exception Description:**

1. Samples 365220001, 365220002, 365220003, 1203246969 and 1203246970 did not meet surrogate spike recovery acceptance limits.
2. The MS(1203246969) and MSD(1203346970) did not meet spike recovery acceptance limits.

DER Disposition:

1. Samples were diluted due to overrange target analyte. As a result, the surrogates were diluted out of their acceptance limit. Data were reported.
2. Samples were diluted 1:5 due to overrange target analyte. As a result, the spikes were diluted out of their acceptance limit. Data were reported.

Originator's Name:

Benjamin Taft 23-JAN-15

Data Validator/Group Leader:

Jimin Cao 23-JAN-15

GEL LABORATORIES LLC

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

Qualifier Definition Report for

WCHN001 Eberline

Client SDG: XP0193 GEL Work Order: 365220 Project: RC-233 Soil

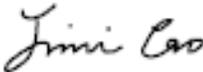
The Qualifiers in this report are defined as follows:

- D Results are reported from a diluted aliquot of sample.
- 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
- 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: Jimin Cao

Date: 23 JAN 2015

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 23, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0193

| | |
|-------------------------------|--------------------|
| Client Sample ID: J1V2X6 | Project: WCHN00313 |
| Sample ID: 365220001 | Client ID: WCHN001 |
| Matrix: SOIL | |
| Collect Date: 14-JAN-15 12:41 | |
| Receive Date: 16-JAN-15 | |
| Collector: Client | |
| Moisture: 13.5% | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|--------|-------|-------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | DT | 258000 | 12500 | 38500 | ug/kg | 5 | BYT1 | 01/22/15 | 1928 | 1451161 | 1 |
| Motor Oil (C20-C36) | DT | 136000 | 12500 | 38500 | ug/kg | 5 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | NWTPH-Dx in Soil | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|------------|---------|-----------|-------------------|
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | 0.00 ug/kg | 770 | 0.00* | (50%-150%) |

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: January 23, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0193

| | |
|-------------------------------|--------------------|
| Client Sample ID: J1V2X7 | Project: WCHN00313 |
| Sample ID: 365220002 | Client ID: WCHN001 |
| Matrix: SOIL | |
| Collect Date: 14-JAN-15 12:47 | |
| Receive Date: 16-JAN-15 | |
| Collector: Client | |
| Moisture: 17% | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|---------|-------|--------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | DT | 1120000 | 52200 | 161000 | ug/kg | 20 | BYT1 | 01/22/15 | 2124 | 1451161 | 1 |
| Motor Oil (C20-C36) | DT | 539000 | 52200 | 161000 | ug/kg | 20 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | NWTPH-Dx in Soil | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|------------|---------|-----------|-------------------|
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | 0.00 ug/kg | 803 | 0.00* | (50%-150%) |

Notes:

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: January 23, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-233 Soil

Client SDG: XP0193

Client Sample ID: J1V2X8
Sample ID: 365220003
Matrix: SOIL
Collect Date: 14-JAN-15 12:50
Receive Date: 16-JAN-15
Collector: Client
Moisture: 19.7%

Project: WCHN00313
Client ID: WCHN001

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|--------|-------|-------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | DT | 604000 | 27000 | 83100 | ug/kg | 10 | BYT1 | 01/22/15 | 2203 | 1451161 | 1 |
| Motor Oil (C20-C36) | DT | 331000 | 27000 | 83100 | ug/kg | 10 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | NWTPH-Dx in Soil | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|------------|---------|-----------|-------------------|
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | 0.00 ug/kg | 831 | 0.00* | (50%-150%) |

Notes:

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Certificate of Analysis

Report Date: January 23, 2015

Company : WC-Hanford, Inc.
Address : 2620 Fermi Avenue
MSIN H4-21
Richland, Washington 99354
Contact: Joan Kessner
Project: RC-233 Soil

Client SDG: XP0193

Client Sample ID: J1V2X9
Sample ID: 365220004
Matrix: SOIL
Collect Date: 14-JAN-15 12:54
Receive Date: 16-JAN-15
Collector: Client
Moisture: 20.1%

Project: WCHN00313
Client ID: WCHN001

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|--------|------|------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | TU | 2710 | 2710 | 8340 | ug/kg | 1 | BYT1 | 01/22/15 | 2242 | 1451161 | 1 |
| Motor Oil (C20-C36) | JT | 4810 | 2710 | 8340 | ug/kg | 1 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|---------|-----------|---------|-----------|-------------------|
| 1 | NWTPH-Dx in Soil | | | | | |
| Surrogate/Tracer Recovery | Test | | | | | |
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | 612 ug/kg | 834 | 73.4 | (50%-150%) |

Notes:

GEL LABORATORIES LLC

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 Address : 2620 Fermi Avenue
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 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0193

| | |
|-------------------------------|--------------------|
| Client Sample ID: J1V300 | Project: WCHN00313 |
| Sample ID: 365220005 | Client ID: WCHN001 |
| Matrix: SOIL | |
| Collect Date: 14-JAN-15 12:59 | |
| Receive Date: 16-JAN-15 | |
| Collector: Client | |
| Moisture: 9.27% | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|--------|------|------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | JT | 4590 | 2380 | 7340 | ug/kg | 1 | BYT1 | 01/22/15 | 2320 | 1451161 | 1 |
| Motor Oil (C20-C36) | JT | 6960 | 2380 | 7340 | ug/kg | 1 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | NWTPH-Dx in Soil | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|-----------|---------|-----------|-------------------|
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | 531 ug/kg | 734 | 72.4 | (50%-150%) |

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 23, 2015

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-233 Soil

Client SDG: XP0193

| | |
|-------------------------------|--------------------|
| Client Sample ID: J1V301 | Project: WCHN00313 |
| Sample ID: 365220006 | Client ID: WCHN001 |
| Matrix: SOIL | |
| Collect Date: 14-JAN-15 13:05 | |
| Receive Date: 16-JAN-15 | |
| Collector: Client | |
| Moisture: 10.7% | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|---|-----------|--------|------|------|-------|----|---------|----------|------|---------|--------|
| Diesel Range Organics | | | | | | | | | | | |
| SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | TU | 2420 | 2420 | 7460 | ug/kg | 1 | BYT1 | 01/22/15 | 2359 | 1451161 | 1 |
| Motor Oil (C20-C36) | JT | 5070 | 2420 | 7460 | ug/kg | 1 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|-----------------------|---------|----------|------|------------|
| SW846 3541 | 3541 DRO IN SOIL PREP | VXS1 | 01/20/15 | 0957 | 1451160 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | NWTPH-Dx in Soil | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|-----------|---------|-----------|-------------------|
| o-Terphenyl | SW 3541/NWTPH-Dx in Soil "Dry Weight Corrected" | 656 ug/kg | 746 | 87.9 | (50%-150%) |

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: January 23, 2015

Page 1 of 2

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington

Contact: Joan Kessner

Workorder: 365220

Client SDG: XP0193

Project Description: RC-233 Soil

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------------|---------------|--------|-----------|--------|-------|-------|--------|------------|-------|----------|-------|
| Diesel Range Organics | | | | | | | | | | | |
| Batch | 1451161 | | | | | | | | | | |
| QC1203246968 | LCS | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | 66600 | | | 60400 | ug/kg | | 90.6 | (70%-130%) | BYT1 | 01/22/15 | 18:50 |
| Motor Oil (C20-C36) | 66600 | | | 71100 | ug/kg | | 107 | (70%-130%) | | | |
| **o-Terphenyl | 666 | | | 660 | ug/kg | | 99.1 | (50%-150%) | | | |
| QC1203246967 | MB | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | | | U | 2170 | ug/kg | | | | | 01/22/15 | 18:11 |
| Motor Oil (C20-C36) | | | U | 2170 | ug/kg | | | | | | |
| **o-Terphenyl | 666 | | | 468 | ug/kg | | 70.2 | (50%-150%) | | | |
| QC1203246969 | 365220001 MS | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | 76900 | DT | 258000 DT | 258000 | ug/kg | | .455 * | (70%-130%) | | 01/22/15 | 20:07 |
| Motor Oil (C20-C36) | 76900 | DT | 136000 DT | 171000 | ug/kg | | 45.2 * | (70%-130%) | | | |
| **o-Terphenyl | 769 | | 0.00 | 0.00 | ug/kg | | 0 * | (50%-150%) | | | |
| QC1203246970 | 365220001 MSD | | | | | | | | | | |
| Diesel Range Organics (C10-C20) | 76900 | DT | 258000 DT | 267000 | ug/kg | 3.23 | 11.5 * | (0%-20%) | | 01/22/15 | 20:46 |
| Motor Oil (C20-C36) | 76900 | DT | 136000 DT | 169000 | ug/kg | 0.954 | 43.1 * | (0%-20%) | | | |
| **o-Terphenyl | 769 | | 0.00 | 0.00 | ug/kg | | 0 * | (50%-150%) | | | |

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

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QC Summary

Workorder: 365220

Client SDG: XP0193

Project Description: RC-233 Soil

Page 2 of 2

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

Miscellaneous

Prep Logbook

Extraction of Semivolatile and Nonvolatile Organic Compounds from Soil, Sludge, and Other Miscellaneous Solid Samples

Batch ID: 1451160 Verified by: _____
 Analyst: Vince Sandifer
 Method: SW846 3541

Lab SOP: GL-OA-E-010 REV# 24
 Instrument: Semi-Volatiles Manual

| Sample ID | Run Date | Aliquot (g) | Prepped Aliquot (mL) | Prepped Factor (mL/g) |
|----------------------------|----------------------|-------------|----------------------|-----------------------|
| 1203246967 MB | 20-JAN-2015 09:57:00 | 30.01 | 1 | 0.03332 |
| 1203246968 LCS | 20-JAN-2015 09:57:00 | 30.01 | 1 | 0.03332 |
| 365220001 | 20-JAN-2015 09:57:00 | 30.01 | 1 | 0.03332 |
| 1203246969 MS (365220001) | 20-JAN-2015 09:57:00 | 30.04 | 1 | 0.03329 |
| 1203246970 MSD (365220001) | 20-JAN-2015 09:57:00 | 30.04 | 1 | 0.03329 |
| 365220002 | 20-JAN-2015 09:57:00 | 30 | 1 | 0.03333 |
| 365220003 | 20-JAN-2015 09:57:00 | 30 | 1 | 0.03333 |
| 365220004 | 20-JAN-2015 09:57:00 | 30.01 | 1 | 0.03332 |
| 365220005 | 20-JAN-2015 09:57:00 | 30.05 | 1 | 0.03328 |
| 365220006 | 20-JAN-2015 09:57:00 | 30.02 | 1 | 0.03331 |

| Type | Sample Id | Description | Serial Number | Spike Amt | Units | Comments: |
|-------|------------|-------------------------------|---------------|-----------|-------|--|
| LCS | 1203246968 | AZDRO SPIKE LCS STD,4000ug/ml | WFI150117-62 | 1 | mL | Final Solvent: CH2Cl2 |
| MS | 1203246969 | AZDRO SPIKE LCS STD,4000ug/ml | WFI150117-62 | 1 | mL | Verified by MD |
| MSD | 1203246970 | AZDRO SPIKE LCS STD,4000ug/ml | WFI150117-62 | 1 | mL | |
| SURR | All | 20 ppm surrogate | WE141120-04 | 1 | mL | 365220001 and 365220002 were dirt mixed with rocks. |
| REGNT | All | Methylene Chloride | 2197913-D | 120 | mL | 365220003-365220006 were muddy dirt with rocks mixed in. |
| SOURC | All | SODIUM SULFATE | 2193342 | 30 | g | |

PCB Analysis

Case Narrative

**PCB Case Narrative
Eberline (WCHN)
SDG XP0193**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1451143
Prep Batch Number: 1451142

Sample Analysis

The following samples were analyzed using the analytical protocol as established in SW846 3541/8082A:

| Sample ID | Client ID |
|------------------|--|
| 365220001 | J1V2X6 |
| 365220002 | J1V2X7 |
| 365220003 | J1V2X8 |
| 365220004 | J1V2X9 |
| 365220005 | J1V300 |
| 365220006 | J1V301 |
| 1203246915 | MB for batch 1451142 |
| 1203246916 | Laboratory Control Sample (LCS) |
| 1203246917 | 365220005(J1V300) Matrix Spike (MS) |
| 1203246918 | 365220005(J1V300) Matrix Spike Duplicate (MSD) |

The samples in this SDG were analyzed on a "dry weight" basis.

Preparation/Analytical Method Verification

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-040 REV# 20.

Raw data reports are processed and reviewed by the analyst using the Chemstation software package. False positives have been removed from the quantitation reports per standard operating procedures (SOP).

Calibration Information

A complete list of the initial calibration data files are shown in the Calibration History report located in the Standard Data section of the data package.

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

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

Quality Control (QC) Information**Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for the samples in this SDG in this batch.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

QC Sample Designation

Sample 365220005 (J1V300) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD met the acceptance limits.

Technical Information**Holding Time Specifications**

GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of sample receipt. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP. 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. All sample extracts were cleaned using alumina. Additionally, copper was added to all sample extracts to remove sulfur.

Sample Dilutions

Sample 365220003 (J1V2X8) was diluted due to high level of target analytes detected in the sample. Sample 365220002 (J1V2X7) was diluted prior to analysis due to the presence of high sulfur content.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG in this batch.

Miscellaneous Information**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation

Data exception report (DER) is generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A DER was not required for the samples in this SDG in this batch.

Manual Integrations

Certain standards and samples may have required manual integration to correctly position the baseline as set in the calibration standard injections. If manual integration was performed, copies of all manual integration peak profiles are included in the raw data section of this PCB fraction.

Additional Comments

The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis, and to list any report documents generated as a result of sample analysis or review. The following additional comments were required:

The higher 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 and MSD are from the same analytical column as the parent sample.

Due to software issue, the surrogate recovery range was not indicated or possibly indicated incorrectly in Quantitation Report. Please see Surrogate Recovery Report for correct surrogate acceptance limits.

Due to rounding differences in the calculation between the forms, the data reported in Sample Summary (form 1) and Spike Recovery Report (form 3) may differ slightly from the data reported in Identification Summary (form 10).

Aroclors quantitated on the raw data report by ChemStation data system do not necessarily represent positive Aroclor identification. In order for positive identification to be made, the Aroclor must match in pattern and retention time; as well as quantitate relatively close between the primary and confirmation columns, as specified in SW846 method 8000. When these conditions are not met, the Aroclor is reported as a non-detect on the data report.

System Configuration

The Semi-Volatiles-PCB analysis was performed on the following instrument configuration:

| Instrument ID | Instrument | System Configuration | Column ID | Column Description |
|----------------------|---|-----------------------------|------------------|---|
| ECD8A.I_1 | Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler | HP6890 Series ECD | Rtx-CLP I | 30m x 0.25mm, 0.25um (Rtx-CLPesticide I) |
| ECD8A.I_2 | Agilent 6890 Gas Chromatograph/Dual ECD w/ 7683 Autosampler | HP6890 Series ECD | Rtx-CLP II | 30m x 0.25mm, 0.20um (Rtx-CLPesticide II) |

Certification Statement

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

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Qualifier Definition Report for

WCHN001 Eberline

Client SDG: XP0193 GEL Work Order: 365220 Project: RC-233 Soil

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of sample.

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

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.

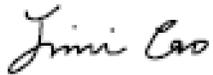
RA Indicates that sample is re-analyzed without re-extraction.

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: 21 JAN 2015

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: January 21, 2015

Company : WC–Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4–21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC–233 Soil

Client SDG: XP0193

| | |
|-------------------------------|--------------------|
| Client Sample ID: J1V301 | Project: WCHN00313 |
| Sample ID: 365220006 | Client ID: WCHN001 |
| Matrix: SOIL | |
| Collect Date: 14–JAN–15 13:05 | |
| Receive Date: 16–JAN–15 | |
| Collector: Client | |
| Moisture: 10.7% | |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | Method |
|--|-----------|--------|------|------|-------|----|---------|----------|------|---------|--------|
| Semi–Volatiles–PCB | | | | | | | | | | | |
| SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected" | | | | | | | | | | | |
| Aroclor–1016 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | JXM | 01/21/15 | 0851 | 1451143 | 1 |
| Aroclor–1221 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1232 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1242 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1248 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1254 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1260 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1262 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |
| Aroclor–1268 | U | 1.24 | 1.24 | 3.72 | ug/kg | 1 | | | | | |

The following Prep Methods were performed:

| Method | Description | Analyst | Date | Time | Prep Batch |
|------------|--------------------------------|---------|----------|------|------------|
| SW846 3541 | Prep Method 3541 PCB Prep Soil | MXD2 | 01/20/15 | 0936 | 1451142 |

The following Analytical Methods were performed:

| Method | Description | Analyst Comments |
|--------|------------------|------------------|
| 1 | SW846 3541/8082A | |
| 2 | SW846 3541/8082A | |

| Surrogate/Tracer Recovery | Test | Result | Nominal | Recovery% | Acceptable Limits |
|---------------------------|---|------------|---------|-----------|-------------------|
| Decachlorobiphenyl | SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected" | 7.60 ug/kg | 7.45 | 102 | (25%–131%) |
| 4cmx | SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected" | 5.95 ug/kg | 7.45 | 79.9 | (29%–106%) |

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: January 21, 2015

Page 1 of 1

WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H4-21
Richland, Washington
Contact: Joan Kessner

Workorder: 365220

Client SDG: XP0193

Project Description: RC-233 Soil

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|-----------|--------|------|------|-------|------|------|------------|-------|----------|------|
| Semi-Volatiles-PCB | | | | | | | | | | | |
| Batch | 1451143 | | | | | | | | | | |
| QC1203246916 | LCS | | | | | | | | | | |
| Aroclor-1016 | 33.3 | | | 23.6 | ug/kg | | 70.9 | (44%-97%) | JXM | 01/21/15 | 07 |
| Aroclor-1260 | 33.3 | | | 29.2 | ug/kg | | 87.6 | (49%-109%) | | | |
| **4cmx | 6.66 | | | 5.27 | ug/kg | | 79.1 | (29%-106%) | | | |
| **Decachlorobiphenyl | 6.66 | | | 6.57 | ug/kg | | 98.7 | (25%-131%) | | | |
| QC1203246915 | MB | | | | | | | | | | |
| Aroclor-1016 | | | U | 1.11 | ug/kg | | | | | 01/21/15 | 07 |
| Aroclor-1221 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1232 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1242 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1248 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1254 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1260 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1262 | | | U | 1.11 | ug/kg | | | | | | |
| Aroclor-1268 | | | U | 1.11 | ug/kg | | | | | | |
| **4cmx | 6.66 | | | 5.50 | ug/kg | | 82.6 | (29%-106%) | | | |
| **Decachlorobiphenyl | 6.66 | | | 6.56 | ug/kg | | 98.4 | (25%-131%) | | | |
| QC1203246917 | 365220005 | MS | | | | | | | | | |
| Aroclor-1016 | 36.7 | U | 1.22 | 16.9 | ug/kg | | 46.1 | (22%-127%) | | 01/21/15 | 08 |
| Aroclor-1260 | 36.7 | U | 1.22 | 25.5 | ug/kg | | 69.6 | (18%-130%) | | | |
| **4cmx | 7.34 | | 5.89 | 5.03 | ug/kg | | 68.5 | (29%-106%) | | | |
| **Decachlorobiphenyl | 7.34 | | 7.44 | 6.46 | ug/kg | | 87.9 | (25%-131%) | | | |

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QC Summary

Workorder: 365220 **Client SDG:** XP0193 **Project Description:** RC-233 Soil **Page 2 of 2**

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|---------------------------|-----------|--------|------|------|-------|------|------|------------|-------|----------|------|
| Semi-Volatiles-PCB | | | | | | | | | | | |
| Batch | 1451143 | | | | | | | | | | |
| QC1203246918 | 365220005 | MSD | | | | | | | | | |
| Aroclor-1016 | 36.7 | U | 1.22 | 19.7 | ug/kg | 15.2 | 53.7 | (0%-30%) | JXM | 01/21/15 | 08 |
| Aroclor-1260 | 36.7 | U | 1.22 | 30.0 | ug/kg | 16.0 | 81.6 | (0%-30%) | | | |
| **4cmx | 7.35 | | 5.89 | 5.44 | ug/kg | | 74 | (29%-106%) | | | |
| **Decachlorobiphenyl | 7.35 | | 7.44 | 7.21 | ug/kg | | 98.2 | (25%-131%) | | | |

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
- 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.

Miscellaneous

Prep Logbook

Automated Soxhlet Extraction

Batch ID: 1451142 Verified by: _____
 Analyst: Mia DeLee
 Method: SW846 3541

Lab SOP: GL-OA-E-066 REV# 5
 Instrument: Semi-Volatiles Manual

| Sample ID | Run Date | Aliquot (g) | Clean Up 1 Amount 1 (mL) | Clean Up Post Clean Up Amount 1 (mL) | Final Volume (mL) | Prepped Factor (mL/g) |
|-------------------------------|----------------------|-------------|--------------------------------|---|-------------------|-----------------------|
| 1203246915 MB | 20-JAN-2015 09:36:00 | 30.02 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03331 |
| 1203246916 LCS | 20-JAN-2015 09:36:00 | 30.03 | H2SO4/KM 2 nO4 | 9 | 1 | 0.0333 |
| 365220001 | 20-JAN-2015 09:36:00 | 30.03 | H2SO4/KM 2 nO4 | 9 | 1 | 0.0333 |
| 365220002 | 20-JAN-2015 09:36:00 | 30 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03333 |
| 365220003 | 20-JAN-2015 09:36:00 | 30.05 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03328 |
| 365220004 | 20-JAN-2015 09:36:00 | 30.11 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03321 |
| 365220005 | 20-JAN-2015 09:36:00 | 30.08 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03324 |
| 1203246917 MS (365220005) | 20-JAN-2015 09:36:00 | 30.02 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03331 |
| 1203246918 MSD (365220005) | 20-JAN-2015 09:36:00 | 30.01 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03332 |
| 365220006 | 20-JAN-2015 09:36:00 | 30.06 | H2SO4/KM 2 nO4 | 9 | 1 | 0.03327 |

| Type | Sample Id | Description | Serial Number | Spike Amt | Units | Comments: |
|-------|------------|-----------------------------------|---------------|-----------|-------|---|
| LCS | 1203246916 | PCB Laboratory Control | WE141210-06 | 1 | mL | Final Solvent: Hexane |
| MS | 1203246917 | PCB Laboratory Control | WE141210-06 | 1 | mL | Verified by: SJW |
| MSD | 1203246918 | PCB Laboratory Control | WE141210-06 | 1 | mL | Clean-up: H2SO4/KMnO4 |
| SURR | All | PEST LOW LEVEL SURROGATE 200 UG/L | WE150114-01 | 1 | mL | Prior to clean-up: 2mL Clean-up initials: MD |
| REGNT | All | 5% Potassium Permanganate | 2176611 | 5 | mL | Clean-up SOP: GL-OA-E-037 Rev.7 |
| REGNT | All | Hexane | 2192355-B10 | 120 | mL | Clean-up date: 01-20-15 |
| REGNT | All | 1:1 sulfuric acid | 2197162 | 5 | mL | |
| SOURC | All | SODIUM SULFATE | 2193342 | 30 | g | All samples contained moist/wet soil and large rocks. |