

**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 10/9/14  
INITIAL/DATE

**COMMENTS:**

**SDG XP0128**

**SAF-RC-233**

Rad only

Chem only

Rad & Chem

Complete

Partial

**REVISED TO INCLUDE WTP-D+ analysis**

**Sample Location: 100-B-35:1, 151-B electrical switchyard**



October 02, 2014

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

Re: RC-233 Soil  
Work Order: 355942  
SDG: XP0128

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 04, 2014. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This data package is revised per client to include WTPH-D+ analyses.

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. 1616.

Sincerely,

Orlette Johnson  
Project Manager

Purchase Order: 1510  
Chain of Custody: RC-233-061  
Enclosures



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# Case Narrative

This data package is revised per client to include WTPH-D+ analyses.

**Receipt Narrative  
for  
WC-HANFORD, INC.  
SDG: XP0128  
Work Order: 355942**

**October 02, 2014**

**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 September 04, 2014 for analysis.

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

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
355942001	J1TXX8
355942002	J1TXX9
355942003	J1V000
355942004	J1V001
355942005	J1V002

**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.



Orlette Johnson  
Project Manager

# **Chain of Custody and Supporting Documentation**

RC-233-061  
Price Code

Project Coordinator  
KESSENER, JH  
SAF No.  
RC-233

Company Contact  
Joan Kessner  
Telephone No.  
375-4688

Project Designation  
100-IU-2 & 100-IU-6 Remaining Waste Sites

Company Contact  
Joan Kessner  
Telephone No.  
375-4688

Project Designation  
100-IU-2 & 100-IU-6 Remaining Waste Sites

Method of Shipment  
Commercial Carrier - fed EX

Method of Shipment  
Commercial Carrier - fed EX

Method of Shipment  
Commercial Carrier - fed EX

Field Logbook No.  
EL-1667-02

Field Logbook No.  
EL-1667-02

Field Logbook No.  
EL-1667-02

Field Logbook No.  
EL-1667-02

Bill of Lading/Air Bill No.  
see OSPC

Bill of Lading/Air Bill No.  
see OSPC

Bill of Lading/Air Bill No.  
see OSPC

Offsite Property No.  
A131225

Offsite Property No.  
A131225

Offsite Property No.  
A131225

Offsite Property No.  
A131225

Other Labs Shipped To  
NA

Preservation  
Cool 4C

Type of Container  
aG

No. of Container(s)  
1

Volume  
125mL

Sample Analysis  
PCBs - 8082

Special Handling and/or Storage  
COOL 4C



XP0128

FINAL SAMPLE DISPOSITION

WCH-EE-011



**SAMPLE RECEIPT & REVIEW FORM**

Client: <u>WCHN</u>		SDG/AR/COC/Work Order: <u>355941 355942</u>	
Received By: <u>Chris Zurcher</u>		Date Received: <u>9-14-14</u>	
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?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts):
Classified Radioactive II or III by RSO?		<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		<input checked="" type="checkbox"/>	

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: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>See Below</u>
2a	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>130532192</u> 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.	<input checked="" type="checkbox"/>			Circle Applicable: <u>FedEx Air</u> FedEx Ground UPS Field Services Courier Other  <u>7710 3267 5458-44</u> <u>7710 0988 8330-22</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HA Date 09/14/14 Page 1 of 1

**From:** "Kessner, Joan H" <joan.kessner@wch-rcc.com>  
**Subject:** XP0128 add-ons  
**Date:** Mon, 29 Sep 2014 19:20:11 +0000  
**To:** 'Orlette Johnson' <orlette.johnson@gel.com>



Orlette--

I missed this is the original WTPH-D+ add-on request ò ò ..

All the samples in SDG XP0128 need to have WTPH-D+ added with a 7 day turn.

Thanks,

Joan

# **Laboratory Certifications**

**List of current GEL Certifications as of 02 October 2014**

<b>State</b>	<b>Certification</b>
Alaska	UST-110
Arkansas	88-0651
CLIA	42D0904046
California NELAP	01151CA
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	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA130005
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	SC000122014-14
Vermont	VT87156
Virginia NELAP	460202
Washington	C780-12
Wisconsin	999887790

# **FID Diesel Range Organics Analysis**

# Case Narrative

**FID Diesel Range Organics  
WC-HANFORD, INC. (WCHN)  
SDG XP0128**

**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: 1423070

Prep Batch Number: 1423067

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
355942001	J1TXX8
355942002	J1TXX9
355942003	J1V000
355942004	J1V001
355942005	J1V002
1203177156	MB for batch 1423067
1203177157	Laboratory Control Sample (LCS)
1203177158	356071001(J1V008) Matrix Spike (MS)
1203177159	356071001(J1V008) 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 standards (ICV or CCV) met the acceptance criteria for the target analytes. Analyte peaks eluted within the established retention time windows for this method.

The associated CCV standards did not meet surrogate recovery acceptance criteria; however they all met the recovery acceptance criteria for the target analytes.

### **Quality Control (QC) Information**

#### **Method Blank (MB) Statement**

The MB analyzed with this SDG met the acceptance criteria; however, the MB contained low level (below the PQL) of hydrocarbons within Motor Oil range.

#### **Surrogate Recoveries**

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

#### **Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

#### **QC Sample Designation**

WCHN sample 356071001 (J1V008) was selected for the matrix spike and matrix spike duplicate analysis.

#### **Matrix Spike (MS) Recovery Statement**

The MS recovery was within the established acceptance limits.

#### **Matrix Spike Duplicate (MSD) Recovery Statement**

The MSD recovery was 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. Samples 355942001 (J1TXX8), 355942002 (J1TXX9), 355942003 (J1V000), 355942004 (J1V001) and 355942005 (J1V002) were logged and prepared for NWTPH analysis after the holding time expired.

#### **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**

The samples in this SDG did not require dilutions.

#### **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 #1339471 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:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>
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**

<b>Mo.Day Yr.</b> 02-OCT-14	<b>Division:</b> Federal	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> GC/FID	<b>Test / Method:</b> NWTPH-Dx in Soil	<b>Matrix Type:</b> Solid	<b>Client Code:</b> WCHN
<b>Batch ID:</b> 1423070	<b>Sample Numbers:</b> See Below		
<p><b>Potentially affected work order(s)(SDG): 355942(XP0128),356071(XP0127)</b></p> <p><b>Application Issues:</b> Sample Prepped out of Holding Sample Logged out of Holding</p>			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
<p>1. All WCHN samples in this batch were prepped out of holding.</p>		<p>1. Client did not release samples until after hold time. Data were reported with proper qualifiers.</p>	

**Originator's Name:**

Benjamin Taft      02-OCT-14

**Data Validator/Group Leader:**

Jimin Cao              02-OCT-14

# GEL LABORATORIES LLC

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

## Qualifier Definition Report for

WCHN001 WC-HANFORD, INC.

Client SDG: XP0128 GEL Work Order: 355942 Project: RC-233 Soil

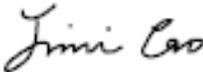
### The Qualifiers in this report are defined as follows:

- B The analyte was detected in both the associated QC blank and in the 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.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: 03 OCT 2014

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: October 2, 2014

Company : WC-Hanford, Inc.  
 Address : 2620 Fermi Avenue  
 MSIN H4-21  
 Richland, Washington 99354

Contact: Joan Kessner  
 Project: RC-233 Soil

Client SDG: XP0128

Client Sample ID: J1TXX8  
 Sample ID: 355942001  
 Matrix: SOIL  
 Collect Date: 03-SEP-14 09:34  
 Receive Date: 04-SEP-14  
 Collector: Client  
 Moisture: 5.88%

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)	UX	2260	2260	6940	ug/kg	1	BYT1	10/01/14	1530	1423070	1
Motor Oil (C20-C36)	BJX	4830	2260	6940	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	09/30/14	1905	1423067

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"	366 ug/kg	694	52.8	(50%-150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: October 2, 2014

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

Client SDG: XP0128

Client Sample ID: J1TXX9	Project: WCHN00313
Sample ID: 355942002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 03-SEP-14 09:38	
Receive Date: 04-SEP-14	
Collector: Client	
Moisture: 3.65%	

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)	X	64700	10700	32900	ug/kg	1	BYT1	10/01/14	1255	1423070	1
Motor Oil (C20-C36)	BX	58100	10700	32900	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	09/30/14	1905	1423067

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"	1680 ug/kg	3290	51.0	(50%-150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: October 2, 2014

Company : WC-Hanford, Inc.  
Address : 2620 Fermi Avenue  
MSIN H4-21  
Richland, Washington 99354

Contact: Joan Kessner  
Project: RC-233 Soil

Client SDG: XP0128

Client Sample ID: J1V000  
Sample ID: 355942003  
Matrix: SOIL  
Collect Date: 03-SEP-14 09:42  
Receive Date: 04-SEP-14  
Collector: Client  
Moisture: 5.42%

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)	JX	5580	2280	7030	ug/kg	1	BYT1	10/01/14	1334	1423070	1
Motor Oil (C20-C36)	BX	12000	2280	7030	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	09/30/14	1905	1423067

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"	504 ug/kg	703	71.7	(50%-150%)

Notes:

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: October 2, 2014

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

Client SDG: XP0128

Client Sample ID: J1V001	Project: WCHN00313
Sample ID: 355942004	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 03-SEP-14 09:46	
Receive Date: 04-SEP-14	
Collector: Client	
Moisture: 5.53%	

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)	X	37200	2290	7040	ug/kg	1	BYT1	10/01/14	1412	1423070	1
Motor Oil (C20-C36)	BX	14300	2290	7040	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	09/30/14	1905	1423067

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"	568 ug/kg	704	80.6	(50%-150%)

**Notes:**

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Report Date: October 2, 2014

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

Client SDG: XP0128

Client Sample ID: J1V002	Project: WCHN00313
Sample ID: 355942005	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 03-SEP-14 09:50	
Receive Date: 04-SEP-14	
Collector: Client	
Moisture: 4.73%	

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)	X	18100	2260	6960	ug/kg	1	BYT1	10/01/14	1451	1423070	1
Motor Oil (C20-C36)	BJX	3850	2260	6960	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	09/30/14	1905	1423067

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"	503 ug/kg	696	72.2	(50%-150%)

**Notes:**

# **Quality Control Summary**

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: October 2, 2014

Page 1 of 2

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

**Contact: Joan Kessner**

**Workorder: 355942**

**Client SDG: XP0128**

**Project Description: RC-233 Soil**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Diesel Range Organics</b>											
Batch	1423070										
QC1203177157	LCS										
Diesel Range Organics (C10-C20)	66600			53400	ug/kg		80.1	(70%-130%)	BYT1	10/01/14	11:37
Motor Oil (C20-C36)	66600		B	61000	ug/kg		91.6	(70%-130%)			
**o-Terphenyl	666			602	ug/kg		90.4	(50%-150%)			
QC1203177156	MB										
Diesel Range Organics (C10-C20)			U	2160	ug/kg					10/01/14	10:57
Motor Oil (C20-C36)			J	2810	ug/kg						
**o-Terphenyl	666			573	ug/kg		86.1	(50%-150%)			
QC1203177158	356071001 MS										
Diesel Range Organics (C10-C20)	67300	X	14300	X	61500	ug/kg		70.2	(70%-130%)		10/01/14 18:05
Motor Oil (C20-C36)	67300	BX	20200	BX	83100	ug/kg		93.4	(70%-130%)		
**o-Terphenyl	673		499		586	ug/kg		87.1	(50%-150%)		
QC1203177159	356071001 MSD										
Diesel Range Organics (C10-C20)	67300	X	14300	X	67200	ug/kg	8.89	78.7	(0%-20%)		10/01/14 18:44
Motor Oil (C20-C36)	67300	BX	20200	BX	80000	ug/kg	3.88	88.8	(0%-20%)		
**o-Terphenyl	673		499		560	ug/kg		83.2	(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: 355942

Client SDG: XP0128

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: 1423067      Verified by: \_\_\_\_\_  
 Analyst: Alberto Velasco  
 Method: SW846 3541

Lab SOP: GL-OA-E-010 REV# 22  
 Instrument: Semi-Volatiles Manual

Sample ID	Run Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203177156 MB	30-SEP-2014 19:05:00	30.05	1	0.03328
1203177157 LCS	30-SEP-2014 19:05:00	30.02	1	0.03331
355942001	30-SEP-2014 19:05:00	15.3	0.5	0.03268
355942002	30-SEP-2014 19:05:00	3.15	0.5	0.15873
355942003	30-SEP-2014 19:05:00	30.08	1	0.03324
355942004	30-SEP-2014 19:05:00	30.05	1	0.03328
355942005	30-SEP-2014 19:05:00	30.15	1	0.03317
356071001	30-SEP-2014 19:05:00	30.01	1	0.03332
1203177158 MS (356071001)	30-SEP-2014 19:05:00	30	1	0.03333
1203177159 MSD (356071001)	30-SEP-2014 19:05:00	30.02	1	0.03331
356071002	30-SEP-2014 19:05:00	30.08	1	0.03324
356071003	30-SEP-2014 19:05:00	30.11	1	0.03321
356071004	30-SEP-2014 19:05:00	30.02	1	0.03331
356071005	30-SEP-2014 19:05:00	30.03	1	0.0333

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203177157	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-63	1	mL	*Sample 355942001 and -42002(consumed) are limited amount, aliquot by 15g, Final Volume is .5mL
MS	1203177158	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-63	1	mL	
MSD	1203177159	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-63	1	mL	
SURR	All	20 ppm surrogate	WE140819-04	.5	mL	Final Solvent: CH2Cl2 Verified By: SLW
SURR	All	20 ppm surrogate	WE140819-04	1	mL	
REGNT	All	Methylene Chloride	2159559-D	120	mL	
SOURC	All	SODIUM SULFATE	2148821	30	g	

# **PCB Analysis**

# Case Narrative

**PCB Case Narrative  
WC-HANFORD, INC. (WCHN)  
SDG XP0128**

**Method/Analysis Information**

**Procedure:** Analysis of Polychlorinated Biphenyls by ECD  
Analytical Method: SW846 3541/8082A  
Prep Method: SW846 3541  
Analytical Batch Number: 1416841  
Prep Batch Number: 1416838

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
355942001	J1TXX8
355942002	J1TXX9
355942003	J1V000
355942004	J1V001
355942005	J1V002
1203161623	MB for batch 1416838
1203161624	Laboratory Control Sample (LCS)
1203161631	355942002(J1TXX9) Matrix Spike (MS)
1203161632	355942002(J1TXX9) 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 355942002 (J1TXX9) was selected for the matrix spike and matrix spike duplicate analysis.

#### **Matrix Spike (MS) Recovery Statement**

The MS recoveries for this SDG were within the established acceptance limits.

#### **Matrix Spike Duplicate (MSD) Recovery Statement**

The MSD recoveries for this SDG 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**

The samples in this SDG did not require dilutions.

#### **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:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>
ECD9A.I_1	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 1	30m x 0.25mm, 0.25um
ECD9A.I_2	Agilent 7890A Gas Chromatograph/Dual ECD w/ 7693 Autosampler	7890A GC/ECD	Restek Rtx-CLPest 2	30m x 0.25mm, 0.20um

**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 WC-HANFORD, INC.

Client SDG: XP0128 GEL Work Order: 355942 Project: RC-233 Soil

#### The Qualifiers in this report are defined as follows:

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.

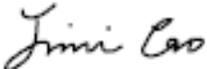
RA Indicates that sample is re-analyzed without re-extraction.

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: 09 SEP 2014

Title: Data Validator

# **Sample Data Summary**



# GEL LABORATORIES LLC

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## Certificate of Analysis

Report Date: September 8, 2014

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

Client SDG: XP0128

Client Sample ID: J1TXX9	Project: WCHN00313
Sample ID: 355942002	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 03-SEP-14 09:38	
Receive Date: 04-SEP-14	
Collector: Client	
Moisture: 3.65%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.15	1.15	3.45	ug/kg	1	YS1	09/06/14	1811	1416841	1
Aroclor-1221	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1232	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1242	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1248	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1254	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1262	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1268	U	1.15	1.15	3.45	ug/kg	1					
Aroclor-1260	J	1.67	1.15	3.45	ug/kg	1	YS1	09/06/14	1811	1416841	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/04/14	1050	1416517
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/05/14	1056	1416838

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
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.08 ug/kg	6.91	59.1	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.93 ug/kg	6.91	71.3	(35%-119%)

**Notes:**

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## Certificate of Analysis

Report Date: September 8, 2014

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

Client SDG: XP0128

Client Sample ID: J1V000      Project: WCHN00313  
 Sample ID: 355942003      Client ID: WCHN001  
 Matrix: SOIL  
 Collect Date: 03-SEP-14 09:42  
 Receive Date: 04-SEP-14  
 Collector: Client  
 Moisture: 5.42%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.17	1.17	3.51	ug/kg	1	YS1	09/06/14	1851	1416841	1
Aroclor-1221	U	1.17	1.17	3.51	ug/kg	1					
Aroclor-1232	U	1.17	1.17	3.51	ug/kg	1					
Aroclor-1242	U	1.17	1.17	3.51	ug/kg	1					
Aroclor-1248	U	1.17	1.17	3.51	ug/kg	1					
Aroclor-1254	J	2.51	1.17	3.51	ug/kg	1					
Aroclor-1260	J	2.42	1.17	3.51	ug/kg	1					
Aroclor-1262	U	1.17	1.17	3.51	ug/kg	1					
Aroclor-1268	U	1.17	1.17	3.51	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/04/14	1050	1416517
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/05/14	1056	1416838

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
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	4.52 ug/kg	7.02	64.4	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.80 ug/kg	7.02	82.6	(35%-119%)

**Notes:**

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## Certificate of Analysis

Report Date: September 8, 2014

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

Client SDG: XP0128

Client Sample ID: J1V001	Project: WCHN00313
Sample ID: 355942004	Client ID: WCHN001
Matrix: SOIL	
Collect Date: 03-SEP-14 09:46	
Receive Date: 04-SEP-14	
Collector: Client	
Moisture: 5.53%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.17	1.17	3.52	ug/kg	1	YS1	09/06/14	1905	1416841	1
Aroclor-1221	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1232	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1242	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1248	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1254	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1262	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1268	U	1.17	1.17	3.52	ug/kg	1					
Aroclor-1260	J	2.48	1.17	3.52	ug/kg	1	YS1	09/06/14	1905	1416841	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/04/14	1050	1416517
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/05/14	1056	1416838

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
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.11 ug/kg	7.04	72.6	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	6.45 ug/kg	7.04	91.6	(35%-119%)

**Notes:**

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## Certificate of Analysis

Report Date: September 8, 2014

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

Client SDG: XP0128

Client Sample ID: J1V002      Project: WCHN00313  
 Sample ID: 355942005      Client ID: WCHN001  
 Matrix: SOIL  
 Collect Date: 03-SEP-14 09:50  
 Receive Date: 04-SEP-14  
 Collector: Client  
 Moisture: 4.73%

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
<b>Semi-Volatiles-PCB</b>											
<b>SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"</b>											
Aroclor-1016	U	1.16	1.16	3.49	ug/kg	1	YS1	09/06/14	1918	1416841	1
Aroclor-1221	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1232	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1242	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1248	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1254	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1260	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1262	U	1.16	1.16	3.49	ug/kg	1					
Aroclor-1268	U	1.16	1.16	3.49	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/04/14	1050	1416517
SW846 3541	Prep Method 3541 PCB Prep Soil	SJW1	09/05/14	1056	1416838

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
4cmx	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	5.63 ug/kg	6.97	80.8	(44%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB Solid Automated Soxhlet "Dry Weight Corrected"	6.93 ug/kg	6.97	99.4	(35%-119%)

**Notes:**

# **Quality Control Summary**

# GEL LABORATORIES LLC

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

## QC Summary

Report Date: September 8, 2014

Page 1 of 2

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

**Workorder: 355942**

**Client SDG: XP0128**

**Project Description: RC-233 Soil**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1416841										
QC1203161624	LCS										
Aroclor-1016	33.3			27.9	ug/kg		83.7	(39%-120%)	YS1	09/06/14	15:48
Aroclor-1260	33.3			28.0	ug/kg		84.2	(50%-116%)			
**4cmx	6.66			5.66	ug/kg		85	(44%-106%)			
**Decachlorobiphenyl	6.66			7.21	ug/kg		108	(35%-119%)			
QC1203161623	MB										
Aroclor-1016			U	1.11	ug/kg					09/06/14	15:35
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			5.61	ug/kg		84.2	(44%-106%)			
**Decachlorobiphenyl	6.66			6.81	ug/kg		102	(35%-119%)			
QC1203161631	355942002	MS									
Aroclor-1016	34.6	U	1.15	19.3	ug/kg		55.7	(25%-125%)		09/06/14	18:24
Aroclor-1260	34.6	J	1.67	20.1	ug/kg		53.1	(28%-127%)			
**4cmx	6.92		4.08	4.41	ug/kg		63.8	(44%-106%)			
**Decachlorobiphenyl	6.92		4.93	5.22	ug/kg		75.5	(35%-119%)			

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 355942

Client SDG: XP0128

Project Description: RC-233 Soil

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Semi-Volatiles-PCB</b>											
Batch	1416841										
QC1203161632 355942002 MSD											
Aroclor-1016	34.4	U	1.15	21.3	ug/kg	10.3	62.1	(0%-30%)	YS1	09/06/14	18:38
Aroclor-1260	34.4	J	1.67	22.3	ug/kg	10.5	60	(0%-30%)			
**4cmx	6.87			4.08	4.55	ug/kg	66.3	(44%-106%)			
**Decachlorobiphenyl	6.87			4.93	5.78	ug/kg	84.2	(35%-119%)			

**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:** 1416838  
**Analyst:** Sirena White  
**Method:** SW846 3541

**Verified by:** \_\_\_\_\_

**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)
1203161623 MB	05-SEP-2014 10:56:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
1203161624 LCS	05-SEP-2014 10:56:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
355941001 - 2	05-SEP-2014 10:56:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
355941002 - 2	05-SEP-2014 10:56:00	30	H2SO4/KM 2 nO4	9	1	0.03333
1203161625 - 2 MS (355941002)	05-SEP-2014 10:56:00	30.13	H2SO4/KM 2 nO4	9	1	0.03319
1203161626 - 2 MSD (355941002)	05-SEP-2014 10:56:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
355941003 - 2	05-SEP-2014 10:56:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
355941004 - 2	05-SEP-2014 10:56:00	30.17	H2SO4/KM 2 nO4	9	1	0.03315
355941005 - 2	05-SEP-2014 10:56:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
355942001 - 2	05-SEP-2014 10:56:00	30.17	H2SO4/KM 2 nO4	9	1	0.03315
355942002 - 2	05-SEP-2014 10:56:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
1203161631 - 2 MS (355942002)	05-SEP-2014 10:56:00	30	H2SO4/KM 2 nO4	9	1	0.03333
1203161632 - 2 MSD (355942002)	05-SEP-2014 10:56:00	30.21	H2SO4/KM 2 nO4	9	1	0.0331
355942003 - 2	05-SEP-2014 10:56:00	30.12	H2SO4/KM 2 nO4	9	1	0.0332
355942004 - 2	05-SEP-2014 10:56:00	30.07	H2SO4/KM 2 nO4	9	1	0.03326
355942005 - 2	05-SEP-2014 10:56:00	30.11	H2SO4/KM 2 nO4	9	1	0.03321

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203161624	PCB Laboratory Control	WE140714-06	1	mL	Final Solvent: Hexane
MS	1203161625	PCB Laboratory Control	WE140714-06	1	mL	Verified by: MD
MS	1203161631	PCB Laboratory Control	WE140714-06	1	mL	Clean-up Initials: SJW
MSD	1203161626	PCB Laboratory Control	WE140714-06	1	mL	Clean-up SOP: GL-OA-E-037 REV1
MSD	1203161632	PCB Laboratory Control	WE140714-06	1	mL	Clean-up date: 09/05/2014
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE140812-01	1	mL	Prior to Clean-up: 2mL
REGNT	All	1:1 sulfuric acid	2130267	5	mL	All samples contained rocks. Samples were a mixture of soil and rocks.
REGNT	All	5% Potassium Permanganate	2134734	5	mL	

# Prep Logbook

**Batch ID:** 1416838  
**Analyst:** Sirena White  
**Method:** SW846 3541

**Verified by:** \_\_\_\_\_

**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 Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
REGNT All	Hexane		2151967-B10		120	mL	
SOURC All	SODIUM SULFATE		2127169		30	g	