

SAF-RC-074
100-D/DR Burial Grounds & Remaining
Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 10/30/14
INITIAL/DATE

COMMENTS:

SDG XP0150

SAF RC-074

Rad only

Chem only

Rad & Chem

Complete

Partial

**Waste Site: 100-D-75:1, 151-D primary electrical
substation**



October 22, 2014

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

Re: RC-074 Soil
Work Order: 359338
SDG: XP0150

Dear Joan Kessner:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on October 17, 2014. 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. 1616.

Sincerely,

Orlette Johnson
Project Manager

Purchase Order: 1510
Chain of Custody: RC-074-684
Enclosures



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Case Narrative

**Receipt Narrative
for
WC-HANFORD, INC.
SDG: XP0150
Work Order: 359338**

October 22, 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 October 17, 2014 for analysis.

Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
359338001	J1V165
359338002	J1V166
359338003	J1V167
359338004	J1V168

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 Semivolatle PCB.



Orlette Johnson
Project Manager

Chain of Custody and Supporting Documentation

Company Contact: Joan Kessner
 Telephone No.: 375-4688
 Project Coordinator: KESSNER, JH
 Price Code: 3 days
 SAF No.: RC-074
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No.: See OSRC

Sampling Location: 100-D-75-1, 151-D Primary electrical substation
 Field Logbook No.: EL-1662-03
 COA: 01D7512600
 Offsite Property No.: A131261

RC-074-684
 Data Turnaround: 8A

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Cool 4C	Cool 4C	Volume	No. of Container(s)	Type of Container	Sample Analysis
J1V165	SOIL	10/16/14	0818	aG	125mL	125mL	1	1	aG	TPH-Diesel Range - WTPH-D +
J1V166	SOIL	10/16/14	0825	aG	125mL	125mL	1	1	aG	
J1V167	SOIL	10/16/14	0833	aG	125mL	125mL	1	1	aG	
J1V168	SOIL	10/16/14	0836	aG	125mL	125mL	1	1	aG	
J1V169	SOIL	10/16/14	0839	aG	125mL	125mL	1	1	aG	

POSSIBLE SAMPLE HAZARDS/REMARKS
 Samples have an odor, possibly hydrocarbon in nature. 10/16/14
 Special Handling and/or Storage
 Cool 4C

CHAIN OF POSSESSION

Relinquished By/Removed From: Heather Weber 10/16/14 0840	Received By/Stored In: 10/16/14 Date/Time 0840
Relinquished By/Removed From: [Signature]	Received By/Stored In: [Signature] Date/Time
Relinquished By/Removed From: [Signature]	Received By/Stored In: [Signature] 10-16-14 1035
Relinquished By/Removed From: [Signature]	Received By/Stored In: Fed EX
Relinquished By/Removed From: [Signature]	Received By/Stored In: [Signature] 10-16-14 0905

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Project Coordinator: KESSNER, JH
 Price Code: 3 days
 SAF No.: RC-074
 Method of Shipment: Commercial Carrier
 Bill of Lading/Air Bill No.: See OSRC

SPECIAL INSTRUCTIONS

REVIEWED BY: [Signature] DATE: 10/16/14

FINAL SAMPLE DISPOSITION
 Disposal Method: [Blank]
 Disposed By: [Blank]
 Date/Time: [Blank]

WCH-EE-011

XP0150



Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: WCHN SDG/AR/COC/Work Order: 359 338 359311

Received By: P. Neurt Date Received: 10/17/14

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? Yes No Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 1000 CPM 0.18 MB

Classified Radioactive II or III by RSO? Yes No If yes, Were swipes taken of sample containers < action levels?

COC/Samples marked containing PCBs? Yes No

Package, COC, and/or Samples marked as beryllium or asbestos containing? Yes No If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Shipped as a DOT Hazardous? Yes No Hazard Class Shipped: UN#: 2910 51 162, 163, 164 RADI

Samples identified as Foreign Soil? Yes 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>0, 2C</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): <u>130532-792</u>
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>7715 2074 0125-</u> <u>7715 2498 3048</u> } <u>0, 2C</u>

Comments (Use Continuation Form if needed):

Laboratory Certifications

List of current GEL Certifications as of 22 October 2014

State	Certification
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	SC000122014-16
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 XP0150**

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: 1429051

Prep Batch Number: 1429050

Sample Analysis

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

Sample ID	Client ID
359338001	J1V165
359338002	J1V166
359338003	J1V167
359338004	J1V168
1203191772	MB for batch 1429050
1203191773	Laboratory Control Sample (LCS)
1203191776	359338001(J1V165) Matrix Spike (MS)
1203191777	359338001(J1V165) 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

The associated calibration verification standards (ICV or CCV) did not meet the acceptance criteria.

The CCV standard bracketing the samples in this SDG failed to meet the acceptance criteria with positive bias. All affected samples were re-analyzed, and the bracketing CCV standard failed in the same manner. Therefore; the failure was attributed to sample matrix interference. The confirmation data were included in the Miscellaneous Data section.

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

Sample 359338002 (J1V166) failed to 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 359338001 (J1V165) 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 not within the established acceptance limits due to extraction efficiency issue.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD between the MS and MSD did not meet the acceptance limits due to relatively lower spike recovery in the MSD.

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

Sample 359338002 (J1V166) was diluted due to the presence of over-range target analytes.

Sample Re-extraction/Re-analysis

All samples associated with this SDG were re-analyzed due to failing CCV standard. The second analysis was reported. The raw data of the first analysis were included in the Miscellaneous Data section for confirmation.

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 #1347074 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. 22-OCT-14	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: 1429051	Sample Numbers: See Below		

Potentially affected work order(s)(SDG): 359338(XP0150)

Application Issues:

Failed RPD for MS/MSD, or PS/PSD

Failed Yield for Surrogates

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
<ol style="list-style-type: none"> 1. Sample 359338002 recovered o-Terphenyl below acceptance limits. 2. The MSD(1203191777) did not meet spike recovery acceptance limits. 3. The MS/MSD RPD value for motor oil did not meet acceptance limits. 	<ol style="list-style-type: none"> 1. Sample was diluted 1:300 due to over-range target analyte. As a result, the surrogate was diluted out of its acceptance limit. Data were reported. 2. The failure was due to extraction efficiency issue. 3. The failure was due to relatively lower spike recovery in the MSD. The results are reported.

Originator's Name:

Benjamin Taft 22-OCT-14

Data Validator/Group Leader:

Jimin Cao 22-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: XP0150 GEL Work Order: 359338 Project: RC-074 Soil

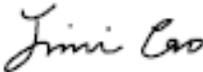
The Qualifiers in this report are defined as follows:

- 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 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 22, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0150

Client Sample ID: J1V165 Project: WCHN00716
 Sample ID: 359338001 Client ID: WCHN001
 Matrix: Soil
 Collect Date: 16-OCT-14 08:18
 Receive Date: 17-OCT-14
 Collector: Client
 Moisture: 4.14%

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)	T	7180	2260	6950	ug/kg	1	BYT1	10/22/14	1148	1429051	1
Motor Oil (C20-C36)		6960	2260	6950	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	10/20/14	1750	1429050

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"	526 ug/kg	695	75.7	(50%-150%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 22, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0150

Client Sample ID: J1V168 Project: WCHN00716
 Sample ID: 359338004 Client ID: WCHN001
 Matrix: Soil
 Collect Date: 16-OCT-14 08:36
 Receive Date: 17-OCT-14
 Collector: Client
 Moisture: 5.92%

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	4160	2300	7070	ug/kg	1	BYT1	10/22/14	1503	1429051	1
Motor Oil (C20-C36)	J	6880	2300	7070	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	3541 DRO IN SOIL PREP	AXV1	10/20/14	1750	1429050

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"	577 ug/kg	707	81.7	(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 22, 2014

Page 1 of 2

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

Contact: Joan Kessner

Workorder: 359338

Client SDG: XP0150

Project Description: RC-074 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Diesel Range Organics											
Batch	1429051										
QC1203191773	LCS										
Diesel Range Organics (C10-C20)	66600			50500	ug/kg		75.9	(70%-130%)	BYT1	10/22/14	11:09
Motor Oil (C20-C36)	66600			59000	ug/kg		88.7	(70%-130%)			
**o-Terphenyl	666			542	ug/kg		81.4	(50%-150%)			
QC1203191772	MB										
Diesel Range Organics (C10-C20)			U	2160	ug/kg					10/22/14	10:30
Motor Oil (C20-C36)			U	2160	ug/kg						
**o-Terphenyl	666			418	ug/kg		62.8	(50%-150%)			
QC1203191776	359338001 MS										
Diesel Range Organics (C10-C20)	69400	T	7180	62800	ug/kg		80.1	(70%-130%)		10/22/14	12:27
Motor Oil (C20-C36)	69400		6960	70900	ug/kg		92.1	(70%-130%)			
**o-Terphenyl	694		526	603	ug/kg		86.8	(50%-150%)			
QC1203191777	359338001 MSD										
Diesel Range Organics (C10-C20)	69200	T	7180	52100	ug/kg	18.6	64.9*	(0%-20%)		10/22/14	13:06
Motor Oil (C20-C36)	69200		6960	57500	ug/kg	20.8*	73.1	(0%-20%)			
**o-Terphenyl	692		526	500	ug/kg		72.3	(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

GEL LABORATORIES LLC

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

QC Summary

Workorder: 359338

Client SDG: XP0150

Project Description: RC-074 Soil

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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: 1429050 **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)
1203191772 MB	20-OCT-2014 17:50:00	30.03	1	0.0333
1203191773 LCS	20-OCT-2014 17:50:00	30.05	1	0.03328
359338001	20-OCT-2014 17:50:00	30.02	1	0.03331
1203191776 MS (359338001)	20-OCT-2014 17:50:00	30.05	1	0.03328
1203191777 MSD (359338001)	20-OCT-2014 17:50:00	30.15	1	0.03317
359338002	20-OCT-2014 17:50:00	30.16	1	0.03316
359338003	20-OCT-2014 17:50:00	30.11	1	0.03321
359338004	20-OCT-2014 17:50:00	30.08	1	0.03324
359341001	20-OCT-2014 17:50:00	30.12	1	0.0332
1203191774 MS (359341001)	20-OCT-2014 17:50:00	30.06	1	0.03327
1203191775 MSD (359341001)	20-OCT-2014 17:50:00	30.03	1	0.0333
359341002	20-OCT-2014 17:50:00	30.02	1	0.03331
359341003	20-OCT-2014 17:50:00	30.03	1	0.0333

Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203191773	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	Final Solvent: CH2Cl2 Verified By: SLW
MS	1203191774	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
MS	1203191776	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
MSD	1203191775	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
MSD	1203191777	AZDRO SPIKE LCS STD,4000ug/ml	WFI140918-62	1	mL	
SURR	All	20 ppm surrogate	WE141001-04	1	mL	
REGNT	All	Methylene Chloride	2168616-D	120	mL	
SOURC	All	SODIUM SULFATE	2168618	30	g	

PCB Analysis

Case Narrative

**PCB Case Narrative
WC-HANFORD, INC. (WCHN)
SDG XP0150**

Method/Analysis Information

Procedure: Analysis of Polychlorinated Biphenyls by ECD
Analytical Method: SW846 3541/8082A
Prep Method: SW846 3541
Analytical Batch Number: 1429053
Prep Batch Number: 1429052

Sample Analysis

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

Sample ID	Client ID
359338001	J1V165
359338002	J1V166
359338003	J1V167
359338004	J1V168
1203191778	MB for batch 1429052
1203191779	Laboratory Control Sample (LCS)
1203191782	359338002(J1V166) Matrix Spike (MS)
1203191783	359338002(J1V166) 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 359338002 (J1V166) was selected for the matrix spike and matrix spike duplicate analysis.

Matrix Spike (MS) Recovery Statement

Matrix spike sample 1203191782 (J1V166) did not meet spike recovery acceptance criteria due to dilution.

Matrix Spike Duplicate (MSD) Recovery Statement

Matrix spike duplicate sample 1203191783 (J1V166) did not meet spike recovery acceptance criteria due to dilution.

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

Samples 1203191782 (J1V166MS), 1203191783 (J1V166MSD) and 359338002 (J1V166) were diluted due to the oily matrix of the extracts and due to high concentrations of non-target analytes within the retention time window of interest.

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. DER #1346653 was generated for the matrix QC samples associated with sample 359338002 (J1V166).

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 column 1 has been chosen as the primary column. The data are reported from the column 1 for all samples in this batch.

Due to software issue, the surrogate recovery range was not indicated 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.

DATA EXCEPTION REPORT

Mo.Day Yr. 22-OCT-14	Division: Industrial	Quality Criteria: Specifications	Type: Process
Instrument Type: GC/ECD	Test / Method: SW846 3541/8082A	Matrix Type: Solid	Client Code: OLAB, WCHN
Batch ID: 1429053	Sample Numbers: See Below		
Potentially affected work order(s)(SDG): 359338(XP0150),359360(X410157)			
Application Issues: Failed Recovery for MS/PS Failed Recovery for MSD/PSD			
Specification and Requirements Exception Description:		DER Disposition:	
1203191782MS and 1203191783MSD did not meet the spike recovery acceptance criteria.		1203191782MS and 1203191783MSD, along with their parent sample 359338002, were diluted at 1:100 due to the extract's extreme thickness and matrix seen in the retention time window. The failures were due to sample matrix and dilutions. Data were reported.	

Originator's Name:
James Maestas 22-OCT-14

Data Validator/Group Leader:
Yiping Shi 22-OCT-14

GEL LABORATORIES LLC

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Qualifier Definition Report for

WCHN001 WC-HANFORD, INC.

Client SDG: XP0150 GEL Work Order: 359338 Project: RC-074 Soil

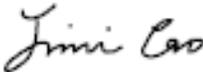
The Qualifiers in this report are defined as follows:

- 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 OCT 2014

Title: Data Validator

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 22, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0150

Client Sample ID: J1V165	Project: WCHN00716
Sample ID: 359338001	Client ID: WCHN001
Matrix: Soil	
Collect Date: 16-OCT-14 08:18	
Receive Date: 17-OCT-14	
Collector: Client	
Moisture: 4.14%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	TU	1.16	1.16	3.48	ug/kg	1	JXM	10/21/14	1139	1429053	1
Aroclor-1221	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1232	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1242	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1248	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1254	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1260	JT	1.26	1.16	3.48	ug/kg	1					
Aroclor-1262	U	1.16	1.16	3.48	ug/kg	1					
Aroclor-1268	U	1.16	1.16	3.48	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SXW3	10/20/14	1803	1429052

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	3.87 ug/kg	6.95	55.7	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.93 ug/kg	6.95	70.9	(25%-131%)

Notes:

GEL LABORATORIES LLC

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

Certificate of Analysis

Report Date: October 22, 2014

Company : WC-Hanford, Inc.
 Address : 2620 Fermi Avenue
 MSIN H4-21
 Richland, Washington 99354
 Contact: Joan Kessner
 Project: RC-074 Soil

Client SDG: XP0150

Client Sample ID: J1V167	Project: WCHN00716
Sample ID: 359338003	Client ID: WCHN001
Matrix: Soil	
Collect Date: 16-OCT-14 08:33	
Receive Date: 17-OCT-14	
Collector: Client	
Moisture: 5.66%	

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatiles-PCB											
SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"											
Aroclor-1016	TU	1.18	1.18	3.53	ug/kg	1	JXM	10/21/14	1236	1429053	1
Aroclor-1221	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1232	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1242	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1248	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1254		4.69	1.18	3.53	ug/kg	1					
Aroclor-1260	JT	3.47	1.18	3.53	ug/kg	1					
Aroclor-1262	U	1.18	1.18	3.53	ug/kg	1					
Aroclor-1268	U	1.18	1.18	3.53	ug/kg	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3541	Prep Method 3541 PCB Prep Soil	SXW3	10/20/14	1803	1429052

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	SW846 3541/8082A	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
4cmx	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.15 ug/kg	7.06	58.8	(29%-106%)
Decachlorobiphenyl	SW846 3541/8082A PCB - 3 day TAT "Dry Weight Corrected"	4.92 ug/kg	7.06	69.6	(25%-131%)

Notes:

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: October 22, 2014

Page 1 of 2

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

Workorder: 359338

Client SDG: XP0150

Project Description: RC-074 Soil

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1429053										
QC1203191779	LCS										
Aroclor-1016	33.3			21.4	ug/kg		64.2	(44%-97%)	JXM	10/21/14	11:26
Aroclor-1260	33.3			22.6	ug/kg		67.8	(49%-109%)			
**4cmx	6.66			5.70	ug/kg		85.6	(29%-106%)			
**Decachlorobiphenyl	6.66			6.90	ug/kg		104	(25%-131%)			
QC1203191778	MB										
Aroclor-1016			U	1.11	ug/kg					10/21/14	11:14
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			5.69	ug/kg		85.3	(29%-106%)			
**Decachlorobiphenyl	6.66			6.78	ug/kg		102	(25%-131%)			
QC1203191782	359338002	MS									
Aroclor-1016	34.9	DTU	116	DTU	116	ug/kg	0*	(22%-127%)		10/21/14	12:07
Aroclor-1260	34.9	DTU	116	DTU	116	ug/kg	0*	(18%-130%)			
**4cmx	6.98		3.31		4.12	ug/kg	59	(29%-106%)			
**Decachlorobiphenyl	6.98		6.80		7.33	ug/kg	105	(25%-131%)			

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QC Summary

Workorder: 359338

Client SDG: XP0150

Project Description: RC-074 Soil

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Semi-Volatiles-PCB											
Batch	1429053										
QC1203191783	359338002	MSD									
Aroclor-1016	34.9	DTU	116	DTU	116	ug/kg	N/A	0*	(0%-30%)	JXM	10/21/14 12:22
Aroclor-1260	34.9	DTU	116	DTU	116	ug/kg	N/A	0*	(0%-30%)		
**4cmx	6.97		3.31		3.70	ug/kg		53	(29%-106%)		
**Decachlorobiphenyl	6.97		6.80		6.03	ug/kg		86.5	(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: 1429052 Verified by: _____
 Analyst: Shannon Whitehead
 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)
1203191778 MB	20-OCT-2014 18:03:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
1203191779 LCS	20-OCT-2014 18:03:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
359338001	20-OCT-2014 18:03:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
359338002	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
1203191782 MS (359338002)	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
1203191783 MSD (359338002)	20-OCT-2014 18:03:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
359338003	20-OCT-2014 18:03:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
359338004	20-OCT-2014 18:03:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
359341001	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
359341002	20-OCT-2014 18:03:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
1203191780 MS (359341002)	20-OCT-2014 18:03:00	30	H2SO4/KM 2 nO4	9	1	0.03333
1203191781 MSD (359341002)	20-OCT-2014 18:03:00	30.06	H2SO4/KM 2 nO4	9	1	0.03327
359341003	20-OCT-2014 18:03:00	30.07	H2SO4/KM 2 nO4	9	1	0.03326
359360001	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
359360002	20-OCT-2014 18:03:00	30.07	H2SO4/KM 2 nO4	9	1	0.03326
359360003	20-OCT-2014 18:03:00	30.01	H2SO4/KM 2 nO4	9	1	0.03332
359360004	20-OCT-2014 18:03:00	30.08	H2SO4/KM 2 nO4	9	1	0.03324
359360005	20-OCT-2014 18:03:00	30.07	H2SO4/KM 2 nO4	9	1	0.03326
359360006	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
359360007	20-OCT-2014 18:03:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328
359360008	20-OCT-2014 18:03:00	30.04	H2SO4/KM 2 nO4	9	1	0.03329
359360009	20-OCT-2014 18:03:00	30.02	H2SO4/KM 2 nO4	9	1	0.03331
359360011	20-OCT-2014 18:03:00	30.03	H2SO4/KM 2 nO4	9	1	0.0333
359360012	20-OCT-2014 18:03:00	30.05	H2SO4/KM 2 nO4	9	1	0.03328

Prep Logbook

Batch ID: 1429052 **Verified by:** _____
Analyst: Shannon Whitehead
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 Amount 1 (mL)	Post Clean Up Amount 1 (mL)	Final Volume (mL)	Prepped Factor (mL/g)
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Type	Sample Id	Description	Serial Number	Spike Amt	Units	Comments:
LCS	1203191779	PCB Laboratory Control	WE141001-06	1	mL	Final Solvent: Hexane Verified By: MD Clean up Initials: SLW Clean up SOP: GL-OA-E-037 Clean up Date: 10-20-14
MS	1203191780	PCB Laboratory Control	WE141001-06	1	mL	
MS	1203191782	PCB Laboratory Control	WE141001-06	1	mL	
MSD	1203191781	PCB Laboratory Control	WE141001-06	1	mL	
MSD	1203191783	PCB Laboratory Control	WE141001-06	1	mL	
SURR	All	PEST LOW LEVEL SURROGATE 200 UG/L	WE141016-01	1	mL	
REGNT	All	5% Potassium Permanganate	2159385	5	mL	
REGNT	All	Hexane	2166764-B10	120	mL	
REGNT	All	1:1 sulfuric acid	2170235	5	mL	
SOURC	All	SODIUM SULFATE	2168618	30	g	