INL/EXT-18-45210

Permanent Closure of the CFA-688 Diesel Underground Storage Tank 98CFA00260 (DEQ Facility ID# 6-120608)

May 2018

The INL is a U.S. Department of Energy National Laboratory
operated by Battelle Energy Alliance

INL/EXT-18-45210

Permanent Closure of the CFA-688 Diesel Underground Storage Tank 98CFA00260 (DEQ Facility ID# 6-120608)

May 2018

Idaho National Laboratory
Idaho Falls, Idaho 83415

http://www.inl.gov

Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517

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1. PURPOSE

This closure package documents the site assessment and petitions for permanent closure of the Idaho National Laboratory (INL) Central Facilities Area (CFA) diesel underground storage tank 98CFA00260 (DEQ Facility ID# 6-120608), in accordance with the regulatory requirements established in 40 CFR 280.71, “Permanent Closure and Changes-In-Service”.

2. INTRODUCTION

The CFA diesel underground storage tank 98CFA00260 is a 2,500-gallon; double-walled, fiberglass reinforced plastic tank with fiberglass reinforced flexible plastic piping, and is located at the Idaho National Laboratory’s (INL) Central Facilities Area, CFA-688. This tank is identified under the Idaho Department of Environmental Quality (DEQ) Tank Management Plan facility identification number 6-120608 and tank number 98CFA00260.

An Idaho Department of Environmental Quality (DEQ) Underground Storage Tank (UST) inspection in September 2017 identified no violations to this tank.

The tank was installed August of 1994 to supply diesel fuel to an emergency diesel generator located inside building CF-688. The tank interstitial and sump sensors were monitored by a Gilbarco Veeder-Root TLS-350 Automatic Tank Gauge (ATG). The piping from the emergency diesel generator is fiberglass reinforced pipe.

Key personnel that were involved in this closure/decommissioning activity are listed in Table 1.

Table 1. Key personnel.

Organization/Title	Name	Responsibilities
BEA Project Manager	Jeremy Bishop	Project execution and completion
BEA Project Supervisor	Eric Walker	Project execution and completion
CFA Facility Manager	Bryan Crofts	Manage/approve facility activities
BEA Environmental Compliance	Bradley Griffith/ George Krauszer/Kerry Nisson	Coordinate UST closure activity

3. PERMANENT CLOSURE

In accordance with 40 CFR 280.71(a), a 30-day closure notification was mailed on August 30, 2017, (Appendix A, CCN 241059) notifying Idaho DEQ of INL's intent to permanently close the CFA-688 tank 98CFA00260 diesel underground storage tank (DEQ ID# 6-120608). Michael Summers (DEQ) was contacted regarding a sampling and analysis plan. Michael stated that a sampling and analysis plan would not be required.

On February 12, 2018, a conference call was placed to Michael Summers at the Idaho DEQ Idaho Falls Office, informing him of INL's intent to remove the UST tentatively on February 19, 2018 and to identify if DEQ wanted be present during any part of the removal process. Michael stated that DEQ wanted to inspect the fill port when the asphalt and concrete was removed from around the fill port. Michael also stated that he wanted to be present during the tank removal and sampling process. It was stated that the INL would contact him when an exact date was confirmed or to any delays. Michael also e-mailed two documents for use in sampling process: Waste Management and Remediation Division Statewide Generic Quality Assurance Project Plan and Fact Sheet: How DEQ Evaluates Sample Collection and Data Analysis for UST Closures and Release Investigations (Appendix B - CCN 242150).

In preparation for demolition and permanent tank closure, the remaining fuel was removed from the tank on March 19, 2018 by Clean Harbors to as low as reasonably achievable (less than 1 inch of fuel).

In preparation for permanent closure in accordance with 40 CFR 280.71, on March 22, 2018 the UST at CF-688 was removed with Michael Summers (DEQ) in attendance. INL's Environmental Monitoring personnel collected two soil samples from under the tank (one at fill port and one at opposite end of tank) and one sample under the fuel supply line in the area identified by Michael Summers. Soil samples were sent to GEL Laboratories LLC in Charleston, South Carolina for analysis. Laboratory analysis was requested for Chemicals of Interest for Various Petroleum Products (diesel) as identified in IDAPA 58.01.24.800.01 **t**able 1, with laboratory detection limits for the Residential Use Screening Levels in table 2. The sampling collection and handling process adhered to the Waste Management and Remediation Division Statewide Generic Quality Assurance Project Plan.

On April 4, 2018, Jill Lundell from INL Environmental Monitoring e-mailed a preliminary sampling data package received from GEL Laboratories LLC. The preliminary sampling data showed that the screening levels for all of the Chemicals of Interest for Various Petroleum Products (diesel) as identified in IDAPA 58.01.24.800.01 **t**able 1, were reported as non-detectable with laboratory detection limits below the Residential Use Screening Levels in table 2.

On April 10, 2018, preliminary sampling data results from the analysis received from GEL Laboratories LLC was e-mailed to Michael Summers. The e-mail also stated when the final analysis data package is received, a site assessment closure report for the underground storage tank removal would be submitted to the Department of Environmental Quality for final closure (Appendix C - CCN 242150).

On April 17, 2018, the INL received a final Report from GEL Laboratories LLC for the CF-688 diesel tank and piping sampling (Appendix E). The INL compared the analysis to the Idaho Risk Evaluation Manual for Petroleum Releases, Table 2 - Screening Level Concentrations for Soil and identified that the concentrations for the chemicals of interest were below the DEQ identified screening levels for these analytes.

4. SITE ASSESSMENT AND CONCLUSION

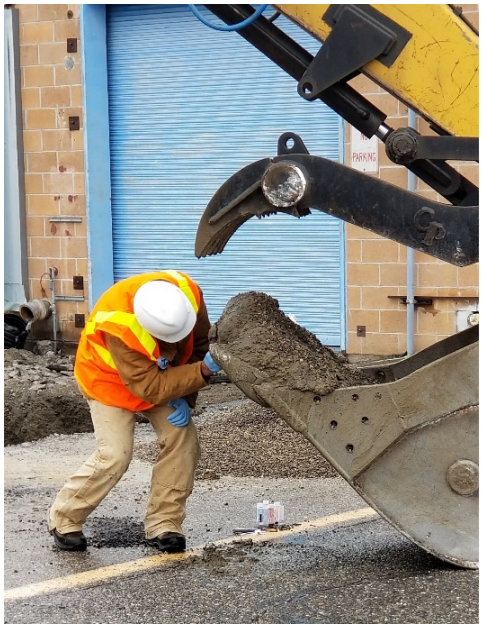
This site assessment was performed in accordance with IDAPA 58.01.24.200, “Risk Evaluation Process.” A screening evaluation was performed according to the chemicals of interest for diesel fuel found in the Idaho Risk Evaluation Manual for Petroleum Releases, Table 2 - Screening Level Concentrations for Soil, Groundwater, and Soil Vapor.

Per 40 CFR 280.71 “Permanent Closure and Changes-In-Service” all liquids and accumulated sludge was removed from the UST.

Sample results were received on April 17, 2018, and were compared to the Idaho Risk Evaluation Manual for Petroleum Releases, Table 2 - Screening Level Concentrations for Soil, Groundwater, and Soil Vapor maximum media-specific (soil) petroleum contaminant concentrations. The concentrations for the chemicals of interest are below the DEQ identified screening levels for these analytes.

According to IDAPA 58.01.24.200.01.c., “if the maximum media-specific petroleum contaminant concentrations at the site do not exceed the screening levels, the owner and/or operator may petition for site closure, subject to other Department regulatory obligations”. This site assessment meets the requirements of IDAPA 58.01.24.200. The INL is petitioning the DEQ for site closure of the CFA-688 diesel tank 98CFA00260 (DEQ ID# 6-120608).

Figure 1. CFA-688 Underground Storage Tank Removal



Figures 2 and 3. CFA-688 Underground Storage Tank Soil Sampling

5. APPENDIXES

Appendix A, CCN: 241059 - 30 Day Notification for Underground Storage Tank Systems for tank Closure at CF-688

Appendix B, CCN: 242079 - Closure Notification of CF-688 UST (DEQ Facility ID# 6-120608)

Appendix C, CCN-242150 Conference call to Idaho Department of Environmental Quality - CF-688 UST Closure Information

Appendix D, CCN: 242503 Preliminary Sampling Data Package Information for CF-688 underground storage tank (DEQ ID# 6-120608)

Appendix E, Sample Analytical Report TOS-231

Appendix F, Idaho Risk Evaluation Manual for Petroleum Releases - Table 2. Screening Level Concentrations for Soil, Groundwater, and Soil Vapor

Appendix A, Notification of Closure (CCN 241059)

Idaho National Laboratory

Nisson, Kerry L <kerry.nisson@inl.gov>

CCN: 241059 - 30 Day Notification for Underground Storage Tank Systems for tank closure at CF-688

1 message

Nisson, Kerry L <kerry.nisson@inl.gov> Wed, Aug 30, 2017 at 10:29 AM
To: Michael.Summers@deq.idaho.gov
Cc: Timothy A Miller <Timothy.Miller@inl.gov>, Kent Miller <kent.miller@inl.gov>, James F Graham <James.Graham@inl.gov>, Bradley K Griffith <bradley.griffith@inl.gov>, ENVIRONMENTAL CORRESPONDENCE ServiceID <envaff@inl.gov>, BEA CORRESPONDENCE CONTROL ServiceID <beacc@inl.gov>, Jason Sturm <STURMJR@id.doe.gov>, Jeremy K Bishop <jeremy.bishop@inl.gov>

Michael

I previously sent you 30 Day Notification for Underground Storage Tank Systems for four tank closures that the Idaho National Laboratory (INL) has intended to remove this fiscal year. The tanks are:

· DEQ Facility Identification Number 6-120612 - Tank ID# 98CFA00057 – 15,000 diesel located at Central Facilities building CF-608,

· DEQ Facility Identification Number 6-120613 - Tank ID# 98CFA00061 – 12,000 diesel located at Central Facilities building CF-609,

· DEQ Facility Identification Number 6-120615 - Tank ID# 99ANL00011 – 2,500 unleaded located at the Materials and Fuels Complex MFC-783, and

· DEQ Facility Identification Number 6-120615 - Tank ID# 99ANL00012 – 2,500 diesel located at the Materials and Fuels Complex MFC-783.

Due to funding issues, these four tanks will not be removed this fiscal year. The INL has plans to remove these tanks next fiscal year, if funding is available.

The INL is performing a decommissioning and demolition (D&D) of building CF-688 at the Central Facilities Area. This building has 2,500 gallon underground storage tank (UST) that supplied an emergency diesel generator. As part of the facility D&D, the UST will be removed. This is tentatively scheduled for October. Attached is the 30 Day Notification for Underground Storage Tank Systems for tank closure, DEQ Facility Identification Number 6-120608 - Tank ID# 98CFA00260.

Kerry L. Nisson
Nuclear Operations Environmental Support - UST TPOC
Office (208) 533-7102
Cell (208) 569-4721
email: kerry.nisson@inl.gov
Materials and Fuels Complex - Mail Stop 6134

CFA-688 UST-notification-form closure.pdf
533K

DEQ Version of EPA 7530-1 (Revised 3/2017)

NOTIFICATION FOR UNDERGROUND STORAGE TANK SYSTEMS	Facility ID
Idaho Department of Environmental Quality, 1410 N Hilton, Boise ID 83706	6-120608

TYPE OF NOTIFICATION ☒ Notice (install or closure) ☐ New Facility (site diagram & install docs required) ☒ Closure
☐ Updates ☐ Change of Owner ☐ Change of Use (substance stored)

INSTRUCTIONS – See additional instructions on page 6

Please type or use ink. This form must be completed for each location containing underground storage tanks. If more than five (5) tanks are owned at this location, photocopy the following sheets, and attach continuation sheets to the form (pages 3, 4, & 5)

Notification is required by law for all underground storage tanks (USTs) storing regulated substances that are brought into use after May 8, 1986, or USTs in the ground as of May 8, 1986, that have stored regulated substances at any time since January 1, 1974. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act (RCRA), as amended.

The primary purpose of this notification form is to provide information about the installation, existence, changes to, and closure of USTs that store or have stored petroleum or hazardous substances. The information you provide will be based on reasonably available records, or in the absence of such records, your knowledge or recollection.

Who must notify? Unless exempted, owners of USTs that store or will store regulated substances must notify DEQ.

1. Owner means -
   a) in the case of an UST in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances
   b) in the case of an UST in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use
   c) in the case of a new installation on or after April 2, 2008, any person who will install an underground storage tank system
   d) in the case of an underground storage tank closure, any person who will remove or close in place such tank
   e) in the case of changes or updates, any person who will make a change to an UST system

What tanks are included? Underground storage tank is defined as any one or combination of tanks that is used to contain an accumulation of "regulated substances," and whose volume (including connected underground piping) is 10% or more beneath the ground.

What tanks are excluded?

1. Tanks with a capacity of 110 gallons or less
2. Farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes
3. Tanks used for storing heating oil for consumptive use on the premises where stored
4. Septic tanks
5. Certain pipeline facilities regulated under chapters 601 and 603 of Title 49
6. Surface impoundments, pits, ponds, or lagoons
7. Stormwater or wastewater collection systems
8. Flow-through process tanks
9. Liquid traps or associated gathering lines directly related to oil or gas production and gathering operations
10. Tanks on or above the floor of underground areas, such as basements or tunnels
11. Wastewater treatment tanks
12. UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954
13. UST systems that are part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR Part 50

What substances are covered? The notification requirements apply to USTs containing petroleum or certain hazardous substances. Petroleum includes gasoline, used oil, diesel fuel, crude oil, or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute). Hazardous substances are those found in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, with the exception of those substances regulated as hazardous waste under Subtitle C of the Resource Conservation and Recovery Act.

Where to notify? Send completed forms to:

UST Coordinator
Idaho Department of Environmental Quality
1410 N. Hilton
Boise, ID 83706 Telephone: (208) 373-0502

When to notify? Owners of underground storage tank systems that are still in the ground must notify immediately. Owners who bring USTs into use after May 8, 1986, must notify within 30 days of bringing the tanks into use. Owners who will install an UST system must notify 30 days prior to the installation. Owners who will replace 50% of piping connected to a single underground storage tank must notify 24 hours prior to the replacement. Owners who will close an UST must notify 30 days prior to the closure. Owners who have closed an UST must notify and indicate the date of closure. New owners must notify within 30 days of ownership.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty.

Name U.S. Department of Energy, Idaho Operations Office (DOE-ID)
Mailing Address 1955 Fremont Avenue
City Idaho Falls
State Idaho
ZIP Code 83401
County Bonneville
Phone Number (With Area Code) (208) 526-2493
Email sturmjr@id.doe.gov

(If same as Section I, mark box here ☐)
Name U.S. Department of Energy, Idaho Operations Office (DOE-ID)
Street Address (no PO Box) Central Facilities Area
City Scoville
State Idaho
ZIP Code 83415
County Butte

☐ Commercial ☐ Private ☐ State Government

☒ Federal Government ☐ Local Government

Select the Appropriate Facility

☐ Gas Station	☐ Local Government	☐ Trucking/Transport
☐ Petroleum Distributor	☐ State Government	☐ Utilities
☐ Air Taxi (Airline)	☒ Federal – Non-Military	☐ Farm
☐ Aircraft Owner	☐ Federal – Military	☐ Residential
☐ Auto Dealership	☐ Commercial	☐ Marina
☐ Railroad	☐ Industrial	☐ Other
☐ Hospital	☐ Contractor	

Name Bryan Crofts
Title Manager, Facility Support Services
Address PO Box 1625

City Idaho Falls
State Idaho
Zip Code 83415
Phone (208) 526-7995
Email Bryan.Crofts@inl.gov

all required

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative (Print)
Name Timothy A. Miller
Title Director, Environmental Support and Services

Signature
Date Signed

I have met the financial responsibility requirements in accordance with 40 CFR 280 Subpart H.

Check All That Apply

☐ State Insurance Fund (PSTF)	☐ Surety Bond
☐ Commercial Insurance	☐ Letter of Credit
☐ Risk Retention Group	☐ Self Insurance
☐ Guarantee	☐ Trust Fund

☒ Other Method Allowed, Specify Federal Government

IDENTIFICATION NUMBER	Tank No. 98CFA00260	Tank No.	Tank No.	Tank No.	Tank No.
A. 30-day Tank and Piping Installation/24-hr Piping Replacement Notifications (see page 7)					
When will tank be installed or replaced?					
When will piping be installed or replaced?					
B. 30-day Notice of Closures (see page 7)					
When will tank be closed?	~Oct. 2, 2017				
Date tank was last used?	~Aug 1, 2017				

Closure to be performed by:

Company Site Supervisor:

Phone:

IDENTIFICATION NUMBER	Tank No. 98CFA00260	Tank No.	Tank No.	Tank No.	Tank No.
A. Type of Tank (check all that apply)					
☐Compartment ☒Emergency Generator ☐Airport Fuel Hydrant					
☐Manifold ☐Field-Constructed					
B. Status of Tank					
Currently In Use	No	Select	Select	Select	Select
Temporarily Out of Use (Complete Section X, estimated date last used)					
Permanently Out of Use (Complete Section X, removal or closed in place)	Select	Select	Select	Select	Select
Date of Installation	8/94				
Total Capacity (gallons)	2500				
Substance Currently or Last Stored	Diesel	Select	Select	Select	Select
CERCLA Name or CAS # (if hazardous)					
C. Tank Construction (Mark all that apply)					
Fiberglass Reinforced Plastic	☒	☐	☐	☐	☐
Cathodically Protected Steel (STIP-3)	☐	☐	☐	☐	☐
Cathodically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐
Composite (Steel with Fiberglass)	☐	☐	☐	☐	☐
Asphalt Coated or Bare Steel	☐	☐	☐	☐	☐
Concrete	☐	☐	☐	☐	☐
Double-Walled	☒	☐	☐	☐	☐
Lined Interior	☐	☐	☐	☐	☐
Polyethylene Tank Jacket	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify	☐	☐	☐	☐	☐
Has tank been repaired? (circle one)	No	Select	Select	Select	Select
D. Spill and Overfill Protection					
Overfill Device Installed? (Alarm, Flapper)	Alarm	Select	Select	Select	Select

Spill Bucket Installed? (Single Wall or Double Wall)					
E. Piping Construction (Mark all that apply)					
Plastic/Flexible	☐	☐	☐	☐	☐
Fiberglass Reinforced Plastic	☒	☐	☐	☐	☐
Bare Steel	☐	☐	☐	☐	☐
Catholically Protected Steel (Impressed Current)	☐	☐	☐	☐	☐
Cathodically Protected Steel (Galvanic)	☐	☐	☐	☐	☐
Corrosion Protection (Soil Isolation)	☐	☐	☐	☐	☐
Double-Walled	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other, Please Specify	☐	☐	☐	☐	☐
F. Piping Type (Mark all that Apply)					
Pressure	☐	☐	☐	☐	☐
Safe Suction (check valve at dispenser)	☒	☐	☐	☐	☐
U.S. Suction (check valve at tank)	☐	☐	☐	☐	☐
Gravity Feed	☐	☐	☐	☐	☐
Has piping been repaired or replaced?	No	Select	Select	Select	Select
Date of the repair or replacement					

G. Release Detection (Mark all that Apply)	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping
Automatic Tank Gauging	☒		☐		☐		☐		☐	
Continuous Interstitial Double-Wall Monitoring (sensors)	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐
Manual Interstitial Double-Wall Monitoring (record log)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Statistical Inventory Reconciliation (SIR)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Manual Tank Gauging (1,000 gallons or less)	☐		☐		☐		☐		☐	
Vapor Monitoring	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Mechanical Line Leak Detector		☐		☐		☐		☐		☐
Electronic Line Leak Detector		☐		☐		☐		☐		☐
Annual Line Tightness Test		☐		☐		☐		☐		☐
3-Year Line Tightness Test (US Suction Only)										
Not Required (safe suction piping, empty tank)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

G. Under-Dispenser Spill Containment (required for new installations, piping replacement and dispenser replacement*)	
Is there under-dispenser spill containment for each new dispenser island?	Select

TANK IDENTIFICATION NUMBER	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
Closing of Tank					
Tank Was Removed From Ground	☐	☐	☐	☐	☐
Tank Was Closed In Ground	☐	☐	☐	☐	☐
Estimated Date Last Used					
Date Tank Closed					
Tank Filled With Inert Material (indicate material – sand, concrete)					
Change in Service (No longer holds a regulated substance)	☐	☐	☐	☐	☐
Site Assessment Completed (samples taken)	Select	Select	Select	Select	Select
Evidence of a Release Detected?	Select	Select	Select	Select	Select
Release Reported to DEQ?	Select	Select	Select	Select	Select
Date Release Reported to DEQ					

TANK IDENTIFICATION NUMBER	Tank No.	Tank No.	Tank No.	Tank No.	Tank No.
A. Installation (Mark all that apply)					
Installer certified by tank and piping manufacturers	☐	☐	☐	☐	☐
Installer certified or licensed by a State	☐	☐	☐	☐	☐
Installation is inspected by a registered engineer	☐	☐	☐	☐	☐
Installation inspected by DEQ	☐	☐	☐	☐	☐
Manufacturer's installation checklists have been completed	☐	☐	☐	☐	☐

Note: The installer must complete this section only if work on your UST system has taken place since December 22, 1988.

OATH: I certify the information concerning installation is true to the best of my belief and knowledge.

Installation Company ____

Address: ____

Installer Name ____

Phone ____

Signature _____

Date____

*When a dispenser is replaced and any equipment necessary to connect the dispenser to the underground storage tank system under the dispenser is installed; under dispenser containment is required.

Appendix B
CCN-242150 Conference call to Idaho Department of Environmental Quality – CF-688 UST Closure Information

Nisson, Kerry L <kerry.nisson@inl.gov>

CCN: 242079 - Closure Notification of CF-688 UST (DEQ Facility ID# 6-120608)
1 message

Nisson, Kerry L <kerry.nisson@inl.gov> Thu, Feb 1, 2018 at 1:59 PM
To: Michael.Summers@deq.idaho.gov
Cc: Bradley K Griffith <bradley.griffith@inl.gov>, "Krauszer II, George J" <george.krauszerii@inl.gov>, James F Graham <James.Graham@inl.gov>, Kent Miller <kent.miller@inl.gov>, Timothy A Miller <Timothy.Miller@inl.gov>, Jason Sturm <STURMJR@id.doe.gov>

Michael

In an email dated August 30, 2018 (ref. CCN: 241059 - 30 Day Notification for Underground Storage Tank Systems for tank closure at CF-688), I sent you the DEQ form Notification for Underground Storage Tank Systems for the closure of the UST at CF-688 (DEQ Facility ID# 6-120608). The project projected that the tank would be removed in October 2017. Due to various factors, that did not happen.

The project has now resumed and will have the remaining fuel in the tank removed on February 13, 2018. The project anticipates removal of the tank during the week of February 19-26, 2018.

I know that the DEQ wants to be there when the tank is removed and for the sampling requirements once the tank is removed.

Is there any additional time that you want to be present while the tank and piping are being uncovered?

I have attached the Notification for Underground Storage Tank Systems that was previously submitted in August, 2017.

I will keep you informed as the project progresses and provide you the required 48 hour notice before the UST is removed.

Kerry L. Nisson
Nuclear Operations Environmental Support - UST TPOC
Office (208) 533-7102
Cell (208) 569-4721
email: kerry.nisson@inl.gov
Materials and Fuels Complex - Mail Stop 6134

CFA-688 UST-notification-form closure.pdf
533K

Appendix C
CCN-242150 Conference call to Idaho Department of Environmental Quality – CF-688 UST Closure Information

Nisson, Kerry L <kerry.nisson@inl.gov>

CCN-242150 Conference call to Idaho Department of Environmental Quality - CF-688 UST Closure Information

1 message

Nisson, Kerry L <kerry.nisson@inl.gov> Mon, Feb 12, 2018 at 11:31 AM
To: Kent Miller <kent.miller@inl.gov>
Cc: Bradley K Griffith <bradley.griffith@inl.gov>, "Krauszer II, George J" <george.krauszerii@inl.gov>, James F Graham <James.Graham@inl.gov>, Jason Sturm <STURMJR@id.doe.gov>, ENVIRONMENTAL CORRESPONDENCE ServiceID <envaff@inl.gov>, BEA CORRESPONDENCE CONTROL ServiceID <beacc@inl.gov>

On February 12, 2018 at ~07:58, a conference call was place to Michael Summers at the Idaho Department of Environmental Quality (IDEQ). The call was placed at the request from Michael Summers [ref. attached email, RE: 242079 - Closure Notification of CF-688 UST (DEQ Facility ID# 6-120608)] to ensure that the INL was meeting the DEQ's Waste Management and Remediation Division Statewide Generic Quality Assurance Project Plan - for the underground storage tank closure for the removal of the 2,500 gallon emergency diesel generator underground storage tank at CF-688. The conference call included Michael Summers (DEQ), Jason Sturm (DOE-ID), Bradley Griffith (BEA - UST TPOC Backup), George Krauszer II (BEA), and Kerry Nisson (BEA - UST TPOC).

Michael emailed two links to Kerry Nisson - *DEQ's Waste Management and Remediation Division Statewide Generic Quality Assurance Project Plan - Third-Party Petroleum Storage Tank Release Investigation and UST Closure and *Change-in-Service and Idaho Department of Environmental Quality Fact Sheet: How DEQ Evaluates Sample Collection and Data Analysis for UST Closures and Release Investigations. The information in these links needs to be followed for the sampling and analysis during the removal of the underground storage tank at CF-688 to ensure proper sample collection/handling and the sample analysis samples are being conducted according to the DEQ's standards. The email and links were distributed by email to those listed on the conference call.

Michael requested to be contacted when the asphalt and concrete was removed from around the fill port so that he could inspect this area for potential fuel leakage. Michael also requested to be present once the tank was ready to be removed and for sampling under the tank and line.

Michael was informed that the UST removal project was tentatively scheduled for the week of February 19th.

As a side note, Michael requested that we send him an Automatic Tank Gauge (Veeder-Root monitor) tape printout showing the corrected time and date for the monitor at IF-603. The time and date on the monitor tape was found to be incorrect at the time of the three year inspection. The monitor had been repaired when an unexpected power outage damaged the circuit board. The circuit board was replaced and the monitor had to be reprogrammed. The Service Provider did not enter the current date and time when reprogramming the monitor software. The date and time reverted to the software's last update time and date. It was stated that we would send him a new tape from the monitor showing that the time and date is now current.

The conference call concluded at ~ 08:11.

Appendix D
CCN: 242503 Preliminary Sampling Data Package Information for CF-688 Underground Storage Tank (DEQ ID# 6-120608)

Nisson, Kerry L <kerry.nisson@inl.gov>

CCN: 242503 Preliminary Sampling Data Package Information for CF-688 underground storage tank (DEQ ID# 6-120608)

1 message

Nisson, Kerry L <kerry.nisson@inl.gov> Tue, Apr 10, 2018 at 11:02 AM
To: michael.summers@deq.idaho.gov
Cc: BEA CORRESPONDENCE CONTROL ServiceID <beacc@inl.gov>, ENVIRONMENTAL CORRESPONDENCE ServiceID <envaff@inl.gov>, Kent Miller <kent.miller@inl.gov>, James F Graham <James.Graham@inl.gov>, Bradley K Griffith <bradley.griffith@inl.gov>, Jason Sturm <STURMJR@id.doe.gov>, "Krauszer II, George J" <george.krauszerii@inl.gov>, Bryan P Crofts <bryan.crofts@inl.gov>, Timothy A Miller <Timothy.Miller@inl.gov>

Michael

A preliminary sampling data package for samples taken under the CF-688 underground storage tank (DEQ ID# 6-120608) and associated piping, show that the screening levels for all of the Chemicals of Interest for Various Petroleum Products (diesel) as identified in IDAPA 58.01.24.800.01 table 1, were reported as non-detectable and laboratory detection limits are below the Residential Use Screening Levels in table 2.

When the final analysis date package is received, a full closure report for the underground storage tank removal will be submitted to the Department of Environmental Quality for final closure.

I also want to restate that the tanks at CF-608 (DEQ ID# 6-120612) and CF-609 (DEQ ID# 6-120613) are in temporary closure status. I am attaching a copy of the Notification for Underground Storage Tank System form for both of these two underground storage tanks that you should already have.

Kerry L. Nisson
Nuclear Operations Environmental Support - UST TPOC
Office (208) 533-7102
Cell (208) 569-4721
email: kerry.nisson@inl.gov
Materials and Fuels Complex - Mail Stop 6134

2 attachments

CF-608 30 Day Notification Form Temporary Closure(signed).pdf
751K

CF-609 30 Day Notification Form Temporary Closure(signed).pdf
510K

Appendix E
Sample Analytical Report
TOS-231 Data Package 1

GEL Laboratories LLC
a member of The GEL Group INC

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

gel.com

March 30, 2018

Ms. Jill Lundell
North Wind - Portage
1075 South Utah Ave.
Suite 200
Idaho Falls, Idaho 83402

Re: Analytical for TOS-231
Work Order: 446517

Dear Ms. Lundell:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on March 23, 2018. This original 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. 4453.

Sincerely,

Kaitlyn Stone for
Edith Kent
Project Manager

Purchase Order: 23270002P01
Chain of Custody: 116
Enclosures

Table of Contents

Case Narrative

Case Narrative
for
North Wind - Portage (8-00000013)
SDG: 446517

March 30, 2018

Laboratory Identification:

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

TOS

Analytical for

Project Title

Tank Removal at CFA

Summary:

Sample Receipt The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on March 23, 2018 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

Items of Note There are no additional items of note concerning this SDG.

Sample Identification The laboratory received the following sample(s):

Laboratory ID	Client ID	Matrix	LIC
446517001	CFA18001 - Soil Location #1	Soil	SVO-A-007
446517001	CFA18001 - Soil Location #1	Soil	VOA-A-013
446517002	CFA18002 - Soil Location #2	Soil	SVO-A-007
446517002	CFA18002 - Soil Location #2	Soil	VOA-A-013
446517003	CFA18003 - Soil Location #3	Soil	SVO-A-007
446517003	CFA18003 - Soil Location #3	Soil	VOA-A-013
446517004	CFA18003 - DUP - Soil Location #3	Soil	SVO-A-007
446517004	CFA18003 - DUP - Soil Location #3	Soil	VOA-A-013

Case Narrative

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

Prep Methods and Prep Dates

Method	Run Date ID
SW846 3541	29-MAR-2018
SW846 5035	22-MAR-2018

Analysis Methods and Analysis Dates

Method	Run Date ID
SW846 3541/8270D SIM PAH	29-MAR-2018
SW846 3541/8270D SIM PAH	30-MAR-2018
SW846 8260B	29-MAR-2018

Certification Statement

I certify that this data package is in compliance with the terms and conditions of SOW-0062 and any applicable TOSs for this project, both technically and for completeness, for other than the conditions detailed in this case narrative. Release of the data contained in this data package and also in any associated computer-readable data submitted has been authorized by the laboratory manager or manager's designee.

Kaitlyn Stone for
Edith Kent
Project Manager

Chain of Custody and Supporting Documentation

Chain of Custody Record 446517 PORTAGE

Client	Contact	Chain of Custody ID#
Portage Inc. 1075 S. Utah Ave. Ste 200 Idaho Falls, ID 83402	Name: Jill Lundell Tel: 2083605471	116 **Date** 3/22/2018

Project Title

TOS-231 Tank Removal at CFA

Location

CFA

Sample / Description	Date/Time	Container(s)	Matrix	Containers	Preservatives	Analysis
CFA18001 - Soil Location #1	3/22/2018 / 1110	2	Soil	(1) - 250 mL Amber Glass, (1) - Soil VOA Kit (4 Vials)	(1) - 4C, (1) - De-I water, Methanol, 4C	(1) - SVOA (SVO-A-011), (1) - VOA (VOA-A-013)
CFA18002 - Soil Location #2	3/22/2018 / 1130	2	Soil	(1) - 250 mL Amber Glass, (1) - Soil VOA Kit (4 Vials)	(1) - 4C, (1) - De-I water, Methanol, 4C	(1) - SVOA (SVO-A-011), (1) - VOA (VOA-A-013)
CFA18003 - Soil Location #3	3/22/2018 / 1155	2	Soil	(1) - 250 mL Amber Glass, (1) - Soil VOA Kit (4 Vials)	(1) - 4C, (1) - De-I water, Methanol, 4C	(1) - SVOA (SVO-A-011), (1) - VOA (VOA-A-013)
CFA18003 - DUP - Soil Location #3	3/22/2018 / 1155	2	Soil	(1) - 250 mL Amber Glass, (1) - Soil VOA Kit (4 Vials)	(1) - 4C, (1) - De-I water, Methanol, 4C	(1) - SVOA (SVO-A-011), (1) - VOA (VOA-A-013)

Cooler	Possible Hazard Identification	Sample Disposal
☑ Yes ☐ No Cooler Temp:	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown	Disposal by Lab

Turn Around Time	QC Requirements
7-Day	

Signatures

1. Relinquished By (sign/print)	Date	Time	1. Received By (sign/print)	Date	Time
Mike Towler	3/22/19	1430	STACY BOONE	3/23/18	0855
2. Relinquished By (sign/print)	Date	Time	2. Received By (sign/print)	Date	Time

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: POEN	SDG/AR/COC/Work Order:
Received By: STACY BOONE	Date Received: 3/23/18
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 7718 0514 5130

Suspected Hazard Information	Yes	No	
Shipped as a DOT Hazardous?		✓	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Ø CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		✓	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	✓			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Wet Ice Ice Packs Dry Ice None Other: *all temperatures are recorded in Celsius TEMP: 1 c
4	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: IR3-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?			✓	Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	✓			If Yes, Are Encores or Soil Kits present? Yes ✓ No___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ✓ N/A___ (If unknown, select No) VOA vials free of headspace? Yes ✓ No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			✓	
13	COC form is properly signed in relinquished/received sections?	✓			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials EMK Date 3/23/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

Data Review Qualifier Definitions

Qualifier	Explanation
*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

P	Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference. For HPLC, the difference is >70%.
U	Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

Laboratory Certifications

List of current GEL Certifications as of 30 March 2018

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
North Wind - Portage (POEN)
SDG #: 446517

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 8260B
Analytical Procedure: GL-OA-E-038 REV# 26
Analytical Batch: 1751482

Preparation Method: SW846 5035
Preparation Procedure: GL-OA-E-039 REV# 12
Preparation Batch: 1751481

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

GEL Sample ID#	Client Sample Identification
446517001	CFA18001 - Soil Location #1
446517002	CFA18002 - Soil Location #2
446517003	CFA18003 - Soil Location #3
446517004	CFA18003 - DUP - Soil Location #3
1203999288	Method Blank (MB)
1203999289	Laboratory Control Sample (LCS)
1203999290	Laboratory Control Sample Duplicate (LCSD)

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

Data Summary:

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

Certification Statement

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

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

Qualifier Definition Report
for

POEN004 North Wind - Portage (8-00000013)
Client SDG: 446517 GEL Work Order: 446517

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

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: Erin Haubert Name: Erin Haubert

Date: 04 APR 2018 Title: Data Validator

Sample Data Summary

Page 1 of 1

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:10	Matrix:	SOIL
Lab Sample ID:	446517001	Date Received:	03/23/2018 08:55	%Moisture:	16.3
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18001 - Soil Location #1	Method:	SW846 8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1751482	Inst:	VOA1.I	Dilution:	1
Run Date:	03/29/2018 18:29	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	03/22/2018 11:10	Aliquot:	6.67 g	Final Volume:	5 mL
Data File:	032918V1\1B419.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene	U	0.895	ug/kg	0.298	0.895
100-41-4	Ethylbenzene	U	0.895	ug/kg	0.298	0.895
108-88-3	Toluene	U	0.895	ug/kg	0.298	0.895
1330-20-7	Xylenes (total)	U	2.69	ug/kg	0.895	2.69

Page 1 of 1

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:30	Matrix:	SOIL
Lab Sample ID:	446517002	Date Received:	03/23/2018 08:55	%Moisture:	21.8
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18002 - Soil Location #2	Method:	SW846 8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1751482	Inst:	VOA1.I	Dilution:	1
Run Date:	03/29/2018 18:58	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	03/22/2018 11:30	Aliquot:	6.42 g	Final Volume:	5 mL
Data File:	032918V1\1B420.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene	U	0.996	ug/kg	0.332	0.996
100-41-4	Ethylbenzene	U	0.996	ug/kg	0.332	0.996
108-88-3	Toluene	U	0.996	ug/kg	0.332	0.996
1330-20-7	Xylenes (total)	U	2.99	ug/kg	0.996	2.99

Page 1 of 1

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	**Date Collected:**	03/22/2018 11:55	**Matrix:**	SOIL
Lab Sample ID:	446517003	**Date Received:**	03/23/2018 08:55	**%Moisture:**	6.8
		Client:	POEN004	**Project:**	POEN004
Client ID:	CFA18003 - Soil Location #3	**Method:**	SW846 8260B	**SOP Ref:**	GL-OA-E-038
Batch ID:	1751482	**Inst:**	VOA1.I	**Dilution:**	1
Run Date:	03/29/2018 19:27	**Analyst:**	PXY1	**Purge Vol:**	5 mL
Prep Date:	03/22/2018 11:55	**Aliquot:**	6.23 g	**Final Volume:**	5 mL
Data File:	032918V1\1B421.D	**Column:**	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene	U	0.861	ug/kg	0.287	0.861
100-41-4	Ethylbenzene	U	0.861	ug/kg	0.287	0.861
108-88-3	Toluene	U	0.861	ug/kg	0.287	0.861
1330-20-7	Xylenes (total)	U	2.58	ug/kg	0.861	2.58

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:55	Matrix:	SOIL
Lab Sample ID:	446517004	Date Received:	03/23/2018 08:55	%Moisture:	7.7
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18003 - DUP - Soil Location #3	Method:	SW846 8260B	SOP Ref:	GL-OA-E-038
Batch ID:	1751482	Inst:	VOA1.I	Dilution:	1
Run Date:	03/29/2018 19:55	Analyst:	PXY1	Purge Vol:	5 mL
Prep Date:	03/22/2018 11:55	Aliquot:	6.19 g	Final Volume:	5 mL
Data File:	032918V1\1B422.D	Column:	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene	U	0.875	ug/kg	0.291	0.875
100-41-4	Ethylbenzene	U	0.875	ug/kg	0.291	0.875
108-88-3	Toluene	U	0.875	ug/kg	0.291	0.875
1330-20-7	Xylenes (total)	U	2.62	ug/kg	0.875	2.62

Quality Control Summary

Volatile

Surrogate Recovery Report

SDG Number: 446517

Matrix Type: SOLID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203999289	LCS for batch 1751481	94	93	100
1203999290	LCSD for batch 1751481	93	94	101
1203999288	MB for batch 1751481	93	93	101
446517001	CFA18001 - Soil Location #1	89	94	103
446517002	CFA18002 - Soil Location #2	91	93	101
446517003	CFA18003 - Soil Location #3	94	93	103
446517004	CFA18003 - DUP - Soil Location #3	92	94	107

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(81%-124%)
TOL	= Toluene-d8	(81%-120%)
BFB	= Bromofluorobenzene	(70%-130%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 446517
Client ID: LCS for batch 1751481
Lab Sample ID 1203999289
Instrument: VOA1.I
Analyst: PXY1
Purge Vol: 5 mL

Sample Type: Laboratory Control Sample
Matrix: SOIL
Analysis Date: 03/29/2018 11:13
Prep Batch ID: 1751481
Batch ID: 1751482
Dilution: 1

CAS No		Parmname	Amount Added ug/kg	Sample Conc. ug/kg	Spike Conc. ug/kg	Recovery %	Acceptance Limits
1330-20-7	LCS	Xylenes (total)	150	0.0	153	102	72-123
71-43-2	LCS	Benzene	50.0	0.0	51.0	102	71-123
108-88-3	LCS	Toluene	50.0	0.0	49.7	99	70-121
100-41-4	LCS	Ethylbenzene	50.0	0.0	50.9	102	72-123

Volatile

Quality Control Summary
Spike Recovery Report

SDG Number: 446517
Client ID: LCSD for batch 1751481
Lab Sample ID 1203999290
Instrument: VOA1.I
Analyst: PXY1
Purge Vol: 5 mL

Sample Type: Laboratory Control Sample Duplicate
Matrix: SOIL
Analysis Date: 03/29/2018 11:42
Dilution: 1
Prep Batch ID: 1751481
Batch ID: 1751482

CAS No	Parmname	Amount Added ug/kg	Sample Conc. ug/kg	Spike Conc. ug/kg	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1330-20-7	LCSD Xylenes (total)	150	0.0	151	101	72-123	1	0-20
71-43-2	LCSD Benzene	50.0	0.0	49.7	99	71-123	3	0-20
108-88-3	LCSD Toluene	50.0	0.0	49.1	98	70-121	1	0-20
100-41-4	LCSD Ethylbenzene	50.0	0.0	50.2	100	72-123	1	0-20

Method Blank Summary

SDG Number:	446517	Client:	POEN004	Matrix:	SOIL
Client ID:	MB for batch 1751481	Instrument ID:	VOA1.I	Data File:	032918V1\1B409P.D
Lab Sample ID:	1203999288	Prep Date:	03/29/2018 09:00	Analyzed:	03/29/18 13:38
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 1751481	1203999289	032918V1\1B404P.D	03/29/18	1113
02	LCSD for batch 1751481	1203999290	032918V1\1B405P.D	03/29/18	1142
03	CFA18001 - Soil Location #1	446517001	032918V1\1B419.D	03/29/18	1829
04	CFA18002 - Soil Location #2	446517002	032918V1\1B420.D	03/29/18	1858
05	CFA18003 - Soil Location #3	446517003	032918V1\1B421.D	03/29/18	1927
06	CFA18003 - DUP - Soil Location #3	446517004	032918V1\1B422.D	03/29/18	1955

Instrument Performance Check

BROMOFLUOROBENZENE

Lab Name GEL Laboratories LLC **Client SDG:** 446517

Instrument ID: VOA1.I **Injection Date/Time:** 26-MAR-18 13:47

Column Description: DB-624 **Lab File ID** 032618V1\1B101.D

m/e	Ion Abundance Criteria	% Relative Abundance
50	15.0 - 40.0% of mass 95	22.2
75	30.0 - 60.0% of mass 95	50.5
95	Base Peak, 100% Relative Abundance	100
96	5.0 - 9.0% of mass 95	5.9
173	Less than 2.0% of mass 174	0
174	50.0 - 100.0% of mass 95	67.5
175	5.0 -9.0% of mass 174	9
176	95.0 - 101.0% of mass 174	98.7
177	5.0 - 9.0% of mass 176	5.9

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, LCS, LCSD,BLANKS AND STANDARDS

Client Sample ID	Lab Sample ID	Lab File ID	Time Analyzed
ICALMIX[A]	W1VM180326-01	032618V1\1B102.D	26-MAR-18 14:10
ICALMIX[A]	W1VM180326-02	032618V1\1B103.D	26-MAR-18 14:39
ICALMIX[A]	W1VM180326-03	032618V1\1B104.D	26-MAR-18 15:08
ICALMIX[A]	W1VM180326-04	032618V1\1B105.D	26-MAR-18 15:37
ICALMIX[A]	W1VM180326-06	032618V1\1B107.D	26-MAR-18 16:35
ICALMIX[A]	W1VM180326-07	032618V1\1B108.D	26-MAR-18 17:04
ICALMIX[A]	W1VM180326-08	032618V1\1B109.D	26-MAR-18 17:32
ICALMIX[A]	W1VM180326-09	032618V1\1B110.D	26-MAR-18 18:01
ICALMIX[A]	W1VM180326-05	032618V1\1B112.D	26-MAR-18 18:58
ICVMIX[A]01	W1VM180326-10	032618V1\1B121.D	26-MAR-18 23:15

Instrument Performance Check

BROMOFLUOROBENZENE

Lab Name GEL Laboratories LLC **Client SDG:** 446517

Instrument ID: VOA1.I **Injection Date/Time:** 29-MAR-18 09:53

Column Description: DB-624 **Lab File ID** 032918V1\1B401.D

m/e	Ion Abundance Criteria	% Relative Abundance
50	15.0 - 40.0% of mass 95	20.2
75	30.0 - 60.0% of mass 95	50.1
95	Base Peak, 100% Relative Abundance	100
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	0
174	50.0 - 100.0% of mass 95	69.9
175	5.0 -9.0% of mass 174	8.4
176	95.0 - 101.0% of mass 174	98.3
177	5.0 - 9.0% of mass 176	7.2

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, LCS, LCSD,BLANKS AND STANDARDS

Client Sample ID	Lab Sample ID	Lab File ID	Time Analyzed
CCVMIX[A]01	W1VM180329-01	032918V1\1B402.D	29-MAR-18 10:16
BLK01LCS	1203999289	032918V1\1B404P.D	29-MAR-18 11:13
BLK01LCSD	1203999290	032918V1\1B405P.D	29-MAR-18 11:42
BLK01	1203999288	032918V1\1B409P.D	29-MAR-18 13:38
CFA18001 - Soil Location #1	446517001	032918V1\1B419.D	29-MAR-18 18:29
CFA18002 - Soil Location #2	446517002	032918V1\1B420.D	29-MAR-18 18:58
CFA18003 - Soil Location #3	446517003	032918V1\1B421.D	29-MAR-18 19:27
CFA18003 - DUP - Soil Location	446517004	032918V1\1B422.D	29-MAR-18 19:55

Internal Standard
Area and RT Summary

Lab Name : GEL Laboratories LLC

Client SDG: 446517

Instrument: VOA1.I

STD Analysis Time: 29-MAR-18 10:16

GC Column: DB-624

Data File: 032918V1\1B402.D

	Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
	Area #	RT #	Area #	RT #	Area #	RT #
12 Hour STD	1104889	12.2	887601	15.8	526186	18.4
Upper Limit	2209778	12.7	1775202	16.3	1052372	18.9
Lower Limit	552445	11.7	443801	15.3	263093	17.9
Sample ID						
BLK01LCS	1061199	12.2	878240	15.8	531372	18.4
BLK01LCSD	1085710	12.2	882426	15.8	533105	18.4
BLK01	1052138	12.2	851262	15.8	518690	18.4
CFA18001 - Soil Location #1	1027603	12.2	830757	15.8	487841	18.4
CFA18002 - Soil Location #2	1028306	12.2	819767	15.8	491849	18.4
CFA18003 - Soil Location #3	1045559	12.2	846137	15.8	494383	18.4
CFA18003 - DUP - Soil Location #3	1051321	12.2	842565	15.8	464807	18.4

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk
* Value outside of QC Limits

Standards

Low level SW846 8260B and Regular level 8260B and EPA 624

Calibration Standard Concentration Levels

	Level 1	Level 1a	Level 2	Level 3	Level 4	Level 5	Level 6 #	Level 7 !	Level 7a
Fluorobenzene (IS)	20	20/50	20/50	20/50	20/50	20/50	20/50	20/50	20/50
1,2-Dichloroethane-d4(surr)		20/50	20/50	20/50	20/50	20/50	20/50	20/50	20/50
Dichlorodifluoromethane		0.5	1	2	5	10	20	50	100
Chloromethane		0.5	1	2	5	10	20	50	100
Vinyl chloride		0.5	1	2	5	10	20	50	100
Bromomethane		0.5	1	2	5	10	20	50	100
Chloroethane		0.5	1	2	5	10	20	50	100
Trichlorofluoromethane		0.5	1	2	5	10	20	50	100
1,1-Dichloroethene		0.5	1	2	5	10	20	50	100
Acetone	1	2.5	5	10	25	50	100	250	500
Iodomethane	1	2.5	5	10	25	50	100	250	500
Carbon disulfide	1	2.5	5	10	25	50	100	250	500
Methylene chloride		0.5	1	2	5	10	20	50	100
trans-1,2-Dichloroethene		0.5	1	2	5	10	20	50	100
1,1-Dichloroethane		0.5	1	2	5	10	20	50	100
Ethyl ether		0.5	1	2	5	10	20	50	100
Vinyl acetate	1	2.5	5	10	25	50	100	250	500
cis-1,2-Dichloroethene		0.5	1	2	5	10	20	50	100
1,2-Dichloroethene (total)		1	2	4	10	20	40	100	200
Cyclohexene		0.5	1	2	5	10	20	50	100
2-Chloroethylvinyl ether			5	10	25	50	100	250	500
2,2-Dichloropropane		0.5	1	2	5	10	20	50	100
2-Butanone	1	2.5	5	10	25	50	100	250	500
Bromochloromethane		0.5	1	2	5	10	20	50	100
Chloroform		0.5	1	2	5	10	20	50	100
1,1,1-Trichloroethane		0.5	1	2	5	10	20	50	100
1,1-Dichloropropene		0.5	1	2	5	10	20	50	100
Carbon tetrachloride		0.5	1	2	5	10	20	50	100
Benzene		0.5	1	2	5	10	20	50	100
1,2-Dichloroethane		0.5	1	2	5	10	20	50	100
Trichloroethene		0.5	1	2	5	10	20	50	100
1,2-Dichloropropane		0.5	1	2	5	10	20	50	100
Dibromomethane		0.5	1	2	5	10	20	50	100
Bromodichloromethane		0.5	1	2	5	10	20	50	100
cis-1,3-Dichloropropene		0.5	1	2	5	10	20	50	100
tert-Butylmethylether		0.5	1	2	5	10	20	50	100
Ethyl Ether			1	2	5	10	20	50	100
Acetonitrile			25	50	125	250	500	1250	2500
Methyl acetate			5	10	25	50	100	250	500
Cyclohexane			1	2	5	10	20	50	100
Methylcyclohexane			1	2	5	10	20	50	100
n-Butyl alcohol		50	100	200	500	1000	2000	5000	10000
2-Nitropropane			5	10	25	50	100	250	500
Ethyl acetate			5	10	25	50	100	250	500
Acrolein			5	10	25	50	100	250	500
Trichlorotrifluoroethane		2	5	10	25	50	100	250	500
Allyl chloride			5	10	25	50	100	250	500
Acrylonitrile			5	10	25	50	100	250	500
1,4-Dioxane			50	100	250	500	1000	2500	5000
Isobutyl alcohol			50	100	250	500	1000	2500	5000
Methacrylonitrile			5	10	25	50	100	250	500
Propionitrile			5	10	25	50	100	250	500
Methyl methacrylate			5	10	25	50	100	250	500
Chlorotrifluoroethylene			5	10	25	50	100	150	200
2-Chloro-1,1,1-trifluoroethane			5	10	25	50	100	150	200
Tetrahydrofuran			5	10	25	50	100	250	500
tert-Butyl alcohol			50	100	250	500	1000	2500	5000
Isopropyl ether			1	2	5	10	20	50	100
Ethyl tert-butyl ether			1	2	5	10	20	50	100
Isopropyl alcohol			50	100	250	500	1000	2500	5000
Methyl tert-amyl ether			1	2	5	10	20	50	100
1-Chlorohexane			1	2	5	10	20	50	100
2-Chloro-1,3-butadiene(chloroprene)			1	2	5	10	20	50	100
Chlorobenzene-d5 (IS)	20	20	20/50	20/50	20/50	20/50	20/50	20/50	20/50
Toluene-d8 (surr)		20	20/50	20/50	20/50	20/50	20/50	20/50	20/50
4-Methyl-2-pentanone	1	2.5	5	10	25	50	100	250	500
Toluene		0.5	1	2	5	10	20	50	100
trans-1,3-Dichloropropene		0.5	1	2	5	10	20	50	100
1,1,2-Trichloroethane		0.5	1	2	5	10	20	50	100
Tetrachloroethene		0.5	1	2	5	10	20	50	100
1,3-Dichloropropane		0.5	1	2	5	10	20	50	100
2-Hexanone	1	2.5	5	10	25	50	100	250	500
Dibromochloromethane		0.5	1	2	5	10	20	50	100
1,2-Dibromoethane		0.5	1	2	5	10	20	50	100
Chlorobenzene		0.5	1	2	5	10	20	50	100
1,1,1,2-Tetrachloroethane		0.5	1	2	5	10	20	50	100
Ethylbenzene		0.5	1	2	5	10	20	50	100
m,p-Xylene		1	2	4	10	20	20	100	200
o-Xylene		0.5	1	2	5	10	20	50	100
Xylenes (total)		1.5	3	6	15	30	60	150	300
Styrene		0.5	1	2	5	10	20	50	100
Ethyl methacrylate			5	10	25	50	100	250	500
1,4-Dichlorobenzene-d4 (IS)	20	20	20/50	20/50	20/50	20/50	20/50	20/50	20/50
Bromofluorobenzene (surr)		20	20/50	20/50	20/50	20/50	20/50	20/50	20/50
Bromoform		0.5	1	2	5	10	20	50	100
Isopropylbenzene		0.5	1	2	5	10	20	50	100
1,1,2,2-Tetrachloroethane		0.5	1	2	5	10	20	50	100
Bromobenzene		0.5	1	2	5	10	20	50	100
1,2,3-Trichloropropane		0.5	1	2	5	10	20	50	100
n-Propylbenzene		0.5	1	2	5	10	20	50	100
2-Chlorotoluene		0.5	1	2	5	10	20	50	100
1,3,5-Trimethylbenzene		0.5	1	2	5	10	20	50	100
4-Chlorotoluene		0.5	1	2	5	10	20	50	100
1,2,4-Trimethylbenzene		0.5	1	2	5	10	20	50	100
sec-Butylbenzene		0.5	1	2	5	10	20	50	100
1,3-Dichlorobenzene		0.5	1	2	5	10	20	50	100
tert-Butylbenzene		0.5	1	2	5	10	20	50	100
Isopropyltoluene		0.5	1	2	5	10	20	50	100
1,4-Dichlorobenzene		0.5	1	2	5	10	20	50	100
n-Butylbenzene		0.5	1	2	5	10	20	50	100
1,2-Dichlorobenzene		0.5	1	2	5	10	20	50	100
1,2-Dibromo-3-chloropropa		0.5	1	2	5	10	20	50	100
1,2,4-Trichlorobenzene		0.5	1	2	5	10	20	50	100
Hexachlorobutadiene		0.5	1	2	5	10	20	50	100
Naphthalene		0.5	1	2	5	10	20	50	100
1,2,3-Trichlorobenzene		0.5	1	2	5	10	20	50	100
cis-1,4-Dichloro-2-butene			5	10	25	50	100	250	500
trans-1,4-Dichloro-2-butene			5	10	25	50	100	250	500
Pentachloroethane			5	10	25	50	100	250	500
Benzyl chloride			5	10	25	50	100	250	500
Cyclohexanone			25	50	125	250	500	1250	2500
bis(2-Chloro-isopropyl)ether			5	10	25	50	100	250	500

Method	PQL	Concentration range		
SW 846 8260B low level	Level 1 &1a	Levels 1-> 7a	IS/SS @ 20 ppb	
EPA 524.2	Level 1a	Levels 1a -> 7a	IS/SS @ 20 ppb	
SW846 8260B/624	Level 2	Levels 1a-> 7a	IS/SS @ 50 ppb	n-butyl alchol only in 1a

#: Indicates calibration verification concentration level used for low level analysis

!: Indicates calibration verification concentration level used for regular level analysis

03/27/2018

Calibration History Report VOA1
GEL Laboratories, LLC

Method File : C:\msdchem\1\DATA\032618V1\VOA1-8260-032618.M
Last Update : Mon Mar 26 23:38:56 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

03/27/2018

Cal Lvl:8 Amt:0.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B102.D

Injection Date	Mix	Calibration File
26 Mar 2018 14:10	A	C:\msdchem\1\DATA\032618V1\1B102.D

Cal Lvl:1 Amt:1.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B114.D

Injection Date	Mix	Calibration File
26 Mar 2018 14:39	A	C:\msdchem\1\DATA\032618V1\1B103.D
26 Mar 2018 19:55	B	C:\msdchem\1\DATA\032618V1\1B114.D

Cal Lvl:2 Amt:2.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B115.D

Injection Date	Mix	Calibration File
26 Mar 2018 15:08	A	C:\msdchem\1\DATA\032618V1\1B104.D
26 Mar 2018 20:24	B	C:\msdchem\1\DATA\032618V1\1B115.D

Cal Lvl:3 Amt:5.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B116.D

Injection Date	Mix	Calibration File
26 Mar 2018 15:37	A	C:\msdchem\1\DATA\032618V1\1B105.D
26 Mar 2018 20:52	B	C:\msdchem\1\DATA\032618V1\1B116.D

Cal Lvl:4 Amt:10.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B117.D

Injection Date	Mix	Calibration File
26 Mar 2018 18:58	A	C:\msdchem\1\DATA\032618V1\1B112.D
26 Mar 2018 21:21	B	C:\msdchem\1\DATA\032618V1\1B117.D

Cal Lvl:5 Amt:20.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B118.D

Injection Date	Mix	Calibration File
26 Mar 2018 16:35	A	C:\msdchem\1\DATA\032618V1\1B107.D
26 Mar 2018 21:49	B	C:\msdchem\1\DATA\032618V1\1B118.D

Cal Lvl:6 Amt:50.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B119.D

Injection Date	Mix	Calibration File
26 Mar 2018 17:04	A	C:\msdchem\1\DATA\032618V1\1B108.D
26 Mar 2018 22:18	B	C:\msdchem\1\DATA\032618V1\1B119.D

Cal Lvl:7 Amt:100.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B120.D

Injection Date	Mix	Calibration File
26 Mar 2018 18:01	A	C:\msdchem\1\DATA\032618V1\1B110.D
26 Mar 2018 22:46	B	C:\msdchem\1\DATA\032618V1\1B120.D

Cal Lvl:9 Amt:80.00 Last Updated with: C:\msdchem\1\DATA\032618V1\1B109.D

Injection Date	Mix	Calibration File

Calibration History Report VOA1
GEL Laboratories, LLC

Method File : C:\msdchem\1\DATA\032618V1\VOA1-8260-032618.M
Last Update : Mon Mar 26 23:38:56 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

26 Mar 2018 17:32	A	C:\msdchem\1\DATA\032618V1\1B109.D

VOA1-8260-032618.M Tue Mar 27 01:19:36 2018

Response Factor Report VOA1
GEL Laboratories, LLC

Method File : C:\msdchem\1\DATA\032618V1\VOA1-8260-032618.M
Last Update : Mon Mar 26 23:38:56 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

03/27/2018

03/27/2018

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
2)MA Dichlorodifluoromethane		0.2088924	0.2483649	0.2603698	0.2346314	0.2505387				
	0.2325581	0.2167259	0.2272198				0.2349	AVRG		7.4532
3)MPA Chloromethane		0.2341336	0.2296776	0.2354239	0.2436657	0.2275842				
	0.2156781	0.2070542	0.2147298				0.2260	AVRG		5.4850
4)MCA Vinyl chloride		0.2259133	0.2361975	0.2349843	0.2263741	0.2281090				
	0.2274747	0.2078446	0.2144775				0.2252	AVRG		4.2742
5)MA Bromomethane		0.1572979	0.1241219	0.1669055	0.1955067	0.1790461				
	0.1583241	0.1560454	0.1848093				0.1653	AVRG		13.2940
6)MA Chloroethane		0.1954015	0.1980714	0.1977998	0.1946664	0.1928280				
	0.1951065	0.1793082	0.1818580				0.1919	AVRG		3.7547
7)MA Trichlorofluoromethane		0.4901719	0.4830355	0.4725668	0.4614184	0.4526316				
	0.4523642	0.4101383	0.4234115				0.4557	AVRG		6.0900
8)MA Ethyl ether		9900	10641	24327	52050	104561		1/x		
0.0027 | 0.2469 | 0.00	263449	511393	406654					LINR	#	0.9980
9)MA Acetone		0.2001692	0.1800094	0.1724045	0.1713927	0.1496458				
	0.1542705	0.1485234	0.1438894				0.1650	AVRG		11.7355
10)MCA 1,1-Dichloroethylene		0.4043906	0.4155089	0.4167753	0.4244260	0.4215178				
	0.4143312	0.3970129	0.4044306				0.4123	AVRG		2.2912
11)MA Iodomethane		0.5354416	0.5446771	0.5400810	0.5461744	0.5283108				
	0.4952894	0.4440563	0.4625985				0.5121	AVRG		7.8029
12)MA Acetonitrile		0.0355543	0.0363771	0.0352623	0.0346553	0.0340871				
	0.0343681	0.0324327	0.0320064				0.0343	AVRG		4.3639
13)MA Methyl acetate		0.0446024	0.0491155	0.0503412	0.0516941	0.0515496				
	0.0508425	0.0499693	0.0484456				0.0496	AVRG		4.6350
14)MA Carbon disulfide		0.9492614	0.9441018	0.9212366	0.9017682	0.8653331				
	0.7985348	0.6814759	0.7174578				0.8474	AVRG		12.2362
15)MA Methylene chloride		11875	18805	39688	75341	143203		1/x		
0.0056 | 0.3229 | 0.00	340898	664835	530308					LINR	#	0.9995
16)MA tert-Butyl methyl ether		9248	19310	49366	119802	235839		1/x		
-0.0079 | 0.6591 | 0.00	647265	1415395	1070734					LINR	#	0.9972

VOA1-8260-032618.M Tue Mar 27 01:20:22 2018 Page: 1

Response Factor Report VOA1
GEL Laboratories, LLC

Method File : C:\msdchem\1\DATA\032618V1\VOA1-8260-032618.M
Last Update : Mon Mar 26 23:38:56 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
17)MA trans-1,2-Dichloroethyle		0.3898358	0.4240649	0.4182697	0.4239597	0.4147848				
	0.4065283	0.3788480	0.3826489				0.4049	AVRG		4.5834
18)MA Hexane				0.3180659	0.3535451	0.3569891				
	0.3262771	0.3249190	0.3358023				0.3359	AVRG		4.7765
19)MA Vinyl acetate		0.3608133	0.4081406	0.4718830	0.4850428	0.4912750				
	0.5059411	0.4309509	0.4480360				0.4503	AVRG		10.8195
20)MPA 1,1-Dichloroethane		0.4966998	0.5086306	0.5111773	0.5201709	0.5245081				
	0.5173020	0.4911449	0.4961369				0.5082	AVRG		2.4325
21)MA 2-Butanone		0.1915718	0.1957543	0.1983272	0.2031121	0.1825786				
	0.1793316	0.1573201	0.1584933				0.1833	AVRG		9.5571
22)MA cis-1,2-Dichloroethylene		0.3028457	0.3263865	0.3288100	0.3389735	0.3332449				
	0.3298769	0.3056791	0.3110140				0.3221	AVRG		4.2245
23)MA 2,2-Dichloropropane		0.2495104	0.2620593	0.2710456	0.2938065	0.3055425				
	0.3320564	0.3319159	0.3320443				0.2972	AVRG		11.3079
24)MA Bromochloromethane		0.1773652	0.1857586	0.1754715	0.1797257	0.1795078				
	0.1781791	0.1729483	0.1714010				0.1775	AVRG		2.5160
25)MCA Chloroform		0.5946665	0.6230573	0.5948547	0.6162850	0.5869909				
	0.5786182	0.5514265	0.5578685				0.5880	AVRG		4.2906
26)MA 1,1,1-Trichloroethane		0.3918667	0.3897199	0.4044782	0.4346504	0.4433327				
	0.4545101	0.4451876	0.4446420				0.4260	AVRG		6.1771
27)MA Cyclohexane		0.3683663	0.4067833	0.4285646	0.4390510	0.4432647				
	0.4352720	0.4017086	0.4113861				0.4168	AVRG		6.0004
28)MA 1,1-Dichloropropene		0.3368874	0.3573866	0.3626150	0.3766119	0.3743477				
	0.3724604	0.3479717	0.3526367				0.3601	AVRG		3.9042
29)MA Carbon tetrachloride		0.4071468	0.4165027	0.4249995	0.4340238	0.4414642				
	0.4387564	0.4137434	0.4208563				0.4247	AVRG		2.9191
30)SA 1,2-Dichloroethane-d4		0.1657030	0.1655181	0.1605205	0.1631044	0.1619280				
	0.1650263	0.1650191	0.1616716				0.1636	AVRG		1.2311
31)MA 1,2-Dichloroethane		0.4729093	0.4827446	0.4686598	0.4764902	0.4652375				
	0.4554705	0.4258460	0.4274934				0.4594	AVRG		4.7258

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Response Factor Report VOA1
GEL Laboratories, LLC

Method File : C:\msdchem\1\DATA\032618V1\VOA1-8260-032618.M
Last Update : Mon Mar 26 23:38:56 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
32)MA Benzene		1.1482798	1.1691111	1.1579361	1.1604116	1.1270888				
	1.0886789	0.9958207	1.0085417				1.1070	AVRG		6.2775
33)MA Cyclohexene		0.4103866	0.4395528	0.4560989	0.4879435	0.4787984				
	0.4803221	0.4462752	0.4580332				0.4572	AVRG		5.5892
34)MA n-Butyl alcohol	5910	11283	27734	74080	166764	353927		1/x		
-0.0055 | 0.0084 | 0.00	892002	1723839	1357268					LINR	# #	0.9984
35)MA Trichloroethylene		0.2864051	0.3113832	0.3079176	0.3123318	0.3034334				
	0.2992549	0.2849576	0.2847453				0.2988	AVRG		3.9781
36)MA 2-Pentanone			0.1914109	0.2057837	0.2209924	0.2204915				
	0.2221755	0.1945759	0.1987284				0.2077	AVRG		6.4331
37)MCA 1,2-Dichloropropane		0.2970915	0.3016639	0.3028971	0.3150810	0.3112623				
	0.3034973	0.2782884	0.2809564				0.2988	AVRG		4.3985
38)MA Methylcyclohexane		0.4329683	0.4718376	0.4819630	0.4905907	0.4832619				
	0.4696647	0.4287871	0.4380291				0.4621	AVRG		5.3904
39)MA Dibromomethane		0.2172094	0.2232545	0.2187509	0.2217841	0.2187688				
	0.2186936	0.2113588	0.2105964				0.2176	AVRG		2.0667
40)MA Bromodichloromethane		0.4270206	0.4432612	0.4455599	0.4833777	0.4662799				
	0.4739910	0.4551744	0.4564423				0.4564	AVRG		3.9628
41)MA 2-Chloroethylvinyl ether		14580	32369	93911	200448	400193		1/x		
0.0039 | 0.1682 | 0.00	932301	1619380	1353645					LINR	#	0.9909
42)MA cis-1,3-Dichloropropylen		6298	14429	40404	97152	202193		1/x		
-0.0052 | 0.5000 | 0.00	521523	1019621	810458					LINR	#	0.9993
44)MA 4-Methyl-2-pentanone		0.2951503	0.3454391	0.3805116	0.3883504	0.3718260				
	0.3410195	0.2910938	0.3029928				0.3395	AVRG		11.5647
45)SA Toluene-d8		1.2619693	1.2550862	1.2365487	1.2494165	1.2354089				
	1.2459444	1.2329948	1.2420845				1.2449	AVRG		0.8181
46)MCA Toluene		1.4561231	1.5253949	1.4928237	1.5114965	1.4710616				
	1.3837170	1.2435658	1.2832722				1.4209	AVRG		7.5155
47)MA trans-1,3-Dichloropropyl		5462	11932	34319	85687	183986		1/x		
-0.0074 | 0.5814 | 0.00	487522	951025	757154					LINR	#	0.9990

Response Factor Report VOA1
GEL Laboratories, LLC
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Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
48)MA 1,1,2-Trichloroethane		0.3191595	0.3291482	0.3164336	0.3172934	0.3183083				
	0.3160217	0.2980786	0.2967413				0.3139	AVRG		3.5039
49)MA 2-Hexanone		0.3204271	0.3619644	0.3869478	0.4019146	0.3498717				
	0.3144514		0.2688154				0.3435	AVRG		13.3602
50)MA 1,3-Dichloropropane		0.5521146	0.5958101	0.5833698	0.6049761	0.6021777				
	0.5815879	0.5233528	0.5318734				0.5719	AVRG		5.5915
51)MA Tetrachloroethylene		0.2921476	0.3031483	0.2979091	0.2961915	0.2968246				
	0.2911156	0.2719161	0.2762948				0.2907	AVRG		3.7621
52)MA Dibromochloromethane		0.3937347	0.4263629	0.4352102	0.4755547	0.4725781				
	0.4872295	0.4746762	0.4727962				0.4548	AVRG		7.1682
53)MA 1,2-Dibromoethane		0.3298043	0.3562277	0.3693205	0.3798708	0.3859035				
	0.3932172	0.3799075	0.3785158				0.3716	AVRG		5.4258
54)MPA Chlorobenzene		1.1397324	1.1402680	1.1035490	1.1160162	1.0933229				
	1.0373318	0.9484544	0.9595364				1.0673	AVRG		7.2205
55)MA 1,1,1,2-Tetrachlorcethan		0.3580469	0.3822894	0.3935022	0.4198595	0.4254237				
	0.4218871	0.3958199	0.4040116				0.4001	AVRG		5.7222
56)MCA Ethylbenzene		1.5531570	1.7074565	1.7425911	1.7598521	1.7434554				
	1.6149805	1.4018590	1.4489627				1.6215	AVRG		8.6837
57)MA m,p-Xylenes		0.6042003	0.6566310	0.6835910	0.6886433	0.6770918				
	0.6279568	0.5394887	0.5692736				0.6309	AVRG		8.8423
58)MA o-Xylene		0.5258410	0.6246785	0.6633841	0.7112564	0.7063249				
	0.6646380	0.5824471	0.6107119				0.6362	AVRG		9.9328
59)MA Styrene		0.8874567	1.0725693	1.1488929	1.2161062	1.1946899				
	1.1057995	0.9366081	0.9920923				1.0693	AVRG		11.2663
61)MPA Bromoform		0.4256759	0.4246603	0.4634273	0.4996311	0.5224546				
	0.5559974	0.5513774	0.5411837				0.4981	AVRG		10.8611
62)MA Isopropylbenzene		2.0347607	2.4079251	2.6640927	2.8976395	2.8572279				
	2.7268550	2.4477411	2.5129989				2.5687	AVRG		10.9545
63)SA Bromofluorobenzene		0.9694472	0.9490863	0.9597598	0.9618963	0.9466911				
	0.9701649	0.9563591	0.9682008				0.9602	AVRG		0.9420

Response Factor Report VOA1
GEL Laboratories, LLC

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Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
64)MPA 1,1,2,2-Tetrachloroethan		0.8570408	0.8744984	0.8664137	0.8895408	0.8912432				
	0.8784830	0.8368506	0.8315129				0.8657	AVRG		2.5970
65)MA 1,2,3-Trichloropropane		0.2138859	0.2208134	0.2329221	0.2314735	0.2313724				
	0.2361496	0.2276857	0.2277881				0.2278	AVRG		3.1688
66)MA Bromobenzene		0.7782932	0.7822950	0.8099807	0.8582907	0.8466472				
	0.8364175	0.7942752	0.8014384				0.8135	AVRG		3.7087
67)MA n-Propylbenzene		3.0686591	3.3404959	3.5573534	3.6398225	3.5689263				
	3.3059018	2.8470881	2.9538000				3.2853	AVRG		9.1496
68)MA 1,3,5-Trimethylbenzene		2.0906525	2.3899197	2.5560805	2.6737756	2.5807291				
	2.4391922	2.1457031	2.2368376				2.3891	AVRG		8.9444
69)MA 2-Chlorotoluene		0.6272856	0.6886570	0.7498822	0.7898752	0.7777139				
	0.7550611	0.7031823	0.7085021				0.7250	AVRG		7.3960
70)MA 4-Chlorotoluene		2.0964413	2.3190853	2.3567927	2.4602481	2.3642754				
	2.2554417	2.0345326	2.0888216				2.2470	AVRG		6.9229
71)MA tert-Butylbenzene		0.3149902	0.3567443	0.4335593	0.4688922	0.4743104				
	0.4799509	0.4531909	0.4655773				0.4309	AVRG		14.2451
72)MA 1,2,4-Trimethylbenzene		2.0976390	2.4832609	2.6423614	2.8103758	2.7298260				
	2.5487023	2.2711639	2.3633019				2.4933	AVRG		9.6431
73)MA sec-Butylbenzene		2.4629318	2.7798059	3.0808954	3.3210051	3.2354251				
	3.0330065	2.6534113	2.7714248				2.9172	AVRG		10.2067
74)MA 4-Isopropyltoluene		2.0433441	2.4445790	2.7034871	2.9751984	2.8799888				
	2.7032056	2.3988263	2.4833061				2.5790	AVRG		11.5872
75)MA 1,3-Dichlorobenzene		1.6296450	1.6899352	1.6613094	1.7008209	1.6640376				
	1.5828907	1.4527441	1.4875639				1.6086	AVRG		5.8039
76)MA 1,4-Dichlorobenzene		1.6964157	1.7256986	1.6737158	1.7217345	1.6289854				
	1.5742424	1.4416282	1.4827836				1.6182	AVRG		6.7309
77)MA n-Butylbenzene		2.0757813	2.4428477	2.7271519	2.9443192	2.8518680				
	2.6329742	2.2581949	2.3987513				2.5415	AVRG		11.7918
78)MA 1,2-Dichlorobenzene		1.4917120	1.5405992	1.5786739	1.6605176	1.6217988				
	1.5673318	1.4392768	1.4822692				1.5478	AVRG		4.8092

Response Factor Report VOA1
GEL Laboratories, LLC

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Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
79)MA 1,2-Dibromo-3-chloroprop -0.0025 | 0.1759 | 0.00	84567	1046 180322	2336 139517	6249	14472	29862		1/x LINR	# 	0.9967
80)MA 1,2,4-Trichlorobenzene	1.1644162	0.9327941 1.0857907	0.9626457 1.1055839	1.0412916	1.2085487	1.1452914	1.0808	AVRG		8.9526
81)MA Hexachlorobutadiene	0.6993255	0.6485444 0.6784818	0.6492331 0.6718937	0.6620304	0.7429349	0.6958988	0.6810	AVRG		4.6118
82)MA Naphthalene -0.0206 | 2.2757 | 0.00	1171488	13396 2192811	31378 1781292	93416	236876	459984		1/x LINR	 	0.9986
83)MA 1,2,3-Trichlorobenzene	0.9974045	0.8652249 0.9508840	0.9502794 0.9594492	0.9033509	1.0611909	1.0012692	0.9611	AVRG		6.3044
85)B Acrolein -0.0020 | 0.0464 | 0.00	232141	2963 466790	7103	20728	44824	87195		1/x LINR	# 	0.9996
86)B Trichlorotrifluoroethane	0.1003098	0.1024484 0.0929762	0.1090057	0.1066670	0.0988205	0.1034477	0.1020	AVRG		5.1829
87)B Isopropyl Alcohol -0.0106 | 0.0165 | 0.00	834124	11504 1682244	22264	58751	130673	297212		1/x LINR	# 	0.9961
88)B Allyl chloride	0.1405864	0.1100411 0.1272786	0.1229206	0.1331931	0.1293906	0.1417796	0.1293	AVRG		8.4358
89)B tert-Butyl Alcohol	0.0190558	0.0134528	0.0133320	0.0139910	0.0151711	0.0168904	0.0153	AVRG		14.7883
90)B Acrylonitrile	0.1062916	0.0876873 0.0993693	0.0965140	0.0998718	0.1014475	0.1056930	0.0996	AVRG		6.3113
91)B Isopropyl ether	0.9063240	0.6172967 0.8408697	0.6582282	0.7210710	0.7561732	0.8519489	0.7646	AVRG		13.9764
92)B 2-Chloro-1,3-butadiene	0.3668768	0.3081053 0.3401195	0.2962253	0.3249391	0.3204414	0.3557869	0.3304	AVRG		7.6812
93)B Ethyl tert-butyl ether -0.0091 | 0.6811 | 0.00	698562	8894 1381838	18347	49269	105770	244734		1/x LINR	# 	0.9960
94)B Ethyl acetate	0.2512262	0.2115318 0.2172888	0.2253938	0.2379592	0.2435703	0.2546387	0.2345	AVRG		7.1485

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For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	8 6	1 7	2 9	3	4	5	Avg	Curve	Exp	%RSD/r2
95)B Propionitrile		0.0366310	0.0371281	0.0403405	0.0408970	0.0418666				
	0.0424080	0.0390556					0.0398	AVRG		5.6511
96)B Methacrylonitrile		0.1251181	0.1414016	0.1519758	0.1548330	0.1593788				
	0.1549908	0.1380200					0.1465	AVRG		8.3232
97)B Tetrahydrofuran		0.0811905	0.0798986	0.0821157	0.0814788	0.0830828				
	0.0830650	0.0763305					0.0810	AVRG		2.9000
98)B Isobutyl alcohol		0.0098390	0.0102006	0.0105823	0.0109717	0.0107074				
	0.0104949	0.0092240					0.0103	AVRG	$	5.7694
99)B Methyl tert-amyl ether		6940	14107	37975	79697	180758		1/x		
-0.0065 | 0.5087 | 0.00	515322	1040511						LINR	#	0.9959
100)B Methyl methacrylate		0.1427820	0.1651882	0.1827359	0.1912556	0.2009976				
	0.1935963	0.1699824					0.1781	AVRG		11.3219
101)B 1,4-Dioxane		0.0021821	0.0024677	0.0024497	0.0026365	0.0027536				
	0.0027558	0.0025829					0.0025	AVRG	#	7.9266
102)B 2-Nitropropane		3384	7721	25243	63644	154606		1/x		
-0.0089 | 0.0867 | 0.00	452790	867707						LINR	#	0.9944
104)B Ethyl methacrylate		0.3503388	0.4185258	0.4702953	0.4901750	0.5023455				
	0.4612967	0.3745463					0.4382	AVRG		13.3510
106)B 1-Chlorohexane		0.3591702	0.4115871	0.4589233	0.4776681	0.5153146				
	0.5262915	0.4682047					0.4596	AVRG		12.6698
107)B cis-1,4-Dichloro-2-buten		0.1903345	0.2160687	0.2524249	0.2587272	0.2654956				
	0.2582613	0.2176661					0.2370	AVRG		12.1362
108)B Cyclohexanone		0.0169351	0.0157901	0.0177005	0.0202711	0.0211931				
	0.0218646	0.0215455					0.0193	AVRG		12.7801
109)B trans-1,4-Dichloro-2-but		0.2063915	0.2282491	0.2473969	0.2529514	0.2519142				
	0.2392125	0.1999553					0.2323	AVRG		9.3339
110)B Pentachloroethane		0.3652509	0.4053070	0.4207437	0.4323936	0.4651170				
	0.4453783	0.3751834					0.4156	AVRG		8.7424
111)B Benzyl chloride		28820	68408	223009	514537	1136181		1/x		
-0.0732 | 1.1790 | 0.00	2777401							LINR	#	0.9984

Response Factor Report VOA1
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For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound	8	1	2	3	4	5	Avg	Curve	Exp	%RSD/r2
b m1 m2	6	7	9							
112)B bis(2-Chloroisopropyl)et		7165	15711	48344	115319	265092		1/x		
-0.0189 0.2810 0.00	717726	1293820						LINR	#	0.9964

(#) = Out of Range ($) = Individual RF Out of Range
AVRG = Average, LINR = Linear Regression, 1/x = the inverse of concentration, 1/x^2 = the inverse square of concentration

Continuing Calibration Summary

Client SDG: 446517

Instrument ID: VOA1.I **Injection Date:** 26-MAR-18 23:15

Data File: 032618V1\1B121.D **Init. Cal. Date(s):** 26-MAR-18 14:10 - 26-MAR-18 18:5

Lab Sample ID W1VM180326-10 **Method:** 032618V1\VOA1-8260-032618.M

Quant Type ISTD **Method Update:** 26-MAR-18 23:38

	Compound	AVERF / Amount	RF CCV	Nominal CCV	Min RF	RF Q	%D / %Drift	Max	Drift Q	Curve Type	
S	1,2-Dichloroethane-d4	0.1636	0.1612		.01		-1.46699	60		Averaged	
S	Toluene-d8	1.2449	1.2386		.01		-0.50606	60		Averaged	
S	Bromofluorobenzene	0.9602	0.97631		.01		1.67778	60		Averaged	
	Chloromethane	0.226	0.21849		.1		-3.32301	60		Averaged	SPCC
	Vinyl chloride	0.2252	0.22194		.01		-1.4476	20		Averaged	CCC
	1,1-Dichloroethylene	0.4123	0.43896		.01		6.46617	20		Averaged	CCC
	1,1-Dichloroethane	0.5082	0.53799		.1		5.86187	60		Averaged	SPCC
	Chloroform	0.588	0.57971		.01		-1.40986	20		Averaged	CCC
	Benzene	1.107	1.11371		.01		0.60614	60		Averaged	
	1,2-Dichloropropane	0.2988	0.29932		.01		0.17403	20		Averaged	CCC
	Toluene	1.4209	1.45611		.01		2.47801	20		Averaged	CCC
	Chlorobenzene	1.0673	1.07511		.3		0.73175	60		Averaged	SPCC
	Ethylbenzene	1.6215	1.67893		.01		3.54178	20		Averaged	CCC
	m,p-Xylenes	0.6309	0.65582		.01		3.94991	60		Averaged	
	o-Xylene	0.6362	0.68121		.01		7.07482	60		Averaged	
	Bromoform	0.4981	0.52299		.1		4.99699	60		Averaged	SPCC
	1,1,2,2-Tetrachloroethane	0.8657	0.8293		.3		-4.20469	60		Averaged	SPCC

Continuing Calibration Summary

Client SDG: 446517

Instrument ID: VOA1.I **Injection Date:** 29-MAR-18 10:16

Data File: 032918V1\1B402.D **Init. Cal. Date(s):** 26-MAR-18 14:10 - 26-MAR-18 18:5

Lab Sample ID W1VM180329-01 **Method:** 032618V1\VOA1-8260-032618.M

Quant Type ISTD **Method Update:** 26-MAR-18 23:38

	Compound	AVERF / Amount	RF CCV	Nominal CCV	Min RF	RF Q	%D / %Drift	Max	Drift Q	Curve Type	
S	1,2-Dichloroethane-d4	0.1636	0.15646		.01		-4.3643	60		Averaged	
S	Toluene-d8	1.2449	1.22346		.01		-1.72223	60		Averaged	
S	Bromofluorobenzene	0.9602	1.00742		.01		4.91773	60		Averaged	
	Chloromethane	0.226	0.21436		.1		-5.15044	60		Averaged	SPCC
	Vinyl chloride	0.2252	0.23758		.01		5.49734	20		Averaged	CCC
	1,1-Dichloroethylene	0.4123	0.34715		.01		-15.8016	20		Averaged	CCC
	1,1-Dichloroethane	0.5082	0.44711		.1		-12.02086	60		Averaged	SPCC
	Chloroform	0.588	0.5173		.01		-12.02381	20		Averaged	CCC
	Benzene	1.107	0.95406		.01		-13.81572	60		Averaged	
	1,2-Dichloropropane	0.2988	0.26441		.01		-11.50937	20		Averaged	CCC
	Toluene	1.4209	1.25791		.01		-11.4709	20		Averaged	CCC
	Chlorobenzene	1.0673	0.93118		.3		-12.75368	60		Averaged	SPCC
	Ethylbenzene	1.6215	1.48234		.01		-8.58218	20		Averaged	CCC
	m,p-Xylenes	0.6309	0.57559		.01		-8.76684	60		Averaged	
	o-Xylene	0.6362	0.59971		.01		-5.73562	60		Averaged	
	Bromoform	0.4981	0.5175		.1		3.8948	60		Averaged	SPCC
	1,1,2,2-Tetrachloroethane	0.8657	0.83671		.3		-3.34874	60		Averaged	SPCC

Quality Control Data

Page 1 of 1

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517			**Matrix:**	SOIL
Lab Sample ID:	1203999288				
Client Sample:	QC for batch 1751481	**Client:**	POEN004	**Project:**	QC
Client ID:	MB for batch 1751481	**Method:**	SW846 8260B	**SOP Ref:**	GL-OA-E-038
Batch ID:	1751482	**Inst:**	VOA1.I	**Dilution:**	1
Run Date:	03/29/2018 13:38	**Analyst:**	PXY1	**Purge Vol:**	5 mL
Prep Date:	03/29/2018 09:00	**Aliquot:**	5 g	**Final Volume:**	5 mL
Data File:	032918V1\1B409P.D	**Column:**	DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene	U	1.00	ug/kg	0.333	1.00
100-41-4	Ethylbenzene	U	1.00	ug/kg	0.333	1.00
108-88-3	Toluene	U	1.00	ug/kg	0.333	1.00
1330-20-7	Xylenes (total)	U	3.00	ug/kg	1.00	3.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**446517**			**Matrix:**	**SOIL**
Lab Sample ID:	**1203999289**				
Client Sample:	**QC for batch 1751481**	**Client:**	**POEN004**	**Project:**	**QC**
Client ID:	**LCS for batch 1751481**	**Method:**	**SW846 8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1751482**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**03/29/2018 11:13**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**03/29/2018 09:01**	**Aliquot:**	**5 g**	**Final Volume:**	**5 mL**
Data File:	**032918V1\1B404P.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene		51.0	ug/kg	0.333	1.00
100-41-4	Ethylbenzene		50.9	ug/kg	0.333	1.00
108-88-3	Toluene		49.7	ug/kg	0.333	1.00
1330-20-7	Xylenes (total)		153	ug/kg	1.00	3.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**446517**			**Matrix:**	**SOIL**
Lab Sample ID:	**1203999290**				
Client Sample:	**QC for batch 1751481**	**Client:**	**POEN004**	**Project:**	**QC**
Client ID:	**LCSD for batch 1751481**	**Method:**	**SW846 8260B**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1751482**	**Inst:**	**VOA1.I**	**Dilution:**	**1**
Run Date:	**03/29/2018 11:42**	**Analyst:**	**PXY1**	**Purge Vol:**	**5 mL**
Prep Date:	**03/29/2018 09:02**	**Aliquot:**	**5 g**	**Final Volume:**	**5 mL**
Data File:	**032918V1\1B405P.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
71-43-2	Benzene		49.7	ug/kg	0.333	1.00
100-41-4	Ethylbenzene		50.2	ug/kg	0.333	1.00
108-88-3	Toluene		49.1	ug/kg	0.333	1.00
1330-20-7	Xylenes (total)		151	ug/kg	1.00	3.00

Miscellaneous

Prep Logbook

Closed-System Purge-and-Trap Collection and Extraction: Volatile Organics in Soil and Waste Samples

Batch ID: **1751481**
Analyst: Patrick Yib
Method: SW846 5035
Lab SOP: GL-OA-E-039 REV# 12
Instrument: OH AUS Balance

Type	Sample Id	Description	Serial Number	Spike Amount	Spike Units

Sample ID	Prep Date	Matrix	Tare Wt (g)	Final Wt (g)	Sample Wt (g)	Preservative	Final Volume (mL)	Prep Factor (mL/g)
446517001	22-MAR-2018 11:10:00	Soil	31.04	37.71	6.67	DI WATER	5	0.74963
446517002	22-MAR-2018 11:30:00	Soil	30.97	37.39	6.42	DI WATER	5	0.77882
446517003	22-MAR-2018 11:55:00	Soil	30.58	36.81	6.23	DI WATER	5	0.80257
446517004	22-MAR-2018 11:55:00	Soil	30.61	36.8	6.19	DI WATER	5	0.80775
1203999288 MB	29-MAR-2018 09:00:00	Soil			5	DI WATER	5	1
1203999289 LCS	29-MAR-2018 09:01:00	Soil			5	DI WATER	5	1
1203999290 LCSD	29-MAR-2018 09:02:00	Soil			5	DI WATER	5	1

Reagent/Solvent Lot ID	Description	Amount	Comments:

GEL Laboratories, LLC
Revision: 11/22/04

ORGANIC RUN LOG - INSTRUMENT ID#VOA1

03/27/2018

03/27/2018

Date: 3/26/2018 Method 8260B/624 Operator: PXY1

HARDWARE CONFIGURATION & METHOD CONDITIONS SUMMARY No# 1 Daily Instrument Readings:

Multiplier Voltage: 1988

CALIBRATION & CC INFORMATION:

Initial Calibration Date: 3/26/2018

Cl test lot # 6021

Sequence Number: 032618V1

Daily Standard Solution ID#		Volume Added for Purge (ul) Blk/ Smpl	CCV	MS/ LCS	BFB
ICV[A]	W1VM180326-10		5UL EA		
IS	UVM170705-01	1	1	1	
SS	UVM170302-02	1	1	1	
ICV[B]	W1VM180326-18			5UL EA	
BFB	IVM180305-02				1

Purge Amount	
5ML	Water Purge Vol:
N/A	Soil Purge Wt.
N/A	Mid level ext. MeOH Vol:
N/A	ul
N/A	Methanol Lot #
X	Heated Purge

Analysis Date	Time	Data File	Lab Sample ID	Client	Batch #	Wt.(g) or Vol(ml/ul)	Dil. Factor	pH	AS Slot #	Matrix w or s	Analyst	Cl test (Y/N)	Acceptable(O/X)	Comments
3/26/2018	13:47	1B101.D	IVM180306-02	GEL	BFB	1UL	1	N/A	1	W	PXY1	N/A	O	
3/26/2018	14:10	1B102.D	W1VM180326-01	VSTD0005	ICAL	5UL	1	N/A	2	W	PXY1	N/A	O	MIX[A] UVM180306-01/UVM180320-01A/UVM171214-01H
3/26/2018	14:39	1B103.D	W1VM180326-02	VSTD001	ICAL	5UL	1	N/A	3	W	PXY1	N/A	O	MIX[A] UVM180306-02/UVM180320-02A/UVM171214-02H
3/26/2018	15:08	1B104.D	W1VM180326-03	VSTD002	ICAL	5UL	1	N/A	4	W	PXY1	N/A	O	MIX[A] UVM180306-03/UVM180320-03A/UVM171214-03H
3/26/2018	15:37	1B105.D	W1VM180326-04	VSTD005	ICAL	5UL	1	N/A	5	W	PXY1	N/A	O	MIX[A] UVM180306-04/UVM180320-04A/UVM171214-04H
3/26/2018	16:06	1B106.D	W1VM180326-05	VSTD010	ICAL	5UL	1	N/A	6	W	PXY1	N/A	X	Unacceptable recoveries. See 1B112
3/26/2018	16:35	1B107.D	W1VM180326-06	VSTD020	ICAL	5UL	1	N/A	7	W	PXY1	N/A	O	MIX[A] UVM180306-06/UVM180320-06A/UVM171214-06H
3/26/2018	17:04	1B108.D	W1VM180326-07	VSTD050	ICAL	5UL	1	N/A	8	W	PXY1	N/A	O	MIX[A] UVM180306-07/UVM180320-07A/UVM171214-07H
3/26/2018	17:32	1B109.D	W1VM180326-08	VSTD080	ICAL	4UL	1	N/A	9	W	PXY1	N/A	O	MIX[A] UVM180306-08/UVM180320-08A/UVM171214-08H
3/26/2018	18:01	1B110.D	W1VM180326-09	VSTD100	ICAL	5UL	1	N/A	10	W	PXY1	N/A	O	MIX[A] UVM180306-08/UVM180320-08A/UVM171214-08H
3/26/2018	18:29	1B111.D	120375---	BLANK	BLANK	5ML	1	N/A	11	W	PXY1	N/A	X	RINSE
3/26/2018	18:58	1B112.D	W1VM180326-05	VSTD010	ICAL	5UL	1	N/A	12	W	PXY1	N/A	O	MIX[A] UVM180306-05/UVM180320-05A/UVM171214-05H
3/26/2018	19:27	1B113.D	W1VM180326-10	ICV	ICV	5UL	1	N/A	13	W	PXY1	N/A	X	Unacceptable recoveries. See 1B121
3/26/2018	19:55	1B114.D	W1VM180326-11	VSTD005S	ICAL	5UL	1	N/A	14	W	PXY1	N/A	O	MIX[B] UVM180202-01B/UVM180213-01A
3/26/2018	20:24	1B115.D	W1VM180326-12	VSTD010S	ICAL	5UL	1	N/A	15	W	PXY1	N/A	O	MIX[B] UVM180202-02B/UVM180213-02A
3/26/2018	20:52	1B116.D	W1VM180326-13	VSTD025S	ICAL	5UL	1	N/A	16	W	PXY1	N/A	O	MIX[B] UVM180202-03B/UVM180213-03A
3/26/2018	21:21	1B117.D	W1VM180326-14	VSTD050S	ICAL	5UL	1	N/A	17	W	PXY1	N/A	O	MIX[B] UVM180202-04B/UVM180213-04A
3/26/2018	21:49	1B118.D	W1VM180326-15	VSTD100S	ICAL	5UL	1	N/A	18	W	PXY1	N/A	O	MIX[B] UVM180202-05B/UVM180213-05A
3/26/2018	22:18	1B119.D	W1VM180326-16	VSTD250S	ICAL	5UL	1	N/A	19	W	PXY1	N/A	O	MIX[B] UVM180202-06B/UVM180213-06A
3/26/2018	22:46	1B120.D	W1VM180326-17	VSTD500S	ICAL	5UL	1	N/A	20	W	PXY1	N/A	O	MIX[B] UVM180202-07B/UVM180213-07A
3/26/2018	23:15	1B121.D	W1VM180326-10	ICV	ICV	5UL	1	N/A	21	W	PXY1	N/A	O	MIX[A] UVM171214-01A/UVM170901-10E/UVM180219-01E/UVM180319-01
3/26/2018	23:43	1B122.D	120375---	BLANK	BLANK	5ML	1	N/A	22	W	PXY1	N/A	X	RINSE
3/27/2018	0:11	1B123.D	W1VM180326-18	ICV	ICV	5UL	1	N/A	23	W	PXY1	N/A	O	MIX[B] UVM180202-08C/UVM180213-08B

GL-OA-E-038, GL-OA-E-026, GL-OA-E-039

GEL Laboratories, LLC
Revision: 11/22/04

ORGANIC RUN LOG - INSTRUMENT ID#VOA1

03/30/2018

03/30/2018

Date: 3/29/2018 Method 8260B/624 Operator: PXY1

HARDWARE CONFIGURATION & METHOD CONDITIONS SUMMARY No# 1 Daily Instrument Readings:
Multiplier Voltage: 2000

CALIBRATION & CC INFORMATION:

Initial Calibration Date: 3/26/2018

Cl test lot # 6021

Sequence Number: 032918V1

	Daily Standard Solution ID#	Volume Added for Purge (ul) Blk/ Smpl	CCV	MS/ LCS	BFB
CCV	W1VM180329-01		5UL EA		
IS	UVM170705-01	1	1	1	
SS	UVM170302-02	1	1	1	
LCS/MS	W1VM180329-02			5UL EA	
BFB	IVM180306-02				1
SHORT	W1VM180329-05		5UL EA		
SHLCS	W1VM180329-06			5UL EA	

Purge Amount	
5ML	Water Purge Vol:
5G	Soil Purge Wt.
N/A	Mid level ext. MeOH Vol:
N/A	ul
N/A	Methanol Lot #
X	Heated Purge

Analysis Date Time	Data File	Lab Sample ID	Client	Batch #	Wt.(g) or Vol(ml/ul)	Dil. Factor	pH	AS Slot #	Matrix w or s	Analyst	Cl test (Y/N)	Acceptable(O/X)	Comments
3/29/2018 9:53	1B401.D	IVM180306-02	GEL	BFB	1UL	1	N/A	1	W	PXY1	N/A	O	
3/29/2018 10:16	1B402.D	W1VM180329-01	GEL	CCV	5UL	1	N/A	2	W	PXY1	N/A	O	MIX[A] UVM170509-07H/UVM180203-07F/UVM171214-01A
3/29/2018 10:44	1B403.D	W1VM180329-02	GEL	LCS	5UL	1	N/A	3	W	PXY1	N/A	O	MIX[A] UVM171214-01A/IVM180327-01/UVM180121-10B/UVM180328-10A
3/29/2018 11:13	1B404.D	W1VM180329-03	GEL	LCS	5G	1	N/A	4	S	PXY1	N/A	O	MIX[A] UVM171214-01A/IVM180327-01/UVM180121-10B/UVM180328-10A
3/29/2018 11:42	1B405.D	W1VM180329-04	GEL	LCSD	5G	1	N/A	5	S	PXY1	N/A	O	MIX[A] UVM171214-01A/IVM180327-01/UVM180121-10B/UVM180328-10A
3/29/2018 12:11	1B406.D	W1VM180329-05	GEL	CCV	5UL	1	N/A	6	W	PXY1	N/A	O	MIX[B] UVM180202-06H/UVM180213-06F
3/29/2018 12:40	1B407.D	W1VM180329-06	GEL	LCS	5G	1	N/A	7	S	PXY1	N/A	O	MIX[B] UVM180202-08C/UVM180213-08B
3/29/2018 13:09	1B408.D	120399	GEL	BLANK	5ML	1	N/A	8	W	PXY1	N/A	O	
3/29/2018 13:38	1B409.D	120399	GEL	BLANK	5G	1	N/A	9	S	PXY1	N/A	O	SOIL
3/29/2018 14:07	1B410.D	446008001	GATE	1751240	5.1G/2.5UL	2000	N/A	10	S	PXY1	N/A	X	Tetrachloroethylene over ranged hit. See 1B412
3/29/2018 14:36	1B411.D	446783001	WSRB	1751477	5ML	1	PH7	11	W	PXY1	N	X	Tetrachloroethylene carryovers. See 1B416
3/29/2018 15:06	1B412.D	446008001	GATE	1751240	5.1G	10000	N/A	12	S	PXY1	N/A	O	SOIL ; 5UL from 10x
3/29/2018 15:35	1B413.D	446783002	WSRB	1751477	5ML	1	PH7	13	W	PXY1	N	X	Incorrect sample. See 1B417
3/29/2018 16:04	1B414.D	446783003	WSRB	1751477	5ML	1	PH7	14	W	PXY1	N	X	Incorrect sample. See 1B418
3/29/2018 16:33	1B415.D	120399	BLANK	BLANK	5ML	1	N/A	15	W	PXY1	N/A	X	RINSE
3/29/2018 17:02	1B416.D	446783001	WSRB	1751477	5ML	1	PH7	16	W	PXY1	N	O	
3/29/2018 17:31	1B417.D	446783002	WSRB	1751477	5ML	1	PH7	17	W	PXY1	N	O	
3/29/2018 18:00	1B418.D	446783003	WSRB	1751477	5ML	1	PH7	18	W	PXY1	N	O	
3/29/2018 18:29	1B419.D	446517001	POEN	1751482	6.7G	1	N/A	19	S	PXY1	N/A	O	SOIL
3/29/2018 18:58	1B420.D	446517002	POEN	1751482	6.4G	1	N/A	20	S	PXY1	N/A	O	SOIL
3/29/2018 19:27	1B421.D	446517003	POEN	1751482	6.2G	1	N/A	21	S	PXY1	N/A	O	SOIL
3/29/2018 19:55	1B422.D	446517004	POEN	1751482	6.2G	1	N/A	22	S	PXY1	N/A	O	SOIL
3/29/2018 20:24	1B423.D	1203999280	WSRB	1751477	5ML	1	PH7	23	W	PXY1	N	O	MIX[A] 446783001PS
3/29/2018 20:53	1B424.D	1203999281	WSRB	1751477	5ML	1	PH7	24	W	PXY1	N	O	MIX[A] 446783001PSD

GL-OA-E-038, GL-OA-E-026, GL-OA-E-039

Semi-Volatile Analysis

Case Narrative

GC/MS Semivolatile
Technical Case Narrative
North Wind - Portage (POEN)
SDG #: 446517

Product: **Analysis of Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry**
Analytical Method: SW846 3541/8270D SIM PAH
Analytical Procedure: GL-OA-E-009 REV# 40
Analytical Batch: 1750981

Preparation Method: SW846 3541
Preparation Procedure: GL-OA-E-066 REV# 8
Preparation Batch: 1750980

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

GEL Sample ID#	Client Sample Identification
446517001	CFA18001 - Soil Location #1
446517002	CFA18002 - Soil Location #2
446517003	CFA18003 - Soil Location #3
446517004	CFA18003 - DUP - Soil Location #3
1203998143	Method Blank (MB)
1203998144	Laboratory Control Sample (LCS)
1203998145	446517001(CFA18001 - Soil Location #1) Matrix Spike (MS)
1203998146	446517001(CFA18001 - Soil Location #1) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Quality Control (QC) Information

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent difference (RPD) between the MS and MSD (See Below) did not meet acceptance limits. As the individual MS and MSD recoveries were within the acceptance limits, the failures had no adverse impact on the reported sample data.

Sample	Analyte	Value
1203998145MS and 1203998146MSD (CFA18001 - Soil Location #1)	Pyrene	RPD 38* (0%-30%)

Technical Information

Sample Re-extraction/Re-analysis
Sample 446517002 (CFA18002 - Soil Location #2) was re-analyzed for ISTD failure.

Certification Statement

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

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

Qualifier Definition Report
for

POEN004 North Wind - Portage (8-00000013)

Client SDG: 446517 GEL Work Order: 446517

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria
** Analyte is a surrogate compound
U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
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: Barbara Bailey **Name: Barbara Bailey**

Date: 04 APR 2018 **Title: Data Validator**

Sample Data Summary

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:10	Matrix:	SOIL
Lab Sample ID:	446517001	Date Received:	03/23/2018 08:55	%Moisture:	16.3
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18001 - Soil Location #1	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/29/2018 18:34	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.079 g	Final Volume:	1 mL
Data File:	s032918.B\s4c2915.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	3.97	ug/kg	1.31	3.97
120-12-7	Anthracene	U	3.97	ug/kg	1.31	3.97
56-55-3	Benzo(a)anthracene	U	3.97	ug/kg	1.31	3.97
50-32-8	Benzo(a)pyrene	U	3.97	ug/kg	1.31	3.97
205-99-2	Benzo(b)fluoranthene	U	3.97	ug/kg	1.31	3.97
207-08-9	Benzo(k)fluoranthene	U	3.97	ug/kg	1.31	3.97
218-01-9	Chrysene	U	3.97	ug/kg	1.31	3.97
206-44-0	Fluoranthene	U	3.97	ug/kg	1.31	3.97
86-73-7	Fluorene	U	3.97	ug/kg	1.31	3.97
91-20-3	Naphthalene	U	3.97	ug/kg	1.31	3.97
129-00-0	Pyrene	U	3.97	ug/kg	1.31	3.97

Page 1 of 1

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:30	Matrix:	SOIL
Lab Sample ID:	446517002	Date Received:	03/23/2018 08:55	%Moisture:	21.8
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18002 - Soil Location #2	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/30/2018 11:20	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.435 g	Final Volume:	1 mL
Data File:	s033018.B\s4c3007.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	4.20	ug/kg	1.39	4.20
120-12-7	Anthracene	U	4.20	ug/kg	1.39	4.20
56-55-3	Benzo(a)anthracene	U	4.20	ug/kg	1.39	4.20
50-32-8	Benzo(a)pyrene	U	4.20	ug/kg	1.39	4.20
205-99-2	Benzo(b)fluoranthene	U	4.20	ug/kg	1.39	4.20
207-08-9	Benzo(k)fluoranthene	U	4.20	ug/kg	1.39	4.20
218-01-9	Chrysene	U	4.20	ug/kg	1.39	4.20
206-44-0	Fluoranthene	U	4.20	ug/kg	1.39	4.20
86-73-7	Fluorene	U	4.20	ug/kg	1.39	4.20
91-20-3	Naphthalene	U	4.20	ug/kg	1.39	4.20
129-00-0	Pyrene	U	4.20	ug/kg	1.39	4.20

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:55	Matrix:	SOIL
Lab Sample ID:	446517003	Date Received:	03/23/2018 08:55	%Moisture:	6.8
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18003 - Soil Location #3	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/29/2018 19:31	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.124 g	Final Volume:	1 mL
Data File:	s032918.B\s4c2917.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	3.56	ug/kg	1.18	3.56
120-12-7	Anthracene	U	3.56	ug/kg	1.18	3.56
56-55-3	Benzo(a)anthracene	U	3.56	ug/kg	1.18	3.56
50-32-8	Benzo(a)pyrene	U	3.56	ug/kg	1.18	3.56
205-99-2	Benzo(b)fluoranthene	U	3.56	ug/kg	1.18	3.56
207-08-9	Benzo(k)fluoranthene	U	3.56	ug/kg	1.18	3.56
218-01-9	Chrysene	U	3.56	ug/kg	1.18	3.56
206-44-0	Fluoranthene	U	3.56	ug/kg	1.18	3.56
86-73-7	Fluorene	U	3.56	ug/kg	1.18	3.56
91-20-3	Naphthalene	U	3.56	ug/kg	1.18	3.56
129-00-0	Pyrene	U	3.56	ug/kg	1.18	3.56

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:55	Matrix:	SOIL
Lab Sample ID:	446517004	Date Received:	03/23/2018 08:55	%Moisture:	7.7
		Client:	POEN004	Project:	POEN004
Client ID:	CFA18003 - DUP - Soil Location #3	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/29/2018 19:59	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.027 g	Final Volume:	1 mL
Data File:	s032918.B\s4c2918.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	3.61	ug/kg	1.19	3.61
120-12-7	Anthracene	U	3.61	ug/kg	1.19	3.61
56-55-3	Benzo(a)anthracene	U	3.61	ug/kg	1.19	3.61
50-32-8	Benzo(a)pyrene	U	3.61	ug/kg	1.19	3.61
205-99-2	Benzo(b)fluoranthene	U	3.61	ug/kg	1.19	3.61
207-08-9	Benzo(k)fluoranthene	U	3.61	ug/kg	1.19	3.61
218-01-9	Chrysene	U	3.61	ug/kg	1.19	3.61
206-44-0	Fluoranthene	U	3.61	ug/kg	1.19	3.61
86-73-7	Fluorene	U	3.61	ug/kg	1.19	3.61
91-20-3	Naphthalene	U	3.61	ug/kg	1.19	3.61
129-00-0	Pyrene	U	3.61	ug/kg	1.19	3.61

Quality Control Summary

Surrogate Recovery Report

SDG Number: 446517

Matrix Type: SOLID

Sample ID	Client ID	5-alpha %REC
1203998144	LCS for batch 1750980	80
1203998145	CFA18001 - Soil Location #1MS	73
1203998146	CFA18001 - Soil Location #1(446517001MSD	59
1203998143	MB for batch 1750980	85
446517001	CFA18001 - Soil Location #1	68
446517003	CFA18003 - Soil Location #3	75
446517004	CFA18003 - DUP - Soil Location #3	68
446517002	CFA18002 - Soil Location #2	64

Surrogate	Acceptance Limits
5-alpha- = 5-alpha-Androstane	(30%-118%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Quality Control Summary
Spike Recovery Report

SDG Number: 446517
Client ID: LCS for batch 1750980
Lab Sample ID 1203998144
Instrument: MSD4.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Laboratory Control Sample
Matrix: SOIL
Analysis Date: 03/29/2018 15:43
Prep Batch ID: 1750980
Batch ID: 1750981
Dilution: 1

CAS No		Parmname	Amount Added ug/kg	Sample Conc. ug/kg	Spike Conc. ug/kg	Recovery %	Acceptance Limits
91-20-3	LCS	Naphthalene	333	0.0	272	81	57-98
83-32-9	LCS	Acenaphthene	333	0.0	269	81	55-99
86-73-7	LCS	Fluorene	333	0.0	288	86	47-106
120-12-7	LCS	Anthracene	333	0.0	282	85	52-102
206-44-0	LCS	Fluoranthene	333	0.0	304	91	39-108
129-00-0	LCS	Pyrene	333	0.0	270	81	41-114
56-55-3	LCS	Benzo(a)anthracene	333	0.0	324	97	51-108
218-01-9	LCS	Chrysene	333	0.0	293	88	54-103
205-99-2	LCS	Benzo(b)fluoranthene	333	0.0	278	83	36-120
207-08-9	LCS	Benzo(k)fluoranthene	333	0.0	269	81	26-121
50-32-8	LCS	Benzo(a)pyrene	333	0.0	316	95	35-121

Quality Control Summary
Spike Recovery Report

SDG Number:	**446517**	**Sample Type:**	**Matrix Spike**
Client ID:	**CFA18001 - Soil Location #1MS**	**Matrix:**	**SOIL**
Lab Sample ID	**1203998145**	**%Moisture:**	**16.3**
Instrument:	**MSD4.I**	**Analysis Date:**	**03/29/2018 16:11**
Analyst:	**JMB3**	**Prep Batch ID:**	**1750980**
Inj. Vol:	**1 uL**	**Batch ID:**	**1750981**

Dilution: 1

CAS No		Parmname	Amount Added ug/kg	Sample Conc. ug/kg		Spike Conc. ug/kg	Recovery %	Acceptance Limits
91-20-3	MS	Naphthalene	397	0.00	U	274	69	33-117
83-32-9	MS	Acenaphthene	397	0.00	U	288	73	38-117
86-73-7	MS	Fluorene	397	0.00	U	315	79	33-123
120-12-7	MS	Anthracene	397	0.00	U	311	78	36-120
206-44-0	MS	Fluoranthene	397	0.00	U	344	87	28-116
129-00-0	MS	Pyrene	397	0.00	U	330	83	30-131
56-55-3	MS	Benzo(a)anthracene	397	0.00	U	389	98	41-118
218-01-9	MS	Chrysene	397	0.00	U	348	88	42-113
205-99-2	MS	Benzo(b)fluoranthene	397	0.00	U	332	84	28-126
207-08-9	MS	Benzo(k)fluoranthene	397	0.00	U	317	80	24-122
50-32-8	MS	Benzo(a)pyrene	397	0.00	U	375	94	27-126

Quality Control Summary
Spike Recovery Report

SDG Number: 446517
Client ID: CFA18001 - Soil Location
Lab Sample ID #1(446517001MSD
1203998146
Instrument: MSD4.I
Analyst: JMB3
Inj. Vol: 1 uL

Sample Type: Matrix Spike Duplicate
Matrix: SOIL
%Moisture: 16.3

Analysis Date: 03/29/2018 16:40
Prep Batch ID: 1750980
Batch ID: 1750981

Dilution: 1

CAS No		Parmname	Amount Added ug/kg	Sample Conc. ug/kg		Spike Conc. ug/kg	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
91-20-3	MSD	Naphthalene	396	0.00	U	220	55	33-117	22	0-30
83-32-9	MSD	Acenaphthene	396	0.00	U	237	60	38-117	20	0-30
86-73-7	MSD	Fluorene	396	0.00	U	266	67	33-123	17	0-30
120-12-7	MSD	Anthracene	396	0.00	U	260	66	36-120	18	0-30
206-44-0	MSD	Fluoranthene	396	0.00	U	327	82	28-116	5	0-30
129-00-0	MSD	Pyrene	396	0.00	U	225	57	30-131	38 *	0-30
56-55-3	MSD	Benzo(a)anthracene	396	0.00	U	332	84	41-118	16	0-30
218-01-9	MSD	Chrysene	396	0.00	U	299	75	42-113	15	0-30
205-99-2	MSD	Benzo(b)fluoranthene	396	0.00	U	305	77	28-126	8	0-30
207-08-9	MSD	Benzo(k)fluoranthene	396	0.00	U	289	73	24-122	9	0-30
50-32-8	MSD	Benzo(a)pyrene	396	0.00	U	326	82	27-126	14	0-30

Method Blank Summary

SDG Number:	446517	Client:	POEN004	Matrix:	SOIL
Client ID:	MB for batch 1750980	Instrument ID:	MSD4.I	Data File:	s032918.B\s4c2913.D
Lab Sample ID:	1203998143	Prep Date:	03/29/2018 06:18	Analyzed:	03/29/18 17:37
Column:	DB-5ms				

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 1750980	1203998144	s032918.B\s4c2909.D	03/29/18	1543
02	CFA18001 - Soil Location #1MS	1203998145	s032918.B\s4c2910.D	03/29/18	1611
03	CFA18001 - Soil Location #1(446517001MSD	1203998146	s032918.B\s4c2911.D	03/29/18	1640
04	CFA18001 - Soil Location #1	446517001	s032918.B\s4c2915.D	03/29/18	1834
05	CFA18003 - Soil Location #3	446517003	s032918.B\s4c2917.D	03/29/18	1931
06	CFA18003 - DUP - Soil Location #3	446517004	s032918.B\s4c2918.D	03/29/18	1959
07	CFA18002 - Soil Location #2	446517002	s033018.B\s4c3007.D	03/30/18	1120

Instrument Performance Check

DFTPP

Lab Name GEL Laboratories LLC **Client SDG:** 446517

Instrument ID: MSD4.I **Injection Date/Time:** 01-MAR-18 09:09

Column Description: DB-5ms **Lab File ID** s030118.B\s4c0101.D

m/e	Ion Abundance Criteria	% Relative Abundance
51	10 - 80% of mass 198	44.5
68	Less than 2% of mass 69	1.4
69	Mass 69 Relative Abundance	43.9
70	Less than 2% of mass 69	0.5
127	10 - 80% of mass 198	53.2
197	Less than 2% of mass 198	0
198	Base Peak, 100% Relative Abundance	100
199	5 - 9% of mass 198	6.8
275	10 - 60% of mass 198	24.6
365	Greater than 1% of mass 198	3.4
441	Less than 24% of mass 442	15.7
442	Greater than 50% of mass 198	85.3
443	15 - 24% of mass 442	19.5

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, LCS, LCSD,BLANKS AND STANDARDS

Client Sample ID	Lab Sample ID	Lab File ID	Time Analyzed
ICALMIX[A,B]	WBN180209-88	s030118.B\s4c0102.D	01-MAR-18 09:25
ICALMIX[A,B]	WBN180209-86	s030118.B\s4c0103.D	01-MAR-18 09:53
ICALMIX[A,B]	WBN180209-85	s030118.B\s4c0104.D	01-MAR-18 10:21
ICALMIX[A,B]	WBN180209-83	s030118.B\s4c0105.D	01-MAR-18 10:49
ICALMIX[A,B]	WBN180209-82	s030118.B\s4c0106.D	01-MAR-18 11:17
ICALMIX[A,B]	WBN180209-81	s030118.B\s4c0107.D	01-MAR-18 11:46
ICVMSDS417D_S01	WBN180301-89	s030118.B\s4c0108.D	01-MAR-18 12:16

Instrument Performance Check

DFTPP

Lab Name GEL Laboratories LLC **Client SDG:** 446517

Instrument ID: MSD4.I **Injection Date/Time:** 29-MAR-18 14:56

Column Description: DB-5ms **Lab File ID** s032918.B\s4c2907.D

m/e	Ion Abundance Criteria	% Relative Abundance
51	10 - 80% of mass 198	46.4
68	Less than 2% of mass 69	1.4
69	Mass 69 Relative Abundance	43.8
70	Less than 2% of mass 69	0.5
127	10 - 80% of mass 198	52.6
197	Less than 2% of mass 198	0.8
198	Base Peak, 100% Relative Abundance	100
199	5 - 9% of mass 198	6.7
275	10 - 60% of mass 198	24.1
365	Greater than 1% of mass 198	3.4
441	Less than 24% of mass 442	15.4
442	Greater than 50% of mass 198	83.8
443	15 - 24% of mass 442	19.2

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, LCS, LCSD,BLANKS AND STANDARDS

Client Sample ID	Lab Sample ID	Lab File ID	Time Analyzed
CCVMIX[A]01	WBN180311-86.3	s032918.B\s4c2908.D	29-MAR-18 15:12
BLK01LCS	1203998144	s032918.B\s4c2909.D	29-MAR-18 15:43
CFA18001 - Soil Location #1MS	1203998145	s032918.B\s4c2910.D	29-MAR-18 16:11
CFA18001 - Soil Location #1MS	1203998146	s032918.B\s4c2911.D	29-MAR-18 16:40
BLK01	1203998143	s032918.B\s4c2913.D	29-MAR-18 17:37
CFA18001 - Soil Location #1	446517001	s032918.B\s4c2915.D	29-MAR-18 18:34
CFA18003 - Soil Location #3	446517003	s032918.B\s4c2917.D	29-MAR-18 19:31
CFA18003 - DUP - Soil Location	446517004	s032918.B\s4c2918.D	29-MAR-18 19:59

Instrument Performance Check

DFTPP

Lab Name GEL Laboratories LLC **Client SDG:** 446517

Instrument ID: MSD4.I **Injection Date/Time:** 30-MAR-18 10:04

Column Description: DB-5ms **Lab File ID** s033018.B\s4c3004.D

m/e	Ion Abundance Criteria	% Relative Abundance
51	10 - 80% of mass 198	46.8
68	Less than 2% of mass 69	1.6
69	Mass 69 Relative Abundance	44.2
70	Less than 2% of mass 69	0.5
127	10 - 80% of mass 198	52.4
197	Less than 2% of mass 198	0.9
198	Base Peak, 100% Relative Abundance	100
199	5 - 9% of mass 198	6.9
275	10 - 60% of mass 198	23.5
365	Greater than 1% of mass 198	3.4
441	Less than 24% of mass 442	15.5
442	Greater than 50% of mass 198	78
443	15 - 24% of mass 442	19.4

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, LCS, LCSD,BLANKS AND STANDARDS

Client Sample ID	Lab Sample ID	Lab File ID	Time Analyzed
CCVMIX[A]02	WBN180311-86.3	s033018.B\s4c3005.D	30-MAR-18 10:20
CFA18002 - Soil Location #2	446517002	s033018.B\s4c3007.D	30-MAR-18 11:20

Internal Standard
Area and RT Summary

Lab Name : GEL Laboratories LLC Client SDG: 446517

Instrument: MSD4.I STD Analysis Time: 29-MAR-18 15:12

GC Column: DB-5ms Data File: s032918.B\s4c2908.D

	1,4-Dichlorobenzene-d4		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10		Chrysene-d12		Perylene-d12	
	Area #	RT #	Area #	RT #	Area #	RT #	Area #	RT #	Area #	RT #	Area #	RT #
12 Hour STD	44686	5.32	151444	7.12	59793	9.46	103405	11.3	36557	14.8	23798	17.9
Upper Limit	89372	5.82	302888	7.62	119586	9.96	206810	11.8	73114	15.3	47596	18.4
Lower Limit	22343	4.82	75722	6.62	29897	8.96	51703	10.8	18279	14.3	11899	17.4
Sample ID												
BLK01LCS	41085	5.32	139010	7.12	61758	9.46	105372	11.3	39264	14.8	29612	17.9
CFA18001 - Soil Location #1MS	39714	5.32	137163	7.12	61952	9.46	107193	11.3	37310	14.8	27212	17.9
CFA18001 - Soil Location #1MSD	45260	5.32	156748	7.12	70848	9.45	135828	11.3	67720	14.8	43419	17.9
BLK01	40464	5.32	139544	7.12	67737	9.45	122793	11.3	62964	14.8	43321	17.9
CFA18001 - Soil Location #1	48389	5.32	168161	7.12	80456	9.45	135258	11.3	53540	14.8	41337	17.9
CFA18003 - Soil Location #3	42964	5.32	148739	7.12	70410	9.45	125260	11.3	55570	14.8	31651	17.9
CFA18003 - DUP - Soil Location #3	47390	5.32	165616	7.12	79252	9.45	142160	11.3	68280	14.8	42454	17.9

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area

RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk
* Value outside of QC Limits

Internal Standard
Area and RT Summary

Lab Name : GEL Laboratories LLC

Client SDG: 446517

Instrument: MSD4.I

STD Analysis Time: 30-MAR-18 10:20

GC Column: DB-5ms

Data File: s033018.B\s4c3005.D

	1,4-Dichlorobenzene-d4			Naphthalene-d8			Acenaphthene-d10			Phenanthrene-d10			Chrysene-d12			Perylene-d12		
	Area	#	RT #	Area	#	RT #	Area	#	RT #	Area	#	RT #	Area	#	RT #	Area	#	RT #
12 Hour STD	20435		5.31	73187		7.11	30261		9.45	57368		11.3	30441		14.8	25965		17.9
Upper Limit	40870		5.81	146374		7.61	60522		9.95	114736		11.8	60882		15.3	51930		18.4
Lower Limit	10218		4.81	36594		6.61	15131		8.95	28684		10.8	15221		14.3	12983		17.4
Sample ID																		
CFA18002 - Soil Location #2	20343		5.31	71519		7.11	36043		9.44	65908		11.3	32580		14.8	26166		17.9

Area Upper Limit = +100% of internal standard area
Area Lower Limit = - 50% of internal standard area
RT Upper Limit = + 0.50 minutes of internal standard RT
RT Lower Limit = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk
* Value outside of QC Limits

Standards

SW846 8270/EPA 625 Calibration Standard Concentration Levels*										
MEGA MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
1,4-Dichlorobenzene-d4 (INTERNAL STANDARD)										
Naphthalene-d8 (INTERNAL STANDARD)										
Acenaphthene-d10 (INTERNAL STANDARD)										
Phenanthrene-d10 (INTERNAL STANDARD)										
Chrysene-d12 (INTERNAL STANDARD)										
Perylene-d12 (INTERNAL STANDARD)										
2-Fluorophenol (SURROGATE)		10	20	40	50	80	100	120	30	60
Phenol-d5 (SURROGATE)		10	20	40	50	80	100	120	30	60
2-Chlorophenol-d4 (CLP SURROGATE)		10	20	40	50	80	100	120	30	60
1,2-Dichlorobenzene-d4 (CLP SURROGATE)		10	20	40	50	80	100	120	30	60
Nitrobenzene-d5 (SURROGATE)		10	20	40	50	80	100	120	30	60
2-Fluorobiphenyl (SURROGATE)		10	20	40	50	80	100	120	30	60
2,4,6-Tribromophenol (SURROGATE)		10	20	40	50	80	100	120	30	60
p-Terphenyl-d14 (SURROGATE)		10	20	40	50	80	100	120	30	60
N-Nitrosodimethylamine	1**	10	20	40	50	80	100	120	30	60
Pyridine		10	20	40	50	80	100	120	30	60
Aniline		10	20	40	50	80	100	120	30	60
Phenol		10	20	40	50	80	100	120	30	60
bis(2-Chloroethyl)ether		10	20	40	50	80	100	120	30	60
2-Chlorophenol		10	20	40	50	80	100	120	30	60
n-Decane		10	20	40	50	80	100	120	30	60
1,3-Dichlorobenzene		10	20	40	50	80	100	120	30	60
1,4-Dichlorobenzene		10	20	40	50	80	100	120	30	60
Benzyl Alcohol		10	20	40	50	80	100	120	30	60
1,2-Dichlorobenzene		10	20	40	50	80	100	120	30	60
bis(2-Chloro-1-methylethyl)ether		10	20	40	50	80	100	120	30	60
o-Cresol (2-Methylphenol)		10	20	40	50	80	100	120	30	60
N-Nitrosodipropylamine		10	20	40	50	80	100	120	30	60
m,p-Cresols (3-Methylphenol & 4-Methylphenol)		10	20	40	50	80	100	120	30	60
Hexachloroethane		10	20	40	50	80	100	120	30	60
Nitrobenzene		10	20	40	50	80	100	120	30	60
Isophorone		10	20	40	50	80	100	120	30	60
2-Nitrophenol		10	20	40	50	80	100	120	30	60
2,4-Dimethylphenol		10	20	40	50	80	100	120	30	60
bis(2-Chloroethoxy)methane		10	20	40	50	80	100	120	30	60
2,4-Dichlorophenol		10	20	40	50	80	100	120	30	60
Benzoic Acid			20	40	50	80	100	120	30	60
1,2,4-Trichlorobenzene		10	20	40	50	80	100	120	30	60
Naphthalene	1	10	20	40	50	80	100	120	30	60
alpha-Terpineol		10	20	40	50	80	100	120	30	60
4-Chloroaniline		10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
MEGA MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
Hexachlorobutadiene		10	20	40	50	80	100	120	30	60
4-Chloro-3-methylphenol		10	20	40	50	80	100	120	30	60
2-Methylnaphthalene	1	10	20	40	50	80	100	120	30	60
1-Methylnaphthalene	1	10	20	40	50	80	100	120	30	60
Hexachlorocyclopentadiene		10	20	40	50	80	100	120	30	60
2,3-Dichloroaniline		10	20	40	50	80	100	120	30	60
2,4,6-Trichlorophenol		10	20	40	50	80	100	120	30	60
2,4,5-Trichlorophenol		10	20	40	50	80	100	120	30	60
2-Chloronaphthalene	1	10	20	40	50	80	100	120	30	60
o-Nitroaniline		10	20	40	50	80	100	120	30	60
m-Nitroaniline		10	20	40	50	80	100	120	30	60
Dimethylphthalate	1**	10	20	40	50	80	100	120	30	60
2,6-Dinitrotoluene		10	20	40	50	80	100	120	30	60
Acenaphthylene	1	10	20	40	50	80	100	120	30	60
Acenaphthene	1	10	20	40	50	80	100	120	30	60
2,4-Dinitrophenol			20	40	50	80	100	120	30	60
Dibenzofuran		10	20	40	50	80	100	120	30	60
2,4-Dinitrotoluene		10	20	40	50	80	100	120	30	60
Diethylphthalate	1**	10	20	40	50	80	100	120	30	60
4-Nitrophenol		10	20	40	50	80	100	120	30	60
Fluorene	1	10	20	40	50	80	100	120	30	60
4-Chlorophenyl phenyl ether		10	20	40	50	80	100	120	30	60
2-Methyl-4,6-dinitrophenol		10	20	40	50	80	100	120	30	60
p-Nitroaniline		10	20	40	50	80	100	120	30	60
Diphenylamine		10	20	40	50	80	100	120	30	60
1,2-Diphenylhydrazine		10	20	40	50	80	100	120	30	60
4-Bromophenyl phenyether		10	20	40	50	80	100	120	30	60
Hexachlorobenzene		10	20	40	50	80	100	120	30	60
Pentachlorophenol		10	20	40	50	80	100	120	30	60
n-Octadecane		10	20	40	50	80	100	120	30	60
Phenanthrene	1	10	20	40	50	80	100	120	30	60
Anthracene	1	10	20	40	50	80	100	120	30	60
Di-n-butylphthalate	1**	10	20	40	50	80	100	120	30	60
Fluoranthene	1	10	20	40	50	80	100	120	30	60
Pyrene	1	10	20	40	50	80	100	120	30	60
Butylbenzylphthalate	1**	10	20	40	50	80	100	120	30	60
Benzo(a)anthracene	1	10	20	40	50	80	100	120	30	60
Chrysene	1	10	20	40	50	80	100	120	30	60
bis (2-Ethylhexyl) phthalate	1	10	20	40	50	80	100	120	30	60
Di-n-octylphthalate	1**	10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
MEGA MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
Benzo(b)fluoranthene	1	10	20	40	50	80	100	120	30	60
Benzo(k)fluoranthene	1	10	20	40	50	80	100	120	30	60
Benzo(a)pyrene	1	10	20	40	50	80	100	120	30	60
Indeno-(1,2,3-cd)pyrene	1	10	20	40	50	80	100	120	30	60
Dibenzo(a,h)anthracene	1	10	20	40	50	80	100	120	30	60
Benzo(ghi)perylene	1	10	20	40	50	80	100	120	30	60
m-Dinitrobenzene		10	20	40	50	80	100	120	30	60
2,3,4,6-Tetrachlorophenol		10	20	40	50	80	100	120	30	60
Dinoseb		10	20	40	50	80	100	120	30	60
Carbazole	1	10	20	40	50	80	100	120	30	60
p-Benzoquinone		10	20	40	50	80	100	120	30	60
Methoxychlor		10	20	40	50	80	100	120	30	60
p-Toluidine		10	20	40	50	80	100	120	30	60
m-Toluidine		10	20	40	50	80	10	120	30	60
1,4-Dinitrobenzene		10	20	40	50	80	100	120	30	60
2-Ethoxyethanol		10	20	40	50	80	100	120	30	60
Phthalic anhydride		10	20	40	50	80	100	120	30	60
Methylenebis(2-chloroaniline)		10	20	40	50	80	100	120	30	60
Dibenzo(a,e)pyrene		10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
AP MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
Benzaldehyde		10	20	40	50	80	100	120	30	60
Acetophenone		10	20	40	50	80	100	120	30	60
Caprolactam		10	20	40	50	80	100	120	30	60
1,1'-Biphenyl		10	20	40	50	80	100	120	30	60
Atrazine		10	20	40	50	80	100	120	30	60
Benzidine		10	20	40	50	80	100	120	30	60
3,3'-Dichlorobenzidene		10	20	40	50	80	100	120	30	60
1,4-Dioxane		10	20	40	50	80	100	120	30	60
Methyl methacrylate		10	20	40	50	80	100	120	30	60
Ethyl methacrylate		10	20	40	50	80	100	120	30	60
2-Picoline		10	20	40	50	80	100	120	30	60
N-Nitrosomethylethylamine		10	20	40	50	80	100	120	30	60
2-Butoxyethanol		10	20	40	50	80	100	120	30	60
Methyl methanesulfonate		10	20	40	50	80	100	120	30	60
N-Nitrosodiethylamine		10	20	40	50	80	100	120	30	60
Ethyl methanesulfonate		10	20	40	50	80	100	120	30	60
Pentachloroethane		10	20	40	50	80	100	120	30	60
N-Nitrosopyrrolidine		10	20	40	50	80	100	120	30	60
N-Nitrosomorpholine		10	20	40	50	80	100	120	30	60
o-Toluidine		10	20	40	50	80	100	120	30	60
N-Nitrosopiperidine		10	20	40	50	80	100	120	30	60
a,a-Dimethylphenethylamine		10	20	40	50	80	100	120	30	60
2,6-Dichlorophenol		10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
AP MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
Hexachloropropene		10	20	40	50	80	100	120	30	60
N-Nitrosodi-n-butylamine		10	20	40	50	80	100	120	30	60
Safrole		10	20	40	50	80	100	120	30	60
1,2,4,5-Tetrachlorobenzene		10	20	40	50	80	100	120	30	60
Isosafrole		10	20	40	50	80	100	120	30	60
1,4-Naphthoquinone		10	20	40	50	80	100	120	30	60
Pentachlorobenzene		10	20	40	50	80	100	120	30	60
1-Naphthylamine		10	20	40	50	80	100	120	30	60
2-Naphthylamine		10	20	40	50	80	100	120	30	60
5-Nitro-o-toluidine		10	20	40	50	80	100	120	30	60
1,3,5-Trinitrobenzene		10	20	40	50	80	100	120	30	60
Phenacetin		10	20	40	50	80	100	120	30	60
Diallate		10	20	40	50	80	100	120	30	60
cis-Diallate		1.5	3	6	7.5	12	15	18	4.5	9
trans-Diallate		8.5	17	34	42	68	85	102	25.5	51
4-Aminobiphenyl		10	20	40	50	80	100	120	30	60
Pentachloronitrobenzene		10	20	40	50	80	100	120	30	60
Pronamide		10	20	40	50	80	100	120	30	60
4-Nitroquinoline-1-oxide		10	20	40	50	80	100	120	30	60
Methapyrilene		10	20	40	50	80	100	120	30	60
Isodrin		10	20	40	50	80	100	120	30	60
Aramite		10	20	40	50	80	100	120	30	60
Kepone		10	20	40	50	80	100	120	30	60
p-(Dimethylamino)azobenzene		10	20	40	50	80	100	120	30	60
Chlorobenzilate		10	20	40	50	80	100	120	30	60
3,3'-Dimethylbenzidine		10	20	40	50	80	100	120	30	60
2-Acetylaminofluorene		10	20	40	50	80	100	120	30	60
7,12-Dimethylbenz(a)anthracene		10	20	40	50	80	100	120	30	60
3-Methylcholanthrene		10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
Hexachlorophene		500	1000	1250	1500	1750	2000			
p-Phenylenediamine		500	1000	1250	1500	1750	2000			

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
PEST MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
bis(Chloromethyl)ether		10	20	40	50	80	100	120	30	60
Tributylphosphate		10	20	40	50	80	100	120	30	60
Triethylphosphorothioate		10	20	40	50	80	100	120	30	60
Thionazin		10	20	40	50	80	100	120	30	60
Sulfotepp		10	20	40	50	80	100	120	30	60
Phorate		10	20	40	50	80	100	120	30	60
Dimethoate		10	20	40	50	80	100	120	30	60
Disulfoton		10	20	40	50	80	100	120	30	60
Methyl parathion		10	20	40	50	80	100	120	30	60
Famphur		10	20	40	50	80	100	120	30	60
Parathion		10	20	40	50	80	100	120	30	60

SW846 8270/EPA 625										
Calibration Standard Concentration Levels*										
NEVADA MIX	Level 1	Level 2	Level 3	Level 4#	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10
bis(Chloromethyl)ether		10	20	40	50	80	100	120	30	60
4-Chlorothiophenol		10	20	40	50	80	100	120	30	60
4-Chlorothioanisole		10	20	40	50	80	100	120	30	60
Phthalic acid		10	20	40	50	80	100	120	30	60
Hydroxymethyl phthalimide		10	20	40	50	80	100	120	30	60
Diphenyl sulfide		10	20	40	50	80	100	120	30	60
Diphenyl disulfide		10	20	40	50	80	100	120	30	60
Phenyl sulfone		10	20	40	50	80	100	120	30	60
Octachlorostyrene		10	20	40	50	80	100	120	30	60
Thiophenol		10	20	40	50	80	100	120	30	60
2,2'-Dichlorobenzil		10	20	40	50	80	100	120	30	60
bis(p-Chlorophenyl)disulfide		10	20	40	50	80	100	120	30	60
bis(p-Chlorophenyl)sulfone		10	20	40	50	80	100	120	30	60

All values are mg/L without the prep factor.
# Indicates the calibration verification concentration level used
* Usual calibration levels using SCAN methodology
** This analyte included in this level at special client request.

EPA 522								
Calibration Standard Concentration Levels#								
	Level 1	Level 2	Level 3	Level 4	Level 5	ICV	CCV	
Tetrahydrofuran-d8 (INTERNAL STANDARD)								
1,4-Dioxane-d8 (SURROGATE)	50	100	200	400	500	200	See Method	
1,4-Dioxane	50	100	200	400	500	200	See Method	

All values are ug/L without the prep factor.
Usual calibration levels using SIM methodology

SW846 8270SIM Calibration Standard Concentration Levels*										
MEGASIM analytes (A)	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6#	Level 7	Level 8	Level 9	Level 10
1,4-Dichlorobenzene-d4 (INTERNAL STANDARD)										
Naphthalene-d8 (INTERNAL STANDARD)										
Acenaphthene-d10 (INTERNAL STANDARD)										
Phenanthrene-d10 (INTERNAL STANDARD)										
Chrysene-d12 (INTERNAL STANDARD)										
Perylene-d12 (INTERNAL STANDARD)										
5-alpha-Androstane (SURROGATE)	$0.1	0.2	0.5	1	2	5	10	20		
$N-Methyl-N-nitrosomethylamine		0.2	0.5	1	2	5	10	20		
$bis(2-Chloroethyl)ether	0.1	0.2	0.5	1	2	5	10	20		
$N-Nitrosodipropylamine	0.1	0.2	0.5	1	2	5	10	20		
Naphthalene	$0.1	0.2	0.5	1	2	5	10	20		
2-Methylnaphthalene	$0.1	0.2	0.5	1	2	5	10	20		
1-Methylnaphthalene	$0.1	0.2	0.5	1	2	5	10	20		
2-Chloronaphthalene	$0.1	0.2	0.5	1	2	5	10	20		
Acenaphthylene	$0.1	0.2	0.5	1	2	5	10	20		
Acenaphthene	$0.1	0.2	0.5	1	2	5	10	20		
Fluorene	$0.1	0.2	0.5	1	2	5	10	20		
Phenanthrene	$0.1	0.2	0.5	1	2	5	10	20		
Anthracene	$0.1	0.2	0.5	1	2	5	10	20		
Fluoranthene	$0.1	0.2	0.5	1	2	5	10	20		
Pyrene	$0.1	0.2	0.5	1	2	5	10	20		
Benzo(a)anthracene	$0.1	0.2	0.5	1	2	5	10	20		
Chrysene	$0.1	0.2	0.5	1	2	5	10	20		
Benzo(b)fluoranthene	$0.1	0.2	0.5	1	2	5	10	20		
Benzo(k)fluoranthene	$0.1	0.2	0.5	1	2	5	10	20		
Benzo(a)pyrene	$0.1	0.2	0.5	1	2	5	10	20		
Indeno-(1,2,3-cd)pyrene	$0.1	0.2	0.5	1	2	5	10	20		
Dibenzo(a,h)anthracene	$0.1	0.2	0.5	1	2	5	10	20		
Benzo(ghi)perylene	$0.1	0.2	0.5	1	2	5	10	20		

$ By special request - Not for regulatory purposes

SW846 8270SIM Calibration Standard Concentration Levels*										
APSIM analytes (A)	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6#	Level 7	Level 8	Level 9	Level 10
$N-Nitrosodimethylamine	0.1	0.2	0.5	1	2	5	10	20		
$N-Nitrosopyrrolidine	0.1	0.2	0.5	1	2	5	10	20		
$N-Nitrosodi-n-butylamine	0.1	0.2	0.5	1	2	5	10	20		
$Benzidine			2.5	5	10	25	50	100		
$3,3'-Dichlorobenzidine	0.1	0.2	0.5	1	2	5	10	20		

$ By special request - Not for regulatory purposes
All values are mg/L without prep factor.
# indicates the calibraton verification concentration level used.
* Usual calibration levels using SIM methodology
(10/16/Full list)

Calibration History Report MSD4
GEL Laboratories, LLC

JMB 03/29/2018

Method File : C:\msdchem\1\data\s032918.B\MSD4_SIMPAHPLUS_8270D_8270C_030118.m
Last Update : Thu Mar 01 12:09:52 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

Cal Lvl:1 Amt:0.10 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0102.D

Injection Date	Mix	Calibration File
01 Mar 2018 09:25	A	C:\msdchem\1\data\s030118.B\s4c0102.D
01 Mar 2018 09:25	B	C:\msdchem\1\data\s030118.B\s4c0102.D

Cal Lvl:2 Amt:0.20 None of the compounds use this level.

Injection Date	Mix	Calibration File

Cal Lvl:3 Amt:0.50 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0103.D

Injection Date	Mix	Calibration File
01 Mar 2018 09:53	A	C:\msdchem\1\data\s030118.B\s4c0103.D
01 Mar 2018 09:53	B	C:\msdchem\1\data\s030118.B\s4c0103.D

Cal Lvl:4 Amt:1.00 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0104.D

Injection Date	Mix	Calibration File
01 Mar 2018 10:21	A	C:\msdchem\1\data\s030118.B\s4c0104.D
01 Mar 2018 10:21	B	C:\msdchem\1\data\s030118.B\s4c0104.D

Cal Lvl:5 Amt:2.00 None of the compounds use this level.

Injection Date	Mix	Calibration File

Cal Lvl:6 Amt:5.00 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0105.D

Injection Date	Mix	Calibration File
01 Mar 2018 10:49	A	C:\msdchem\1\data\s030118.B\s4c0105.D
01 Mar 2018 10:49	B	C:\msdchem\1\data\s030118.B\s4c0105.D

Cal Lvl:7 Amt:10.00 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0106.D

Injection Date	Mix	Calibration File
01 Mar 2018 11:17	A	C:\msdchem\1\data\s030118.B\s4c0106.D
01 Mar 2018 11:17	B	C:\msdchem\1\data\s030118.B\s4c0106.D

Cal Lvl:8 Amt:20.00 Last Updated with: C:\msdchem\1\data\s030118.B\s4c0107.D

Injection Date	Mix	Calibration File
01 Mar 2018 11:46	A	C:\msdchem\1\data\s030118.B\s4c0107.D
01 Mar 2018 11:46	B	C:\msdchem\1\data\s030118.B\s4c0107.D

JMB
03/29/2018

Response Factor Report MSD4
GEL Laboratories, LLC
Method File : C:\msdchem\1\data\s032918.B\MSD4_SIMPAHPLUS_8270D_8270C_030118.m
Last Update : Thu Mar 01 12:09:52 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	1 7	2 8	3	4	5	6	Avg	Curve	Exp	%RSD/r2
2)AM N-Methyl-N-nitrosomethyl	0.5739591		0.7363695	0.7960170		0.8088700				
	0.8459805	0.8838720					0.7742	AVRG		14.1952
3)AM bis(2-Chloroethyl) ether	1.0895327		1.1737825	1.2681212		1.1428539				
	1.1837107	1.2179693					1.1793	AVRG		5.2024
4)AM N-Nitrosodipropylamine	569		2907	5646		38160		1/x^2		
-0.0082 | 0.8739 | 0.00	65903	140866						LINR	#	0.9961
6)AM Naphthalene	1.1516635		1.1708486	1.2252096		1.0698585				
	1.0912657	1.0577659					1.1278	AVRG		5.8156
7)AM 2-Methylnaphthalene	0.6776630		0.7283657	0.7883614		0.7134851				
	0.7218044	0.6948893					0.7208	AVRG		5.2680
8)AM 1-Methylnaphthalene	0.6431131		0.6668062	0.7171525		0.6360468				
	0.6353706	0.6201867					0.6531	AVRG		5.3387
10)AM 2-Chloronaphthalene	1.5658442		1.6808036	1.7972387		1.6131550				
	1.6557561	1.6386759					1.6586	AVRG		4.7312
11)AM Acenaphthylene	2.2814897		2.3320313	2.4995559		2.3947911				
	2.4877236	2.4946028					2.4150	AVRG		3.8796
12)AM Acenaphthene	1.5163109		1.5197173	1.6201523		1.4707392				
	1.4971094	1.4947567					1.5198	AVRG		3.4356
13)AM Fluorene	1.4268552		1.4942336	1.6518018		1.5711021				
	1.5659245	1.5973250					1.5512	AVRG		5.1223
15)AM Phenanthrene	1.3635178		1.3836311	1.4588130		1.3254610				
	1.3571877	1.3176934					1.3677	AVRG		3.7236
16)AM Anthracene	1.0864083		1.1494996	1.2460551		1.2166288				
	1.2603195	1.2365732					1.1992	AVRG		5.6338
17)SA 5-alpha-Androstane	0.1391345		0.1270746	0.1313303		0.1230432				
	0.1302853	0.1303944					0.1302	AVRG		4.0947
18)AM Fluoranthene	0.9119105		1.0940073	1.2185225		1.1717106				
	1.1066402	1.0723218					1.0959	AVRG		9.5977
20)AM Pyrene	3.1245275		3.1506352	3.3873688		2.8477290				
	3.2219563	3.0536736					3.1310	AVRG		5.7249

MSD4_SIMPAH...70C_030118.m Thu Mar 29 15:33:16 2018 Page: 1

Response Factor Report MSD4
GEL Laboratories, LLC
Method File : C:\msdchem\1\data\s032918.B\MSD4_SIMPAHPLUS_8270D_8270C_030118.m
Last Update : Thu Mar 01 12:09:52 2018
Integrator : (RTE Integrator) Response via : Initial Calibration

For Linear Calibration: x = concentration ratio, y = response ratio. y = b + m1(x) + m2(xE2)

Compound b | m1 | m2	1 7	2 8	3	4	5	6	Avg	Curve	Exp	%RSD/r2
21)AM Benzo(a)anthracene	1.5844378		1.3284936	1.4619565		1.4448617				
	1.5220261	1.5607207					1.4837	AVRG		6.2950
22)AM Chrysene	1.5622638		1.5201452	1.6746627		1.4589952				
	1.5055427	1.4872197					1.5348	AVRG		4.9959
24)AM Benzo(b)fluoranthene	1.6594033		1.7846222	2.0141781		1.8278896				
	1.9078847	2.0213493					1.8692	AVRG		7.5103
25)AM Benzo(k)fluoranthene	1.5990613		1.7159828	1.9375277		1.8381171				
	1.9338279	2.0074461					1.8387	AVRG		8.4179
26)AM Benzo(a)pyrene	1.3040563		1.2548675	1.4124945		1.3936668				
	1.5228487	1.6607073					1.4248	AVRG		10.4029
27)AM Indeno(1,2,3-cd)pyrene	0.9520617		0.8201518	0.8560035		0.8268013				
	0.9880882	1.1068396					0.9250	AVRG		12.1520
28)AM Dibenzo(a,h)anthracene	0.9989943		0.7383126	0.7585290		0.7573592				
	0.9052565	0.9592423					0.8529	AVRG		13.5267
29)AM Benzo(ghi)perylene	1.2738854		1.0269497	1.0943731		0.9550384				
	1.1258160	1.1435850					1.1033	AVRG		9.8559
31)BM N-Nitrosodiethylamine	332		1686	3274		23295		1/x^2		
-0.0055 | 0.5325 | 0.00	41143	88698						LINR	#	0.9916
32)BM N-Nitrosopyrrolidine	0.2612503		0.3831698	0.4514570		0.5224042				
	0.5501720	0.5935886					0.4603	AVRG	#	26.6668
34)BM N-Nitrosodi-n-butylamine	462		2316	4473		31196		1/x^2		
-0.0021 | 0.2169 | 0.00	54558	120445						LINR	#	0.9940
36)BM Benzidine			6072	16305		176378				
-0.1531 | 0.3566 | 0.00	230269	578183						LINR	#	0.9976
38)BM 3,3'-Dichlorobenzidine	165		689	1601		14438		1/x		
-0.0057 | 0.3927 | 0.00	19174							LINR	#	0.9916

(#) = Out of Range ($) = Individual RF Out of Range
AVRG = Average, LINR = Linear Regression, 1/x = the inverse of concentration, 1/x^2 = the inverse square of concentration

Continuing Calibration Summary

Client SDG: 446517

Instrument ID: MSD4.I **Injection Date:** 01-MAR-18 12:16

Data File: s030118.B\s4c0108.D **Init. Cal. Date(s):** 01-MAR-18 09:25 - 01-MAR-18 11:4

Lab Sample ID WBN180301-89 **Method:** s030118.B\MSD4_SIMPAHPLUS_8270D_8270C_

Quant Type ISTD **Method Update:** 01-MAR-18 12:09

	Compound	AVERF / Amount	RF CCV	Nominal CCV	Min RF	RF Q	%D / %Drift	Max	Drift Q	Curve Type
S	5-alpha-Androstane	0.1302	0.11819		.01		-9.22427	30		Averaged
	Naphthalene	1.1278	1.06558		.7		-5.51694	30		Averaged
	Acenaphthene	1.5198	1.42055		.9		-6.53046	30		Averaged
	Fluorene	1.5512	1.51179		.9		-2.54061	30		Averaged
	Anthracene	1.1992	1.18409		.7		-1.26001	30		Averaged
	Fluoranthene	1.0959	1.10453		.6		0.78748	30		Averaged
	Pyrene	3.131	3.04916		.6		-2.61386	30		Averaged
	Benzo(a)anthracene	1.4837	1.36811		.8		-7.79066	30		Averaged
	Chrysene	1.5348	1.14189		.7		-25.60008	30		Averaged
	Benzo(b)fluoranthene	1.8692	1.77275		.7		-5.15996	30		Averaged
	Benzo(k)fluoranthene	1.8387	1.87331		.7		1.88231	30		Averaged
	Benzo(a)pyrene	1.4248	1.32805		.7		-6.79043	30		Averaged

Continuing Calibration Summary

Client SDG: 446517

Instrument ID: MSD4.I **Injection Date:** 29-MAR-18 15:12

Data File: s032918.B\s4c2908.D **Init. Cal. Date(s):** 01-MAR-18 09:25 - 01-MAR-18 11:4

Lab Sample ID WBN180311-86.3 **Method:** s032918.B\MSD4_SIMPAHPLUS_8270D_8270C_

Quant Type ISTD **Method Update:** 01-MAR-18 12:09

	Compound	AVERF / Amount	RF CCV	Nominal CCV	Min RF	RF Q	%D / %Drift	Max	Drift Q	Curve Type
S	5-alpha-Androstane	0.1302	0.14082		.01		8.15668	20		Averaged
	Naphthalene	1.1278	1.0773		.7		-4.47774	20		Averaged
	Acenaphthene	1.5198	1.52008		.9		0.01842	20		Averaged
	Fluorene	1.5512	1.65894		.9		6.94559	20		Averaged
	Anthracene	1.1992	1.17774		.7		-1.78953	20		Averaged
	Fluoranthene	1.0959	1.18478		.6		8.11023	20		Averaged
	Pyrene	3.131	3.17886		.6		1.52859	20		Averaged
	Benzo(a)anthracene	1.4837	1.62921		.8		9.80724	20		Averaged
	Chrysene	1.5348	1.47564		.7		-3.85457	20		Averaged
	Benzo(b)fluoranthene	1.8692	1.81313		.7		-2.99968	20		Averaged
	Benzo(k)fluoranthene	1.8387	1.67732		.7		-8.77685	20		Averaged
	Benzo(a)pyrene	1.4248	1.52591		.7		7.09643	20		Averaged

Continuing Calibration Summary

Client SDG: 446517

Instrument ID: MSD4.I **Injection Date:** 30-MAR-18 10:20

Data File: s033018.B\s4c3005.D **Init. Cal. Date(s):** 01-MAR-18 09:25 - 01-MAR-18 11:4

Lab Sample ID WBN180311-86.3 **Method:** s033018.B\MSD4_SIMPAHPLUS_8270D_8270C_

Quant Type ISTD **Method Update:** 01-MAR-18 12:09

	Compound	AVERF / Amount	RF CCV	Nominal CCV	Min RF	RF Q	%D / %Drift	Max	Drift Q	Curve Type
S	5-alpha-Androstane	0.1302	0.12923		.01		-0.74501	20		Averaged
	Naphthalene	1.1278	1.08447		.7		-3.84199	20		Averaged
	Acenaphthene	1.5198	1.4859		.9		-2.23056	20		Averaged
	Fluorene	1.5512	1.69419		.9		9.21802	20		Averaged
	Anthracene	1.1992	1.23301		.7		2.81938	20		Averaged
	Fluoranthene	1.0959	1.2305		.6		12.28214	20		Averaged
	Pyrene	3.131	2.53187		.6		-19.13542	20		Averaged
	Benzo(a)anthracene	1.4837	1.66181		.8		12.00445	20		Averaged
	Chrysene	1.5348	1.75032		.7		14.04222	20		Averaged
	Benzo(b)fluoranthene	1.8692	1.80649		.7		-3.35491	20		Averaged
	Benzo(k)fluoranthene	1.8387	1.71277		.7		-6.84886	20		Averaged
	Benzo(a)pyrene	1.4248	1.57181		.7		10.31794	20		Averaged

Quality Control Data

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517			**Matrix:**	SOIL
Lab Sample ID:	1203998143				
Client Sample:	QC for batch 1750980	**Client:**	POEN004	**Project:**	QC
Client ID:	MB for batch 1750980	**Method:**	SW846 3541/8270D SIM P.	**SOP Ref:**	GL-OA-E-009
Batch ID:	1750981	**Inst:**	MSD4.I	**Dilution:**	1
Run Date:	03/29/2018 17:37	**Analyst:**	JMB3	**Inj. Vol:**	1 uL
Prep Date:	03/29/2018 06:18	**Aliquot:**	30.017 g	**Final Volume:**	1 mL
Data File:	s032918.B\s4c2913.D	**Column:**	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene	U	3.33	ug/kg	1.10	3.33
120-12-7	Anthracene	U	3.33	ug/kg	1.10	3.33
56-55-3	Benzo(a)anthracene	U	3.33	ug/kg	1.10	3.33
50-32-8	Benzo(a)pyrene	U	3.33	ug/kg	1.10	3.33
205-99-2	Benzo(b)fluoranthene	U	3.33	ug/kg	1.10	3.33
207-08-9	Benzo(k)fluoranthene	U	3.33	ug/kg	1.10	3.33
218-01-9	Chrysene	U	3.33	ug/kg	1.10	3.33
206-44-0	Fluoranthene	U	3.33	ug/kg	1.10	3.33
86-73-7	Fluorene	U	3.33	ug/kg	1.10	3.33
91-20-3	Naphthalene	U	3.33	ug/kg	1.10	3.33
129-00-0	Pyrene	U	3.33	ug/kg	1.10	3.33

Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517			Matrix:	SOIL
Lab Sample ID:	1203998144				
Client Sample:	QC for batch 1750980	Client:	POEN004	Project:	QC
Client ID:	LCS for batch 1750980	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/29/2018 15:43	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.015 g	Final Volume:	1 mL
Data File:	s032918.B\s4c2909.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene		269	ug/kg	1.10	3.33
120-12-7	Anthracene		282	ug/kg	1.10	3.33
56-55-3	Benzo(a)anthracene		324	ug/kg	1.10	3.33
50-32-8	Benzo(a)pyrene		316	ug/kg	1.10	3.33
205-99-2	Benzo(b)fluoranthene		278	ug/kg	1.10	3.33
207-08-9	Benzo(k)fluoranthene		269	ug/kg	1.10	3.33
218-01-9	Chrysene		293	ug/kg	1.10	3.33
206-44-0	Fluoranthene		304	ug/kg	1.10	3.33
86-73-7	Fluorene		288	ug/kg	1.10	3.33
91-20-3	Naphthalene		272	ug/kg	1.10	3.33
129-00-0	Pyrene		270	ug/kg	1.10	3.33

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:10	Matrix:	SOIL
Lab Sample ID:	1203998145	Date Received:	03/23/2018 08:55	%Moisture:	16.3
Client Sample:	QC for batch 1750980	Client:	POEN004	Project:	QC
Client ID:	CFA18001 - Soil Location #1MS	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	1750981	Inst:	MSD4.I	Dilution:	1
Run Date:	03/29/2018 16:11	Analyst:	JMB3	Inj. Vol:	1 uL
Prep Date:	03/29/2018 06:18	Aliquot:	30.101 g	Final Volume:	1 mL
Data File:	s032918.B\s4c2910.D	Column:	DB-5ms		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene		288	ug/kg	1.31	3.97
120-12-7	Anthracene		311	ug/kg	1.31	3.97
56-55-3	Benzo(a)anthracene		389	ug/kg	1.31	3.97
50-32-8	Benzo(a)pyrene		375	ug/kg	1.31	3.97
205-99-2	Benzo(b)fluoranthene		332	ug/kg	1.31	3.97
207-08-9	Benzo(k)fluoranthene		317	ug/kg	1.31	3.97
218-01-9	Chrysene		348	ug/kg	1.31	3.97
206-44-0	Fluoranthene		344	ug/kg	1.31	3.97
86-73-7	Fluorene		315	ug/kg	1.31	3.97
91-20-3	Naphthalene		274	ug/kg	1.31	3.97
129-00-0	Pyrene		330	ug/kg	1.31	3.97

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Semi-Volatile
Certificate of Analysis
Sample Summary

SDG Number:	446517	Date Collected:	03/22/2018 11:10	Matrix:	SOIL
Lab Sample ID:	1203998146	Date Received:	03/23/2018 08:55	%Moisture:	16.3
Client Sample:	QC for batch 1750980	Client:	POEN004	Project:	QC
Client ID:	CFA18001 - Soil Location	Method:	SW846 3541/8270D SIM P.	SOP Ref:	GL-OA-E-009
Batch ID:	#1(446517001MSD	Inst:	MSD4.I	Dilution:	1
Run Date:	1750981 03/29/2018 16:40	Analyst:	JMB3	Inj. Vol:	1 uL
		Aliquot:	30.145 g	Final Volume:	1 mL
Prep Date:	03/29/2018 06:18	Column:	DB-5ms		
Data File:	s032918.B\s4c2911.D				

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
83-32-9	Acenaphthene		237	ug/kg	1.31	3.96
120-12-7	Anthracene		260	ug/kg	1.31	3.96
56-55-3	Benzo(a)anthracene		332	ug/kg	1.31	3.96
50-32-8	Benzo(a)pyrene		326	ug/kg	1.31	3.96
205-99-2	Benzo(b)fluoranthene		305	ug/kg	1.31	3.96
207-08-9	Benzo(k)fluoranthene		289	ug/kg	1.31	3.96
218-01-9	Chrysene		299	ug/kg	1.31	3.96
206-44-0	Fluoranthene		327	ug/kg	1.31	3.96
86-73-7	Fluorene		266	ug/kg	1.31	3.96
91-20-3	Naphthalene		220	ug/kg	1.31	3.96
129-00-0	Pyrene		225	ug/kg	1.31	3.96

Miscellaneous

Prep Logbook

Automated Soxhlet Extraction

Batch ID: 1750980 **Verified by:** _____
Analyst: Stacey Grant
Method: SW846 3541

Lab SOP: GL-OA-E-066 REV# 8
Instrument: Semi-Volatiles Manual

Sample ID	Prep Date	Aliquot (g)	Prepped Aliquot (mL)	Prepped Factor (mL/g)
1203998143 MB	29-MAR-2018 06:18:00	30.017	1	0.03331
1203998144 LCS	29-MAR-2018 06:18:00	30.015	1	0.03332
446517001	29-MAR-2018 06:18:00	30.079	1	0.03325
1203998145 MS (446517001)	29-MAR-2018 06:18:00	30.101	1	0.03322
1203998146 MSD (446517001)	29-MAR-2018 06:18:00	30.145	1	0.03317
446517002	29-MAR-2018 06:18:00	30.435	1	0.03286
446517003	29-MAR-2018 06:18:00	30.124	1	0.0332
446517004	29-MAR-2018 06:18:00	30.027	1	0.0333

Type	Sample Id	Description	Serial Number	Spike Amt	Units
LCS	1203998144	PAH SIM LCS 10 mg/L	UEI80322-20	1	mL
MS	1203998145	PAH SIM LCS 10 mg/L	UEI80322-20	1	mL
MSD	1203998146	PAH SIM LCS 10 mg/L	UEI80322-20	1	mL
SURR	All	BNA for all Surrogate	UEI80209-12	1	mL
REGNT	All	Sand pure 40-100 mesh	2600642-A	30	g
REGNT	All	Acetone	2651865-B4	60	mL
REGNT	All	Methylene Chloride	2662636	60	mL

Comments:
Soxtherm Unit:: 1,2
Final Solvent: CH2Cl2
Start Time:: 6:32
End Time:: 7:35
Verified by: DF

ORGANIC RUN LOG - INSTRUMENT ID#MSD4

GEL ORGANIC RUN LOG

DATE: 1-Mar-18 METHOD: See Data OPERATOR: JMB3 Sequence Number: S03011

03/02/2018

Multiplier Voltage: 1941
Internal Std ID: UBN171221-01.1
Internal Std ID: WBN180209-99 (SIM)
Solvent Reference ID: 2620130

Calibration Information:
Initial Calibration Dates: See Calibration History
Initial Calibration Std ID's: See Associated Data and Run Log
GEL SOP: GL-OA-E-009

Analysis Date	Time	Data File	Lab Sample ID	Client	Batch #	Dil. Factor	AS Slot #	Analyst	Comments
03/01/2018	09:09	s4c0101.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	√
03/01/2018	09:25	s4c0102.D	WBN180209-88	SIM-1	ICAL	1	2	JMB3	√
03/01/2018	09:53	s4c0103.D	WBN180209-86	SIM-3	ICAL	1	3	JMB3	√
03/01/2018	10:21	s4c0104.D	WBN180209-85	SIM-4	ICAL	1	4	JMB3	√
03/01/2018	10:49	s4c0105.D	WBN180209-83	SIM-6	ICAL	1	5	JMB3	√ IS1: 35355
03/01/2018	11:17	s4c0106.D	WBN180209-82	SIM-7	ICAL	1	6	JMB3	√
03/01/2018	11:46	s4c0107.D	WBN180209-81	SIM-8	ICAL	1	7	JMB3	√
03/01/2018	12:16	s4c0108.D	WBN180301-89	SIM-ICV	ICV	1	8	JMB3	√
03/01/2018	12:45	s4c0109.D	1203979323	MB	1742417	1	9	JMB3	Report: SIM 3541
03/01/2018	13:40	s4c0110.D	1203979324	LCS	1742417	1	10	JMB3	Report: SIM 3541
03/01/2018	14:08	s4c0111.D	444392002	QCQA(1/2MDL)	1742417	1	11	JMB3	Report: SIM 3541
03/01/2018	14:36	s4c0112.D	444392003	QCQA(MDL)	1742417	1	12	JMB3	Report: SIM 3541
03/01/2018	15:05	s4c0113.D	444392004	QCQA(LOD)	1742417	1	13	JMB3	Report: SIM 3541
03/01/2018	15:33	s4c0114.D	444392005	QCQA(LOQ)	1742417	1	14	JMB3	Report: SIM 3541
03/01/2018	16:01	s4c0115.D	1203979402	MB	1742457	1	15	JMB3	Report: SIM 3510
03/01/2018	16:29	s4c0116.D	1203979403	LCS	1742457	1	16	JMB3	Report: SIM 3510
03/01/2018	16:57	s4c0117.D	444318002	QCQA(1/2MDL)	1742457	1	17	JMB3	Report: SIM 3510
03/01/2018	17:25	s4c0118.D	444318003	QCQA(MDL)	1742457	1	18	JMB3	Report: SIM 3510
03/01/2018	17:53	s4c0119.D	444318004	QCQA(LOD)	1742457	1	19	JMB3	Report: SIM 3510
03/01/2018	18:21	s4c0120.D	444318005	QCQA(LOQ)	1742457	1	20	JMB3	Report: SIM 3510
03/01/2018	18:49	s4c0121.D	WBN180209-83	SIM-CCV	CCV	1	21	JMB3	√

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ORGANIC RUN LOG - INSTRUMENT ID#MSD4

JMB 04/04/2018

GEL ORGANIC RUN LOG

DATE: 29-Mar-18 METHOD: See Data OPERATOR: JMB3 Sequence Number: S032918.B

Multiplier Voltage: 1671
Internal Std ID: UBN171221-01.2
Internal Std ID: WBN180311-99 (SIM)
Solvent Reference ID: 2620130

Calibration Information:
Initial Calibration Dates: See Calibration History
Initial Calibration Std ID's: See Associated Data and Run Log
GEL SOP: GL-OA-E-009

Analysis Date Time	Data File	Lab Sample ID	Client	Batch #	Dil. Factor	AS Slot #	Analyst	Comments
03/29/2018 10:49	s4c2901.D	RINSE				100	JMB3	DUSE
03/29/2018 11:04	s4c2902.D	RINSE				100	JMB3	DUSE
03/29/2018 11:19	s4c2903.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	DUSE: passed
03/29/2018 11:34	s4c2904.D	WBN180220-05.2	M-CCV	CCV	1	2	JMB3	DUSE: HCCPD, acids low --> performed maintenance
03/29/2018 12:43	s4c2905.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	DUSE: no PCP
03/29/2018 12:59	s4c2906.D	WBN180220-05.2	M-CCV	CCV	1	2	JMB3	DUSE: acids low --> performed maintenance
03/29/2018 14:56	s4c2907.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	√ no PCP, not required for SIM PAH's
03/29/2018 15:12	s4c2908.D	WBN180311-86.3	S-CCV	CCV	1	3	JMB3	√ IS1: 44686
03/29/2018 15:43	s4c2909.D	1203998144	LCS	1750981	1	4	JMB3	Report
03/29/2018 16:11	s4c2910.D	1203998145	MS	1750981	1	5	JMB3	Report
03/29/2018 16:40	s4c2911.D	1203998146	MSD	1750981	1	6	JMB3	Report
03/29/2018 17:08	s4c2912.D	1203998158	LCS	1750987	1	7	JMB3	Report
03/29/2018 17:37	s4c2913.D	1203998143	MB	1750981	1	8	JMB3	Report
03/29/2018 18:05	s4c2914.D	1203998157	MB	1750987	1	9	JMB3	DUSE: failed ISTD - see rr s4c3006
03/29/2018 18:34	s4c2915.D	446517001	POEN	1750981	1	10	JMB3	Report
03/29/2018 19:02	s4c2916.D	446517002	POEN	1750981	1	11	JMB3	DUSE: failed ISTD - see rr s4c3007
03/29/2018 19:31	s4c2917.D	446517003	POEN	1750981	1	12	JMB3	Report
03/29/2018 19:59	s4c2918.D	446517004	POEN	1750981	1	13	JMB3	Report
03/29/2018 20:28	s4c2919.D	446352002	SAME	1750987	1	14	JMB3	DUSE: failed surr - RX s2d0309 passed w/in hold
03/29/2018 20:56	s4c2920.D	446352003	SAME	1750987	1	15	JMB3	Report
03/29/2018 21:24	s4c2921.D	446352004	SAME	1750987	1	16	JMB3	DUSE: failed ISTD - see rr s4c3022
03/29/2018 21:53	s4c2922.D	446352005	SAME	1750987	1	17	JMB3	DUSE: failed ISTD - see rr s4c3023
03/29/2018 22:21	s4c2923.D	446352006	SAME	1750987	1	18	JMB3	DUSE: failed ISTD - see rr s4c3024
03/29/2018 22:50	s4c2924.D	446352008	SAME	1750987	1	19	JMB3	DUSE: failed ISTD - see rr s4c3025
03/29/2018 23:18	s4c2925.D	446352001	SAME	1750987	1	20	JMB3	Report
03/29/2018 23:47	s4c2926.D	1203998159	MS	1750987	1	21	JMB3	Report
03/30/2018 00:15	s4c2927.D	1203998160	MSD	1750987	1	22	JMB3	DUSE: MSD mislabeled with MSD for Scan - see rr s4c3008
03/30/2018 00:43	s4c2928.D	446352007	SAME	1750987	1	23	JMB3	DUSE: possible carryover - see rr s4c3026
03/30/2018 01:12	s4c2929.D	446352009	SAME	1750987	1	24	JMB3	Report
03/30/2018 01:40	s4c2930.D	446352010	SAME	1750987	1	25	JMB3	Report
03/30/2018 02:08	s4c2931.D	446352011	SAME	1750987	1	26	JMB3	Report
03/30/2018 02:36	s4c2932.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	DUSE: post sequence screen - breakdown >20%

ORGANIC RUN LOG - INSTRUMENT ID#MSD4

GEL ORGANIC RUN LOG

DATE: 30-Mar-18 METHOD: See Data OPERATOR: JMB3 Sequence Number: S033018.B

Multiplier Voltage: 1671
Internal Std ID: UBN171221-01.2
Internal Std ID: WBN171226-99 (SIM)
Solvent Reference ID: 2620130

Calibration Information:
Initial Calibration Dates: See Calibration History
Initial Calibration Std ID's: See Associated Data and Run Log
GEL SOP: GL-OA-E-009

Analysis Date	Time	Data File	Lab Sample ID	Client	Batch #	Dil. Factor	AS Slot #	Analyst	Comments
03/30/2018	08:51	s4c3001.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	DUSE
03/30/2018	09:08	s4c3002.D	WBN180311-86.3	S-CCV	CCV	1	2	JMB3	DUSE
03/30/2018	09:36	s4c3003.D	WBN180311-86.3	S-CCV	CCV	1	2	JMB3	DUSE
03/30/2018	10:04	s4c3004.D	WBN180108-99	DFTPP	DFTPP	1	1	JMB3	√
03/30/2018	10:20	s4c3005.D	WBN180311-86.3	S-CCV	CCV	1	2	JMB3	√ IS1: 20435
03/30/2018	10:51	s4c3006.D	1203998157	MB(rr)	1750987	1	3	JMB3	Report
03/30/2018	11:20	s4c3007.D	446517002	PCEN(rr)	1750981	1	4	JMB3	Report
03/30/2018	11:48	s4c3008.D	1203998160	MSD(rr)	1750987	1	5	JMB3	Report
03/30/2018	12:16	s4c3009.D	446352012	SAME	1750987	1	6	JMB3	Report
03/30/2018	12:45	s4c3010.D	446352013	SAME	1750987	1	7	JMB3	Report
03/30/2018	13:13	s4c3011.D	446352014	SAME	1750987	1	8	JMB3	DUSE: failed surr - RX s2d0310 passed w/in hold
03/30/2018	13:42	s4c3012.D	1203999907	MB	1751727	1	15	JMB3	Report
03/30/2018	14:10	s4c3013.D	1203999908	LCS	1751727	1	16	JMB3	Report
03/30/2018	14:39	s4c3014.D	446573002	OLAB(rx)	1751727	1	17	JMB3	Report: RX of s8c2821 - passed w/in hold
03/30/2018	15:07	s4c3015.D	446573005	OLAB(rx)	1751727	1	18	JMB3	Report: RX of s8c2832 - passed w/in hold
03/30/2018	15:36	s4c3016.D	446573006	OLAB(rx)	1751727	1	19	JMB3	DUSE: failed ISTD, OR hits - see s4c2920 for 4x results
03/30/2018	16:04	s4c3017.D	446913003	OLAB	1751727	1	20	JMB3	Report
03/30/2018	16:32	s4c3018.D	1203999909	MS	1751727	1	21	JMB3	Report
03/30/2018	17:01	s4c3019.D	1203999910	MSD	1751727	1	22	JMB3	Report
03/30/2018	17:29	s4c3020.D	446573006	OLAB(rx)	1751727	4	27	JMB3	Report: RX of s8c2833 - passed w/in hold
03/30/2018	17:58	s4c3021.D	446352015	SAME	1750987	1	9	JMB3	Report: failed surr - RX s2d0311 confirmed surr failure
03/30/2018	18:26	s4c3022.D	446352004	SAME(rr)	1750987	1	10	JMB3	Report
03/30/2018	18:55	s4c3023.D	446352005	SAME(rr)	1750987	1	11	JMB3	Report
03/30/2018	19:23	s4c3024.D	446352006	SAME(rr)	1750987	1	12	JMB3	Report
03/30/2018	19:52	s4c3025.D	446352008	SAME(rr)	1750987	1	13	JMB3	Report
03/30/2018	20:20	s4c3026.D	446352007	SAME(rr)	1750987	1	14	JMB3	Report
03/30/2018	20:49	s4c3027.D	446762003	OLAB	1751727	1	23	JMB3	Report
03/30/2018	21:17	s4c3028.D	446762004	OLAB	1751727	10	24	JMB3	Report
03/30/2018	21:46	s4c3029.D	446762005	OLAB	1751727	10	25	JMB3	Report
03/30/2018	22:14	s4c3030.D	446762007	OLAB	1751727	1	26	JMB3	DUSE: outside tune, OR hits, failed ISTD - see rr s4c3105 (4x)

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Appendix F
Idaho Risk Evaluation Manual for Petroleum Releases

Idaho
Risk Evaluation Manual
for Petroleum Releases

Idaho Department of Environmental Quality
1410 North Hilton
Boise, Idaho 83706

August 2012

Table 2 lists the screening levels for unrestricted use. For comparison, Table 2 provides the risk-based concentrations in soil and groundwater for all the pathways and ROE listed above. The screening level values incorporated in the Rule are indicated in bold.

Because of the methods and assumptions used in the development of the screening levels and the current limitations of laboratory analytical methods, the calculated screening levels may be lower than the practical quantitation limit reported by a laboratory for selected chemicals. In these situations, site-specific review by DEQ will be required based on the criteria provided in Section 500 of the Rule and Appendix K.

Table 2. Screening Level Concentrations for Soil, Groundwater, and Soil Vapor

	SOIL (mg/kg)			GROUNDWATER (mg/L)		DEEP SOIL VAPOR (ug/m3) (>3- 5 feet bgs)	
						Unrestricted Use	Commercial/ Industrial
CHEMICAL	Vapor Intrusion	Direct Contact	Groundwater Protection	Vapor Intrusion	Ingestion	Vapor Intrusion	Vapor Intrusion
Benzene	0.08	8.3	**0.025**	0.044	**0.005**	**31**	160
Toluene	1300	7930	**6.6**	340	**1**	**520000**	2200000
Ethylbenzene	**0.25**	39	7.4	**0.05**	0.700	**97**	490
Xylenes	**27**	6170	91	**8.7**	10	**10000**	44000
Naphthalene	**0.12**	44	9.2	**0.07**	0.73	**7**	36
MTBE	2.4	340	**0.08**	6.8	**0.04**	**940**	4700
1,2-Dichloroethane	0.02	3.7	**0.013**	0.03	**0.005**	**9**	47
Ethylene Dibromide	0.001	0.27	**0.00014**	0.004	**0.00005**	**0.4**	2
Acenaphthene	NA	4470	**200**	NA	**2.2**	NA	NA
Anthracene	NA	22300	**3200**	NA	**11**	NA	NA
Benz(a)anthracene	NA	0.19	**0.09**	NA	**0.00003**	NA	NA
Benzo(a)pyrene	NA	**0.02**	2.1	NA	**0.0002**	NA	NA
Benzo(b)fluoranthene	NA	**0.19**	0.31	NA	**0.00003**	NA	NA
Benzo(k)fluoranthene	NA	**1.9**	3.1	NA	**0.0003**	NA	NA
Chrysene	NA	19	**9.5**	NA	**0.003**	NA	NA
Fluoranthene	NA	2970	**1400**	NA	**1.5**	NA	NA
Fluorene	NA	2970	**240**	NA	**1.5**	NA	NA
Pyrene	NA	2230	**1000**	NA	**1.1**	NA	NA

Values in bold are current screening level values specified in the Rule. Screening level values for deep soil vapor are equivalent to EPA Regional Screening Levels (EPA, 2012) for residential and industrial ambient air divided by an attenuation factor of 0.01.

NA: not applicable because the chemical does not meet EPA volatility criteria or does not have a Regional Screening Level for ambient air.